June 8, 2018

Mr. John Hoffelt
TDEC - Nashville Field Office
711 R.S. Gass Boulevard
Nashville, TN 37243

REFERENCE: **National Guard Bureau Contract Number W9133L-14-D-0007, Task Order 0009, Fiscal Year 2017 Phase IV Regional Site Inspections for Perfluorinated Compounds at Multiple Air National Guard Installations, Project #ANGH20177153**

SUBJECT: **Draft Final Site Inspection Report for Perfluorooctane Sulfonate and Perfluorooctanoic Acid at Nashville International Airport, Nashville, Tennessee, June 2018**

Dear Mr. Hoffelt,

Attached, please find one hard copy and one electronic version (on compact disc) of the above-referenced document for your review per Task 12.3 of Task Order 0009. This report documents results of the Site Inspection at Nashville Air National Guard Base, Nashville, Tennessee.

Additionally, this is the first report submitted under the Phase III and Phase IV Task Orders, and will serve as a template for consistency in the remaining reports.

We would like comments back as soon as possible. Should you have any questions, please do not hesitate to contact me at 865-405-8332 or by email at poligonem@leidos.com. Thank you.

Sincerely,

LEIDOS

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Project Manager

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DRAFT FINAL

SITE INSPECTION REPORT
FOR
PERFLUOROOCTANE SULFONATE AND
PERFLUOROOCTANOIC ACID
AT
NASHVILLE INTERNATIONAL AIRPORT, TENNESSEE

118th Wing
Tennessee Air National Guard
Nashville Air National Guard Base
Nashville, Tennessee

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118th Wing
Tennessee Air National Guard
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Nashville, Tennessee

June 2018

Contract Number W9133L-14-D-0007
Task Order Number 0009

Prepared for

Air National Guard
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CONTENTS

TABLES

FIGURES

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ACRONYMS

AFFF	aqueous film-forming foam
AMSL	above mean sea level
ANG	Air National Guard
ANGB	Air National Guard Base
ARFF	aircraft rescue firefighting
BGS	below ground surface
cm/sec	centimeters per second
COC	chemical of concern
DoD	U.S. Department of Defense
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
FSS	fire suppression system
ft	foot or feet
ft^2	square feet
FTA	fire training area
gal	gallon
HA	health advisory
HDPE	high-density polyethylene
IDW	investigation-derived waste
in.	inch
µg/L	micrograms per liter
min	minute
mL	milliliter
MS	matrix spike
MSD	matrix spike duplicate
NFA	no further action
ng/L	nanograms per liter
OWS	oil/water separator
oz.	ounce
%	percent
PA	preliminary assessment
PFBS	perfluorobutane sulfonate
PFHpA	perfluoroheptanoic acid
PFHxS	perfluorohexane sulfonate
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PRL	potential release location
QA	quality assurance
QC	quality control
RSL	regional screening level
SI	site inspection
TestAmerica	TestAmerica Analytical Laboratories, Inc.
UCMR3	third Unregulated Contaminant Monitoring Rule
UFP-QAPP	Uniform Federal Policy Quality Assurance Project Plan
USFWS	U.S. Fish and Wildlife Service

VOC	volatile organic compound
WP	Work Plan
WTP	water treatment plant

EXECUTIVE SUMMARY

Leidos was contracted to conduct Phase IV regional site inspections (SIs) for perfluorinated compounds at multiple Air National Guard (ANG) Bases (ANGBs). This report documents SI activities conducted at four potential release locations (PRLs) at the 118th Wing of Tennessee ANG at Nashville International Airport, Nashville, Tennessee (Nashville ANGB). The primary objective of the SI was to determine the presence or absence of perfluorinated compounds, more specifically per- and polyfluoroalkyll substances, including perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutane sulfonate (PFBS), perfluorononanoic acid (i.e., PFNA), perfluoroheptanoic acid (i.e., PFHpA), and perfluorohexane sulfonate (i.e., PFHxS), herein collectively referred to as PFOS/PFOA at each PRL, and based on the findings:

- determine if PFOS/PFOA-contaminated groundwater has reached the Installation boundary,
- provide a defensible no further action (NFA) decision for qualifying PRLs, and
- develop data quality objectives (DQOs) for additional investigation for PRLs not meeting NFA criteria or an interim response action if appropriate.

To meet the objectives, Leidos performed SIs at the following four PRLs:

- PRL 1: Building 736, (Former) Fire Station;
- PRL 3: Fire Equipment Test Area;
- PRL 4: Flight Apron - Concrete Ramp; and
- PRL 5: Stormwater Outfall 001.

Based on recommendations from the preliminary assessment and site visit conducted by BB&E in February 2016, soil, groundwater, sediment, and surface water samples were collected and analyzed for PFOS/PFOA compounds. The detected PFOS/PFOA concentrations were compared against screening criteria for PFOS, PFOA, and PFBS, including the U.S. Environmental Protection Agency (EPA) lifetime drinking water health advisory for PFOS and PFOA, the EPA regional screening level (RSL) table for PFBS in tap water, the EPA RSL table for PFBS in residential soil, and calculated screening levels using the EPA screening level calculator for PFOS and PFOA in soil and sediment, as shown in Table ES-1.

Based on comparison of analytical data to the screening criteria in Table ES-1, Leidos recommends further investigations at all four PRLs. PRLs 1 and 3 are co-located and are described together in this SI Report. Additional investigations are recommended for soil and groundwater at PRLs 1 and 3, PRL 4, and PRL 5, and surface water at PRL 5. The recommendations are summarized in Table ES-2 and described briefly below:

- Conduct further investigation at all four PRLs to determine the nature and extent of PFOS/PFOA contamination due to detectable levels at all PRLs.
- Develop an expanded conceptual site model that considers localized groundwater and surface water flow paths to select future sampling locations.

Table ES-1. PFOS/PFOA SI Screening Criteria

Parameter	Chemical Abstract Service Number	EPA RSL for Tap Water[a] (ng/L)	EPA Health Advisory[b] (ng/L)	Residential Risk-based Soil Screening Level[c] (µg/kg)
PFOS	1763-23-1	NA	70.0[d]	1,260
PFOA	335-67-1	NA		1,260
PFBS	375-73-5	400,000	NA	1,260,000

[a]EPA RSL for tap water, November 2017.
[b]*Drinking Water Health Advisory for Perfluorooctanoic Acid* (EPA 2016b) and *Drinking Water Health Advisory for Perfluorooctane Sulfonate* (EPA 2016a).
[c]Residential risk-based soil screening levels determined by using the EPA RSL calculator (https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search) and the November 2017 EPA RSL tables (https://epa.gov/risk/regional-screening-levels-rsls-generic-tables-november-2017) for soil and sediment.
[d]When PFOA and PFOS are both present, the combined detected concentrations of the compounds are compared with the 70-ng/L health advisory value. Analytical results for groundwater and stormwater have been compared to the tap water screening levels.

EPA = U.S. Environmental Protection Agency.
µg/kg = Micrograms per kilogram.
NA = Not available.
ng/L = Nanograms per liter.
PFBS = Perfluorobutane sulfonate.
PFOA = Perfluorooctanoic acid.
PFOS = Perfluorooctane sulfonate.
RSL = Regional screening level.
SI = Site inspection.

- Complete the nature and extent evaluation of PFOS/PFOA as part of an expanded SI or a remedial investigation that could consist of:
    - An expanded groundwater sampling program to complete horizontal and vertical delineation of the PFOS/PFOA impacts. Further groundwater investigation at the Base boundary is recommended due to the presence of PFOS/PFOA in groundwater above respective screening levels.
    - The installation and sampling of new and existing upgradient and downgradient off-Base monitoring wells to better define the upgradient source of PFOS/PFOA, as well as impacts of PFOS/PFOA that have migrated off-Base.
    - Additional soil and sediment sampling and analysis of an expanded list of PFOS/PFOA constituents (in addition to the six third Unregulated Contaminant Monitoring Rule constituents) for the purpose of determining if significant source areas related to precursor substances are present. Precursor substances have been demonstrated to oxidize into PFOS and PFOA and, thus, could provide a lingering source of these compounds to soil and groundwater.
- Conduct preliminary site-specific risk assessment calculations to identify chemicals of potential concern in all media and establish preliminary remedial goals for screening purposes.

DQOs are proposed based on the results of the SI and are presented in Table ES-2. In general, additional samples are required at each PRL to establish the nature and extent of PFOA/PFOS constituents for each applicable medium and to determine if there is a complete receptor pathway. For soil, additional samples are proposed to determine if a source area exists, and if so, what the vertical and horizontal extents for both the vadose and saturated zones are. Additional surface water and sediment samples should be collected at PRL 5, taking care to sample upstream of the Nashville International Airport storm water inlet.

Table ES-2. SI Recommendation Summary Table

PRL Number	PRL Description	Constituents Above Screening Criteria	Sampling Recommendations and Objectives
1 and 3	Building 736 - Fire Station and Fire Equipment Test Area	Groundwater: PFOS + PFOA	Soil: Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists, and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration Groundwater: Determine the nature and extent (both vertically and horizontally) through the sampling of existing and additional new monitoring wells
4	Flight Apron	Groundwater: PFOS + PFOA	Soil: Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists, and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration Groundwater: Although screening criteria were not exceeded in the artesian spring sample from beneath the Aircraft Apron, there were exceedances in the downgradient co-located groundwater well at PRL 5. Therefore, additional groundwater sampling is proposed to better define potential groundwater impacts both vertically and horizontally through the sampling of additional new monitoring wells
5	Stormwater Outfall 001	Groundwater: PFOS + PFOA	Soil: Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists, and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration Groundwater: Determine the nature and extent (both vertically and horizontally) through the sampling of existing and additional new monitoring wells Surface Water and Sediment: Additional sampling to determine the extent of surface water impacts and to support the evaluation of whether there are unacceptable risks to ecological or human health receptors
General			Groundwater: (1) Collect additional groundwater samples in upgradient locations to quantify potential impacts from upgradient sources. (2) Collect additional groundwater samples off-Base through the installation of a limited number of new monitoring wells to determine if PFOS/PFOA impacts beyond the Base boundary are increasing or decreasing Surface Water: (1) Collect additional groundwater samples in upgradient locations to quantify potential impacts from upgradient sources. (2) Collect additional groundwater samples off-Base through the installation of a limited number of new monitoring wells to determine if PFOS/PFOA impacts beyond the Base boundary are increasing or decreasing Care should be taken in choosing locations for additional downgradient samples for both groundwater and surface water. The Nashville International Airport is located immediately downgradient based on both surface water and groundwater flow directions. The presence of PFOS/PFOA compounds from downgradient locations within the Nashville International Airport footprint may identify an additional source of contamination that is beyond the scope of this SI

PFOA = Perfluorooctanoic acid.
PFOS = Perfluorooctane sulfonate.
PRL = Potential release location.
SI = Site inspection.

The conceptual site model should take into consideration that the Nashville International Airport is located immediately downgradient based on both surface water and groundwater flow directions. The presence of PFOS/PFOA compounds from downgradient locations within the Nashville International Airport footprint may identify an additional source of contamination that is beyond the scope of this SI.

1.0 INTRODUCTION

Leidos has prepared this Site Inspection (SI) Report to satisfy the requirements of Task Order 0009 of National Guard Bureau Contract Number W9133L-14-D-0007. Under this Task Order, Leidos was contracted to conduct Phase IV regional SIs for perfluorinated compounds at multiple Air National Guard (ANG) Bases (ANGBs). This report documents SI activities conducted at four potential release locations (PRLs) at the 118th Wing of Tennessee ANG at Nashville International Airport, Nashville, Tennessee, herein referred to as Nashville ANGB, the Installation, or the Base (Figure 1). All field activities were conducted in accordance with the *Work Plan for Fiscal Year 2017 Phase IV Regional Site Inspections for Perfluorooctane Sulfonate and Perfluorooctanoic Acid at Nashville International Airport, Tennessee* (Leidos 2018).

1.1 PROJECT OBJECTIVES AND SCOPE

The primary objective of the SI was to determine the presence or absence of perfluorinated compounds, more specifically per- and polyfluoroalkyll substances, including perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutane sulfonate (PFBS), perfluorononanoic acid (PFNA), perfluoroheptanoic acid (PFHpA), and perfluorohexane sulfonate (PFHxS), herein collectively referred to as PFOS/PFOA.

Surface and subsurface soil, groundwater (downgradient of the PRL), and surface water and sediment (if available) were sampled and analyzed to determine the presence or absence of PFOS/PFOA in environmental media at the PRLs identified during the 2016 preliminary assessment (PA) (BB&E 2016) and to:

- determine if PFOS/PFOA-contaminated groundwater has reached the Installation boundary;
- provide a defensible no further action (NFA) decision for qualifying PRLs; and
- develop data quality objectives (DQOs) for additional investigation for PRLs not meeting the NFA criteria or an interim response action if appropriate.

The scope of work consisted of three inter-related tasks: (1) prepare an SI Work Plan (WP), (2) conduct SI and data collection activities, and (3) evaluate data from the field effort and applicable historical information to present conclusions and recommendations in an SI Report.

All sampling was performed on ANG property, and only PRLs located on ANG property were included in the project scope. Sampling of drinking water sources (other than the on-Base potable water supply that was used for decontamination activities) was not included, and determination of nature and extent of any identified contamination was not within the scope of this SI.

Four PRLs, as listed in Table 1 and depicted in Figure 2, were selected for SI activities based upon the PA and site visit conducted by BB&E in February 2016 and reported in the *Perfluorinated Compounds Preliminary Assessment Site Visit Report, 118th Wing, Tennessee Air National Guard, Nashville International Airport Air National Guard Base, Nashville, Tennessee* (BB&E 2016). This SI Report briefly summarizes the PA, describes SI field activities, presents analytical results of environmental sampling, and provides recommendations for each PRL.

1.2 REGULATORY OVERVIEW AND SCREENING CRITERIA

In 2012, the U.S. Environmental Protection Agency (EPA) published the third Unregulated Contaminant Monitoring Rule (UCMR3), which required public water supplies across the country to sample for a list of 30 unregulated contaminants, including 6 chemicals of concern (COCs) relevant to this SI (PFOS, PFOA, PFBS, PFNA, PFHpA, and PFHxS; i.e., PFOS/PFOA). Results of UCMR3-required sampling indicated detections of PFOS/PFOA at numerous locations, including several near U.S. Department of Defense (DoD) facilities. PFOS/PFOA detections at DoD facilities are often linked to the use of aqueous film-forming foam (AFFF), which may contain one or more of these chemicals. AFFF is a firefighting agent used to suppress fires involving petroleum hydrocarbons.

Detected concentrations of PFOS/PFOA in environmental samples collected during the Nashville SI were compared against soil and water screening criteria for PFOS, PFOA, and PFBS, as described below and listed in Table 2.

The November 2017 EPA generic regional screening level (RSL) table lists a residential risk-based screening level for tap water for PFBS of 400 micrograms per liter (µg/L) (400,000 nanograms per liter [ng/L]; target hazard quotient = 1). Currently, no legally enforceable federal standards exist for PFOS/PFOA in water. However, under the Safe Drinking Water Act, EPA issued a series of health advisories (HAs) for PFOS/PFOA, including the most recent in May 2016. To provide Americans, including the most sensitive populations, with a margin of protection from a lifetime of exposure to PFOS/PFOA in drinking water, EPA established an HA level for PFOS and PFOA (combined) of 70 ng/L. The HA of 70 ng/L applies to PFOS and PFOA individually, as well as combined. If an individual compound is detected >70 ng/L, the screening criterion is exceeded. However, if individual compounds are <70 ng/L but the sum of the compounds is >70 ng/L, the screening criterion is exceeded. For example, if PFOS equals 50 ng/L and PFOA equals 25 ng/L, the screening criterion is exceeded. Therefore, screening levels for groundwater and surface water are as follows:

- PFOS and PFOA = 70 ng/L; and
- PFBS = 400,000 ng/L.

There are also no legally enforceable federal standards for PFOS/PFOA in soil or sediment. The November 2017 EPA generic RSL table lists a residential risk-based screening level for soil for PFBS of 1,300 µg/L (1.300,000 ng/L). Following the process utilized at other ANG Installations around the country, Leidos will use resident risk-based screening levels for soil determined using the EPA RSL calculator and the November 2017 RSL tables. The calculated screening value for PFBS is slightly less than the value listed in the generic RSL table. RSLs are only available for three of the six COCs listed above. The calculated screening levels for these three COCs are as follows:

- PFOS = 1,260 µg/kg;
- PFOA = 1,260 µg/kg; and
- PFBS = 1,260,000 µg/kg.

As of the preparation of this SI Report, no site-specific soil screening levels have been developed in Tennessee. Furthermore, no surface water or sediment screening criteria have been established by EPA or the Tennessee Department of Environment and Conservation at this time.

2.0 INSTALLATION DESCRIPTION

2.1 LOCATION

Nashville ANGB (also known as Berry Field) is the home of the 118th Wing in Nashville, Tennessee, and is located in the southeast portion of the Nashville International Airport. The Base occupies approximately 88 acres within the Nashville International Airport and is situated in Davidson County, approximately 14 miles southeast of downtown Nashville. The site location is shown on Figure 1.

2.2 ORGANIZATION AND HISTORY

The modern Tennessee ANG received federal recognition on February 3, 1947, as the 105th Fighter Squadron at Berry Field, Nashville. After the September 11, 2001, terrorist attacks on the United States, elements of every ANG unit in Tennessee have been activated in support of the Global War on Terrorism. Flight crews, aircraft maintenance personnel, communications technicians, air controllers, and air security personnel were engaged in Operation Noble Eagle air defense overflights of major United States cities. Also, Tennessee ANG units have been deployed overseas as part of Operation Enduring Freedom in Afghanistan and Operation Iraqi Freedom in Iraq, as well as other locations as directed (ANG 2008). In 2012, the Nashville-based 118th Wing began transition from a C-130 Hercules airlift wing to an MQ-9 Reaper (known as the Reaper Drone) reconnaissance/surveillance wing.

DoD began investigations at military bases under the Installation Restoration Program with the goal of identifying, evaluating, and remediating areas of contamination (the program is now referred to as the Environmental Restoration Program). Under this program, investigations began at Nashville ANBG in 1988 (AFCEC 2018). These investigations included PAs, site investigations, removal action investigations, and remedial investigations. Prior to the BB&E 2016 PA, potential releases of PFOS/PFOA from use and storage of AFFF had not been evaluated at Nashville ANGB.

Base operations that could have contributed to contamination of soil, groundwater, sediment, and surface water include fire training areas (FTAs) and non-FTAs. FTA PRLs are sites where AFFF was likely used for fire suppression during training activities. There are no FTAs located on Nashville ANGB property. Non-FTA PRLs identified at Nashville ANGB are sites where AFFF was stored, released, and/or likely to have been released, and include the fire station (PRL 1), fire equipment test area (PRL 3), flight apron (PRL 4), and surface water drainage features and outfalls (PRL 5) (BB&E 2016).

When AFFF is released to the environment, PFOS/PFOA can migrate into soil and groundwater. The amount of PFOS/PFOA that migrates to groundwater depends on the type and amount of AFFF used, where it was used, the type of soil, and other factors. PFOS/PFOA may migrate readily from soil to groundwater. The primary exposure pathway for PFOS/PFOA is the ingestion of contaminated drinking water.

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3.0 ENVIRONMENTAL SETTING

3.1 CLIMATE

Nashville ANGB is in Davidson County in north-central Tennessee. Nashville has a humid, subtropical climate with hot, humid summers and generally mild winters. Spring and fall are prone to thunderstorms, which occasionally bring tornadoes.

The average annual temperature in Davidson County is 59 degrees Fahrenheit (°F), with an average monthly maximum of 89°F in July and an average monthly low of 28°F in January. Davidson County has an average annual precipitation of 47 inches (in.). Rainfall is evenly distributed throughout the year, averaging a high of 5.5 in. in May and a low of 3 in. in August. The average yearly snowfall is 7 in. (USA.com 2017).

3.2 TOPOGRAPHY

Nashville ANGB is located at approximately 560 feet (ft) above mean sea level in the northwestern portion of the Central Basin, which was caused by an uplifting that produced a dome known as the Nashville Dome. The uplifting of the Nashville Dome fractured overlying strata, making it more easily eroded and, thus, the dome resulted in a basin. The Central Basin extends for approximately 45 to 60 miles east of Nashville and about 80 miles south near the Tennessee-Alabama state line (USGS 1986).

Nashville is bordered to the north and east by the Highland Rim escarpment and further east by the Cumberland Plateau. The southern edge of the Highland Rim is more distant and somewhat less pronounced. The only downhill routes leaving the area follow the course of the Cumberland River as it flows northwest toward Ashland City and Clarksville, Tennessee (USGS 1986, 2017).

3.3 GEOLOGY

The Central Basin is underlain by carbonates (primarily limestones) that range in age from Devonian to Ordovician. Some shaley zones exist in the section, as well as phosphate-rich layers and several thin bentonite beds, which strongly influence the hydrology. Chert is generally restricted to Devonian formations (USGS 1986).

The Devonian to Ordovician formations are overlain by Mississippian rocks in and near the Highland Rim and Cumberland Plateau. Devonian to Ordovician rocks of the Central Basin aquifer system are exposed on the eastern side of the Sequatchie Valley. The central and western sides of the valley are underlain by the Knox Group and the Mississippian formations, respectively. West of the western limit of occurrence of Mississippian rocks, where these rocks have been eroded away, the formations of the Central Basin aquifer system are overlain by Cretaceous formations. The base of the Chattanooga Shale is defined as the top of the Central Basin aquifer system (USGS 1986).

During the upwarping and doming of the Nashville Dome, the rocks at the crest were stretched, resulting in the formation of systematic joints, parallel sets of almost vertical fractures along which relatively little displacement has occurred (USGS 1986). Rock strata underlying the Nashville Dome dip downward away from Nashville.

Borings conducted during the Leidos SI encountered refusal at the top of bedrock between 8 ft (BNA05-SB1) and 21 ft (BNA03-SB2) below ground surface (BGS). The boring log for the planned MW-BNA01-01 well encountered limestone rock at 10.1 ft BGS. The well bore was advanced to a depth of 36 ft BGS

through fractured limestone, but was abandoned when the well failed to encounter water. Borings BNA01-SB1 (total depth of 26 ft), BNA03-SB1 (total depth of 21.5 ft), and BNA04-SB1 (total depth of 15 ft) did not encounter bedrock (Appendix A).

3.4 SOIL

The soils at Nashville ANGB are composed primarily of Stiversville-Urban Land, with small sectors of Maury-Urban Land. The permeability of this group is moderately rapid (1.41 × 10-3 to 4.23 × 10-3 centimeters per second [cm/sec]).

Stiversville-Urban Land is characterized by sloping, low-lying ridges; moderately steep side slopes; narrow valleys; and well-drained soils. It is composed of 43 percent (%) Stiversville soils, which have a dark brown loam upper layer, reddish-brown clay loam lower layer, and fragments of limestone.

Maury-Urban Land consists of undulating to rolling, well-drained soils. Approximately 40% of Maury soils have a dark brown silt loam surface layer and a reddish-brown silty clay loam subsoil (SAIC 2001).

Soils identified during the Leidos SI typically consisted of clay, silty clay, silty sandy clay, and gravel.

3.5 SURFACE WATER HYDROLOGY

Stormwater at the Base is directed through a network of ditches and in-ground conveyances that drain northward to the two outfalls. Drainage Basin 001 is comprised of the western side of the Base and private/commercial aviation areas. The total area is approximately 81.5 acres, with 90% of the area impervious. Approximately 48.7 acres of Drainage Basin 001 are located on-Base. Stormwater Outfall 001 drains Drainage Basin 001 and is located beneath a pedestrian/golf cart bridge near the north-central Base boundary. An emergency spill gate, which can be closed in the event of a spill, is located at this outfall (BB&E 2016). According to the ANG Environmental Manager, an off-site Airport Stormwater Inlet is located just downstream of Stormwater Outfall 001 (Figure 2). Stormwater from the Nashville International Airport comingles with stormwater from Outfall 001 and then flows off the Base as described in the paragraph below (ANG 2018). Drainage Basin 002 includes the eastern portion of the Base, a portion of road right of way, and undeveloped Nashville International Airport property. Drainage Basin 002 is 36.4 acres, with 50% of the area impervious. Approximately 31.8 acres of Drainage Basin 002 are located on-Base. Stormwater Outfall 002 drains Drainage Basin 002 and is in a ditch located beneath a pedestrian/golf cart bridge near the perimeter fence at the northeast corner of the Base (Figure 2). An emergency spill gate, which can be closed in the event of a spill, is located at this outfall. Stormwater Outfall 002 was not recommended for inclusion in the SI.

The Base is located within the drainage basin of McCrory Creek and the Stones River. Stormwater Outfalls 001 and 002 combine a few hundred feet from the Base boundary to form an unnamed tributary to McCrory Creek. McCrory Creek flows for about 4.5 miles before discharge into the Stones River downstream of J. Percy Priest Dam. Stones River eventually discharges to the Cumberland River. The Cumberland River is the source for Metro Water Services, which provides water for the City of Nashville and Davidson County, including the Base. Water from the Cumberland River is treated at the K.R. Harrington water treatment plant (WTP), located approximately 5.35 miles north-northeast of Stormwater Outfall 001, and the Omohundro WTP, located approximately 11.9 miles downstream (towards downtown Nashville). However, surface waters of the Cumberland River could be impacted by numerous other sources, including the Nashville International Airport, which is located between the ANGB and the river.

3.6 HYDROGEOLOGY

The Final *Work Plan for the Regional Compliance Restoration Program Preliminary Assessment/Site Inspection, Nashville International Airport Air National Guard Base, Nashville, Tennessee* (URS Group, Inc. 2015) indicated that the average depth to groundwater in the area is approximately 25 ft BGS and may be affected by seasonal fluctuations, fractured bedrock, and karst features that are characteristic of the region. The WP also indicated that groundwater in the shallow aquifer beneath the property flows in a north or northeast direction, toward McCrory Creek and its tributaries.

The groundwater information collected from three temporary piezometers installed in PRLs 1 and 3 during the Leidos SI field activities confirmed a northward flow of shallow groundwater. The shallow water table occurs at varying depths within the ANGB Installation and does not appear to be continuous based on an attempted monitoring well installation downgradient of PRLs 1 and 3, which did not encounter water and was abandoned. Soil boring logs indicate shallow groundwater was encountered at depths ranging from 5.7 ft BGS in BNA05-SB1 to 21.7 ft BGS in BNA01-SB1. Borings in PRLs 3 and 4 encountered shallow groundwater at depths ranging from 13.1 to 14.4 ft BGS. Groundwater levels collected before purging and sampling monitoring wells installed during the SI indicate the depth to shallow groundwater ranged from 4.55 ft BGS in MW-BNA05-01 to 26.2 ft BGS in MW-BNA01-01 (co-located with BNA01-SB1). Groundwater elevations were 555.943 ft above mean sea level (AMSL) in MW-BNA01-01 and 532.899 ft AMSL in MW-BNA01-01.

Groundwater within a 1-mile radius of the Base is not used for drinking water. The Base and surrounding metropolitan area are supplied with potable water by the Metro Water Services of Davidson County, whose source is surface water from the Cumberland River (see Section 3.5).

3.7 CRITICAL HABITATS AND ENDANGERED/THREATENED SPECIES

According to the U.S. Fish and Wildlife Service (USFWS) and a review of the list of federally listed threatened and endangered species compiled by the Tennessee Division of Natural Areas in its Biotics Database, the species of animals and plants listed below are known to or believed to occur in Davidson County (TWRA 2017). The potential for these species to occur in Davidson County does not mean they are present at Nashville ANGB:

- Invertebrate animals:
  - Nashville Crayfish (*Orconectes shoupi*) – Endangered.

- Vertebrate animals:
  - Indiana Bat (*Myotis sodalis*) – Endangered,
  - Gray Bat (*Myotis grisescens*) – Endangered, and
  - Northern Long-Eared Bat (*Myotis septentrionalis*) – Endangered.

- Vascular plants:
  - Price's Potato-bean (*Apios priceana*) – Endangered (Federal),
  - Braun's Rockcress (*Boechera perstellata*) – Endangered (Federal),
  - Short's Bladderpod (*Physaria globosa*) – Endangered (Federal), and
  - Pyne's Ground-plum (*Astragalus bibullatus*) – Endangered (Federal).

The USFWS National Wetlands Inventory has documented several wetland features at and surrounding Nashville ANGB and Nashville International Airport (USFWS 2018). Approximately 14.9 acres of McCrory Creek enter the Base property from the east and primarily traverse north and south. McCrory Creek is suitable habitat for benthic and fish species. These species are expected to be typical of

similar limestone bedrock creeks throughout the Central Basin. However, the noted wetlands and McCrory Creek were not present in the vicinity of the PRLs included in this SI.

3.8 WATER WELLS

The PA Report (BB&E 2016) indicates there are no federal or public water wells within a 1-mile radius of the Base. One private well, located between 1/2 to 2 miles north of the Base, was listed on the Tennessee State Database (TN Wells). The owner of the well is Vultee Aircraft Company, and no use or depth information is listed for this well. According to Base personnel, no drinking water wells are located at the Base. Potable water is supplied by the Metro Water Service of Davidson County from surface waters of the Cumberland River (see Section 3.5).

The Final *Environmental Baseline Survey, 118th Wing, Tennessee Air National Guard, Berry Field, Nashville International Airport, Nashville, Tennessee* (SAIC 2001) indicates that the Base is not in an area with high potential availability of large groundwater resources. The shallow groundwater is very hard and has high iron concentrations. As a result, no drinking water wells are located within a 3/4-mile radius of the Base. However, 13 non-potable water wells are within a 2-mile radius of the Base. Use of many of these older wells was discontinued after a city ordinance required all residences to use city water. The Base and the city of Nashville both obtain their drinking water from surface waters; therefore, groundwater is used for other purposes, such as commercial, industrial, or irrigation (SAIC 2001).

4.0 PRELIMINARY ASSESSMENT

In 2016, BB&E conducted a PA to identify potential sites of historic environmental releases of PFOS/PFOA related to AFFF usage and storage at Nashville ANGB (BB&E 2016). The PA evaluated a total of five PRLs and recommended four of these for further investigation under an SI (Table 2; see also Figure 1). At the time of the 2016 PA, no documentation was available showing that soil, groundwater, sediment, and surface water at Nashville ANGB were previously tested for PFOS/PFOA; therefore, these compounds could be present in media at any of these PRLs.

BB&E researched the potential existence of any documented FTAs or any other use or release of AFFF. There is no evidence that a current or former FTA that utilized AFFF was located within the footprint of the Nashville ANGB site boundary. The PA Report does state that ANG utilized several Nashville Airport Authority FTAs. However, because these are located offsite of Nashville ANGB, they were not evaluated during the PA and are not considered PRLs for the purpose of the Phase IV SI.

The PA site visit included on-site interviews with active and former personnel from the ANG Installation and other parties with relevant historical site knowledge. According to Base personnel, 3% AFFF was used at Nashville ANGB from approximately 1974 to 2014. Two former hangars (Hangars 728 and 729) were demolished in 2004 to build the current Hangar 757. There is no record of AFFF use/storage or fire suppression systems (FSSs) in either of the former hangars. Hangar 757 is equipped with a high-expansion foam FSS.

The sections below briefly describe the operational history and waste characteristics of the PRLs included in this SI, as presented in the PA Report (BB&E 2016). PRL numbers correspond to the area of concern designation used in the PA Report.

4.1 POTENTIAL RELEASE LOCATION 1: BUILDING 736 - FIRE STATION

Building 736 was constructed in 1953 and is approximately 21,645 square feet (ft^2), with a concrete foundation and concrete block with brick veneer. The southeastern portion of this building was used as the Fire Station from 1961 to 2012 and is currently unused. Aircraft rescue firefighting (ARFF) vehicles were stored at this location, including the following:

- Oshkosh P-4 (1974 to 2011), 180-gallon (gal) AFFF storage;
- Oshkosh P-19 (unknown to 2013), 130-gal AFFF storage; and
- Oshkosh P-19 Striker (unknown to 2013), 210-gal AFFF storage.

According to the Final Environmental Baseline Survey (SAIC 2001), the building was formerly equipped with an oil/water separator (OWS), which discharged to the sanitary sewer. At the time of the 2001 Environmental Baseline Survey, the indoor drains were self-contained and, if a discharge were to occur, the building drains would be pumped out.

ARFF vehicles were historically washed either in designated wash rack areas equipped with an OWS or occasionally outside on the concrete to the southeast of this building. Exterior drains discharge to the storm sewer.

AFFF was previously stored within the former Fire Station in 5-gal containers. Base personnel reported that the ARFF trucks were refilled by pouring the 5-gal containers of AFFF into the top-loading vehicles. No known releases of AFFF have occurred at Building 736. A former Nashville ANGB Fire Chief (2011 through 2014) interviewed during the PA indicated that most of the ARFF trucks were in like-new condition and he was only aware of very minor leaks on some of the older apparatus. This spilled AFFF would be wiped up with a paper shop rag and disposed as trash.

Nashville ANGB no longer operates a Fire Department. The Fire Department was closed in 2012 when the Base mission was changed. Prior to its closure in 2012, the Fire Department operated under a Joint Use Agreement with the Nashville Airport Authority since at least 2008. This agreement designated the Nashville Airport Authority as the primary responder for emergencies. Therefore, although Nashville ANGB had a Fire Department until 2012, it was not equipped or staffed to independently respond to incidents at the ANGB. After the Fire Department was closed in 2012, the ARFF trucks were relocated, and the remainder of the 5-gal AFFF containers was given to the Nashville Airport Authority in December 2014.

4.2 POTENTIAL RELEASE LOCATION 3: FIRE EQUIPMENT TEST AREA

Base personnel reported that nozzle testing was conducted on the concrete area to the southeast of the Former Fire Hall (Building 736) with water only. The former Fire Chief, interviewed during the PA, noted that AFFF was not used during testing of equipment, as the Fire Department did not have foam refractometer or conductivity testing equipment. This water-only equipment testing was conducted annually. Former Fire Department employees also report that ARFF vehicles were also sometimes washed in this area.

4.3 POTENTIAL RELEASE LOCATION 4: FLIGHT APRON - CONCRETE RAMP

Although there are no records or Base personnel accounts of AFFF releases, the flight apron concrete ramp area located at the southern side of the Base and adjacent to the Main Hangar (Building 757) may have been impacted by AFFF due to the historical presence of aircraft. The apron drains as sheet flow primarily into the drainage ditch and Outfall 001 located northwest of the apron (Section 3.5). Surface drainage not collected by the storm drain system may also drain to adjacent shallow surface soils off the edges of the paved concrete surface.

4.4 POTENTIAL RELEASE LOCATION 5: STORMWATER OUTFALL 001

Although there are no records or Base personnel accounts of AFFF releases at Outfall 001, there is documented use/storage of AFFF within Drainage Basin 1 (including PRLs 1, 3, and 4), which may have discharged to Outfall 001. Stormwater Outfall 001 is located near the north end of the Base and consists of a natural open flowing stream. This outfall drains the western side of the Base, including the aircraft apron. The outfall location is located near the Security Gate beneath a pedestrian bridge near the northern Base boundary. An emergency spill gate, which can be closed in the event of a spill, is located adjacent to the east of the outfall.

5.0 SITE INVESTIGATION FIELD PROGRAM

This chapter summarizes the SI field activities, including soil, groundwater, surface water, and sediment sampling, at Nashville ANGB. Analytical results for each PRL are presented and identify the presence or absence of PFOS/PFOA and results for PFOS, PFOA, and PFBS that exceed the screening criteria shown in Table 1 and described in Section 1.2 of this SI Report.

All sampling and analytical activities were conducted in accordance with the procedures specified in the Final SI WP (Leidos 2018). Boring logs and monitoring well construction logs are provided in Appendix A, groundwater sampling logs are provided in Appendix B, and SI field activity photographs are provided in Appendix C. The groundwater monitoring survey report is included in Appendix D. The data validation report is provided in Appendix E. The full data package is provided in Appendix F.

5.1 GENERAL APPROACH

5.1.1 Field Sampling

SI field activities included the following:

- surface and subsurface soil sampling;
- water level measurements at three temporary piezometers to confirm local groundwater flow due to the absence of existing monitoring wells at Nashville ANGB;
- installation and sampling of groundwater from new monitoring wells located downgradient from the PRLs and/or at the Installation boundary;
- sediment and surface water sampling; and
- Global Positioning System survey of soil borings, sediment, and surface water locations (the horizontal location and elevation of all newly installed wells were surveyed by a professional licensed surveyor).

Soil, groundwater, sediment, and surface water sampling locations were based on known historical or potential releases, and site conditions as observed during the PA. Table 3 summarizes the SI sampling activities at Nashville ANGB. Figure 2 shows an overview of the Nashville ANGB SI sample locations. Prior to intrusive activities, an underground utility locator marked and cleared all boring locations.

A total of five soil borings were installed. Borings were installed in areas of asphalt pavement and were advanced using an air rotary rig to clear asphalt and underlying road gravel. Borings were drilled using a combination of air rotary drilling and split spoon sampling to first water or refusal, whichever was encountered first. All soil borings were logged for soil lithology. Boring logs are included in Appendix A. Two grab soil samples were collected from each boring—one from within the 0 to 2-ft BGS interval, and one from within the 2-ft interval immediately above first water.

All sample depths were measured from ground surface; therefore, the depth reported for surface samples extends below 2 ft BGS due to the presence of asphalt and road base material comprising a thickness of up to 1.9 ft on top of the unconsolidated soil material. However, the upper soil samples were collected within the 2-ft internal occurring just below the asphalt and road base (i.e., the first soil available for

sampling). Additionally, the shallow water zone at Nashville International Airport consists of separate lenses of water-bearing material at varying depths. For example, in BNA01-SB1, first water was encountered at 21.7 ft BGS, while in nearby BNA03-SB1, first water was encountered at 13.7 ft BGS. At BNA03-SB2, artesian conditions were encountered, thus necessitating drilling an offset location to set the temporary piezometer to determine depth to groundwater. Therefore, the depth of the samples collected from within the 2-ft interval just above the water table is variable across the site in relation to the variable depths at which the shallow water zone was encountered.

All soil samples were screened by a photoionization detector as a health and safety precaution due to the potential presence of volatile organic compounds (VOCs). Following collection of soil samples, boreholes not co-located with monitoring wells were abandoned by backfilling with a Portland cement/bentonite mixture. Holes were capped with concrete flush to surface.

Because there are no existing wells on Nashville ANGB, three temporary piezometers were installed and water levels measured to determine groundwater flow direction. This information was used to determine the downgradient direction for placement of monitoring wells. Two new monitoring wells were installed—one co-located with BNA01-SB1, and one co-located with BNA05-SB1. Wells were developed and sampled following ANG guidance, as prescribed in the SI WP (Leidos 2018).

Sediment and surface water sampling locations were based on the presence of drainage ditches or stormwater outfalls. One sediment sample and one surface water sample were collected from Outfall 001 (PRL 5), as described in the SI WP. A surface water sample was also collected from a spring flowing beneath a catch basin downgradient of PRL 4. Additional details on the field activities for each PRL are given in Section 5.3.

5.1.2 Deviations from the Work Plan

The following minor deviations were observed during field activities:

- After installing a piezometer in boring BNA03-SB2, the hole began producing water to the surface at a rate of 1.5 gal per minute (min), which precluded measurement of the water level in the piezometer. The piezometer was pulled and the hole was plugged. An offset location was drilled 52 ft east-northeast of the original location and south of Building 745. Temporary piezometer BNA03-PZ2 was installed in this hole.

- Based on water level data from the temporary piezometers, MW-BNA01-01 was drilled to a depth of 36 ft in a location approximately 53 ft east-southeast of the location shown in the SI WP. However, after drilling through over 25 ft of bedrock, no water was encountered. Discussions with the Tennessee Department of Environment and Conservation (telephone call on March 7, 2018) to convert BNA-PZ01 to a permanent monitoring well (MW-BNA01-01) concluded that moving the well would be acceptable.

- Clarification on the SI WP—MW-BNA05-01 is located downgradient to PRLs 1, 3, and 4 and should have been listed as a co-located downgradient well for all the upgradient PRLs.

5.1.3 Data Analysis

5.1.3.1 Laboratory

Environmental samples were submitted to TestAmerica Analytical Laboratories, Inc. (TestAmerica), in West Sacramento, California. TestAmerica is accredited under the DoD Environmental Laboratory

Accreditation Program and maintains a National Environmental Laboratory Accreditation Program certification.

5.1.3.2 Screening criteria

Analytical data for three of the 2012 EPA UCMR3 COCs (PROS, PFOA, and PFBS) were compared to appropriate HA or risk-based screening criteria (Section 1.2 and Table 1) to determine whether further investigation is required. There are currently no HA or RSL criteria for PFHpA, PFHxS, or PFNA.

5.1.3.3 Data validation

A Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP) was developed for this project as Appendix A of the SI WP (Leidos 2018). The UFP-QAPP was written to apply to all 14 Installations included in the scope of the Phase IV SI contract. Specifics on the number and type of samples to be collected in characterizing the site, and the number and type of quality assurance/quality control (QA/QC) samples to be used to evaluate the quality of the data obtained, were included in the SI WP. Soil and sediment were collected in one 4-ounce (oz.) high-density polyethylene (HDPE) container with HDPE cap. Groundwater and surface water samples were collected in two 250-milliliter (mL) HDPE containers with HDPE caps. Solid investigation-derived waste (IDW) samples were collected in 8-oz. glass jars, and liquid IDW samples were collected in three 40-mL vials. IDW samples were analyzed for VOCs. Analytical results for PFOS/PFOA were used for characterization of generated IDW. The following samples were collected during the Nashville ANGB SI:

- 10 soil samples,
- 2 groundwater samples,
- 3 field duplicate samples,
- 1 reagent blank,
- 3 equipment rinsates,
- 2 field blanks, and
- 2 IDW samples – one each for solid waste and wastewater.

The results of the data quality evaluation indicate that the overall quality of the data is acceptable to confirm the presence or absence of contamination. Through data verification, validation, and review, the analytical information has been qualified as appropriate. Data are considered usable if it is unqualified or qualified as estimated. For groundwater, 100% of the data was considered usable. For soil, 100% of the data was considered usable. The overall quality of the data meets or exceeds the established project objectives.

QC

Three field duplicate samples were collected, including two for soil and one for groundwater. Field duplicate analytical results were consistent with their associated regular samples, indicating no issues with field and laboratory precision. Three equipment rinsate samples, one for soil, one for groundwater, and one for sediment, were collected and analyzed for PFOS/PFOA. All results were non-detect for the equipment rinsate samples. One reagent blank was collected following the procedure outlined in the SI WP. There were no PFOS/PFOA detections in the reagent blank sample. Field blank sample BNA-FB01was collected from the deionized water used for decontamination activities, and BNA-FB02 was collected from the on-site potable water source (preserved with Trizma). Field blank samples were analyzed for PFOS/PFOA. There were no PFOS/PFOS detections in BNA-FB01. PFOS, PFBS, and PFHxS were detected at low estimated concentrations in BNA-FB02, but all detections were below screening criteria. In addition, the PFHxS result in BNA-FB02 was qualified as non-detect (U) due to

PFHxS contamination in the associated continuing calibration blank. Note that decontamination procedures were followed in the field, including washing with laboratory-grade, non-phosphate detergent; rinsing with potable water; final rinsing with deionized, analyte-free water; and air drying. For these reasons, SI data quality was not impacted as a result of the SI COCs being detected in the field blank.

PFOS/PFOA

Some PFOS/PFOA compounds were qualified as estimated due to minor QC outliers. PFHxS was qualified as estimated (J) due to matrix spike/matrix spike duplicate (MS/MSD) recovery outliers, and PFOS was qualified as estimated (J) due to injection internal standard recovery outliers in sample BNA01-SB-01. PFOA, PFHxS, and PFOS were qualified as estimated (J) due to MS/MSD recovery outliers, and PFOA was qualified as estimated (J) due to laboratory control sample recovery outliers in sample MW-BNA05-01-01. No other QC outliers resulted in qualification of the data during the data validation process.

Except as noted above, data produced for this investigation demonstrate that it can withstand scientific scrutiny; are appropriate for its intended purpose; are technically defensible; and are of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of QA and QC measures. The environmental information presented has an established confidence that allows utilization for the project objectives and provides data for future needs.

5.2 INVESTIGATION-DERIVED WASTE

IDW was managed in compliance with the Final SI WP (Leidos 2018). Eight drums of non-hazardous soil IDW, four drums of non-hazardous water IDW, and two drums of plastic sheeting with decontamination water and mud were transported to a designated drum staging area located onsite. IDW samples were collected for Toxicity Characteristic Leaching Procedure VOC analysis on March 8, 2018 (solids) and March 9, 2018 (liquids). PFOS/PFOA results from soil and water samples collected during this SI will also be used for IDW waste characterization.

5.3 POTENTIAL RELEASE LOCATION 1: BUILDING 736 - FIRE STATION AND POTENTIAL RELEASE LOCATION 3: FIRE EQUIPMENT TEST AREA

PRLs 1 and 3 are co-located and are described together in this section. A total of three co-located soil borings, three temporary piezometers, and one co-located monitoring well were installed and sampled (Table 3), as described below. Additionally, MW-PRL05-01, located at the Installation boundary in PRL 5, is downgradient of all PRLs examined in the SI and is, therefore, co-located with PRLs 1 and 3.

5.3.1 Sampling Activities

5.3.1.1 Soil sampling

A total of three soil borings were installed on March 6, 2018, in the PRLs 1 and 3 area. One soil boring was attributed to PRL 1 and two borings were attributed to PRL 3. BNA01-SB1 was installed just outside the door of the former Fire Station, within in the footprint of PRL 3. BNA03-SB1 and BNA03-SB2 were installed to the south of BNA01-SB1, in the middle and southern portions of PRL 3, respectively (Figure 3). An air rotary drill rig was used to break through the asphalt surface and base gravel of the Fire Equipment Test Area in the vicinity of each soil boring. The soil boring was advanced using a combination of air rotary drilling and split spoon sampling. Borings were advanced to total depths ranging from 21.5 ft BGS (BNA03-SB1) to 26.2 ft BGS (BNA01-SB1). Soil lithology descriptions were

logged on the soil boring logs (Appendix A). A total of six soil samples were collected and analyzed for PFOS/PFOA.

5.3.1.2 Temporary piezometers

After soil borings BNA01-SB1, BNA03-SB1, and BNA03-SB2 were advanced, logged, and sampled, temporary piezometers were installed in the boreholes to determine the depth to groundwater and local groundwater flow direction. However, as described in Section 5.1.2, piezometer BNA03-PZ2 was offset approximately 52 ft east-northeast of BNA03-SB2 and south of Building 745 (Figure 3). Water levels were measured at the three temporary piezometers on March 7, 2018. Based on the water level measurements, and the results of three-point problem calculations, it was determined that MW-BNA01-01 should be placed 53 ft east-southeast of the location proposed in the SI WP. This position is downgradient of PRLs 1 and 3.

5.3.1.3 Groundwater

MW-BNA01-01 was drilled on March 7, 2018. As explained in Section 5.1.2, BNA01-PZ1 (BNA01-SB1) was converted to a monitoring well. The temporary piezometer was removed and the borehole was over-drilled to install MW-BNA01-01 (Figure 4). Well construction details are shown in Table 4. The well construction diagram is included in Appendix A and utilizes the lithology described for BNA01-SB1. The well boring log labeled MW-BNA01-01 (planned) was a dry hole that was plugged and not sampled (Appendix A).

MW-BNA01-01 was developed on March 8, 2018, and sampled on March 9, 2018. Water levels are shown in Table 5, and water quality parameters are shown in Table 6. Groundwater sample MW-BNA01-01-01 was collected and analyzed for PFOS/PFOA. The Groundwater Micro Purge Sheet and Groundwater Micro Purge Log are included in Appendix B.

Well MW-BNA01-01 was surveyed by a licensed surveyor and the well survey report is included in Appendix D.

5.3.2 Analytical Results

5.3.2.1 Soil

Six soil samples were collected and analyzed from PRLs 1 and 3 as described in Section 5.3.1. All three surface soil samples showed PFHxS detections above the laboratory detection limit. There is no screening criterion for PFHxS. In addition, the surface soil sample from BNA01-SB1 showed concentrations above the laboratory detection limit for PFOS, PFOA, PFBS, and PFHpA. PFNA was not detected. None of the concentrations of PFOS, PFOA, or PFBS exceeded the soil screening criteria.

In the subsurface soil samples, the only detected compound was PFHxS in BNA01-SB1. All other PFOS/PFOA results were non-detect. There is no screening criterion for PFHxS. Soil analytical results for PRL 1 are presented in Table 7 and shown on Figure 3.

5.3.2.2 Groundwater

One groundwater sample was collected from MW-BNA01-01 and analyzed as described in Section 5.3.1. Five of six PFOS/PFOA compounds were detected above laboratory detection limits, and PFOS exceeded the 70-ng/L EPA drinking water HA (EPA 2016a) at a concentration of 96 ng/L. The combined PFOS/PFOA concentration at this location is 109 ng/L. Groundwater analytical results for PRL 1 are

presented in Table 8 and shown on Figure 4. Groundwater results for the co-located downgradient well MW-BNA05-01 are discussed in Section 5.5.2.2.

5.4 POTENTIAL RELEASE LOCATION 4: FLIGHT APRON

One soil boring was installed and one surface water sample was collected to evaluate PRL 4. Co-located soil, groundwater, surface water, and sediment samples from PRL 5 (Stormwater Outfall 001) are also used to evaluate PRL 4, as Outfall 001 is representative of the overall impacts of PFOS/PFOA from the PRLs included in this SI. As explained in the SI WP (Leidos 2018), in lieu of installing an additional monitoring well directly downgradient of PRL 4, a surface water sample was collected from a catch basin in the storm drain system downgradient of PRL 4. This catch basin receives flow from a spring flowing continually at a depth of approximately 16 ft BGS. During the August 16, 2017, Installation Kickoff Meeting site walk, Leidos, ANG, and the state agreed that water flowing from the spring may be considered indicative of groundwater, and therefore, BNA04-SW1 would be an appropriate location to assess PRL 4 groundwater impacts from the natural spring originating under the aircraft apron.

5.4.1 Sampling Activities

5.4.1.1 Soil

BNA04-SB1 was installed in the location shown on Figure 5 on March 6, 2018. The soil boring was located in an area of cracked/damaged pavement in front of a curb inlet drain that discharges to Outfall 001. The soil boring was advanced using a combination of air rotary drilling and split spoon sampling and was drilled to a total depth of 15 ft BGS. Soil lithology descriptions were logged on the soil boring logs (Appendix A). A total of two soil samples were collected and analyzed for PFOS/PFOA.

5.4.1.2 Surface water

The depth to flowing water at BNA04-SW1 was measured at 16.3 ft below the top of the grate on March 8, 2018. Surface water sample BNA04-SW1-01 was collected on March 9, 2018, at the location shown on Figure 6. Water quality parameters were measured as shown on Table 6. The sample was analyzed for PFOS/PFOA.

5.4.2 Analytical Results

5.4.2.1 Soil

Two soil samples from BNA04-SB1 were collected and analyzed as described in Section 5.4.1. There were no PFOS/PFOA compounds detected in either surface or subsurface soil samples from BNA04-SB1. PRL 4 soil analytical results are presented in Table 7 and shown on Figure 5.

5.4.2.2 Surface water

Surface water sample BNA04-SW1-01 was collected and analyzed as described in Section 5.4.1. Analytical results indicate that all six PFOS/PFOA compounds exceeded the laboratory detection limit; however, concentrations for PFOS, PFOA, and PFBS were below their respective screening criteria. PRL 4 surface water analytical results are presented in Table 8 and shown on Figure 6.

5.4.2.3 Groundwater

Groundwater results for the co-located downgradient well MW-BNA05-01 are discussed in Section 5.5.2.2.

5.5 POTENTIAL RELEASE LOCATION 5: STORMWATER OUTFALL 001

Outfall 001 is located in the northern portion of the Base adjacent to the Installation boundary and consists of an open channel stream. The outfall drains the western side of the Base, including the aircraft apron. Stormwater (via the storm drain system), surface water, and groundwater are transported northward from PRLs 1, 3, and 4 to PRL 5, a location representative of the overall impacts of PFOS/PFOA at Nashville ANGB. A co-located soil boring and monitoring well were installed in this area, and surface water and sediment samples were collected from within the open channel stream.

5.5.1 Sampling Activities

5.5.1.1 Soil

BNA05-SB1 was installed at PRL 5 on March 7, 2018. The soil boring was installed through asphalt on the south side of the pedestrian bridge over the drainage ditch on the north end of the Base (Figure 7). An air rotary drill rig was used to break through the asphalt surface. The soil boring was advanced using a combination of air rotary drilling and split spoon sampling and was drilled to a total depth of 8 ft BGS. Soil lithology descriptions were logged on the soil boring logs (Appendix A). A total of two soil samples were collected and analyzed for PFOS/PFOA.

5.5.1.2 Groundwater

After collecting soil samples from BNA05-SB1, well MW-BNA05-01 was installed in the boring as shown on the well construction log (Appendix A). MW-BNA05-01 was developed on March 8, 2018, in accordance with the SI WP.

MW-BNA01-01 was sampled on March 9, 2018. Water levels are shown in Table 5, and water quality parameters are shown in Table 6. Groundwater sample MW-BNA0501-01-01 was collected and analyzed for PFOS/PFOA. The Groundwater Micro Purge Sheet and Groundwater Purge Log are included in Appendix B.

MW-BNA05-01 was surveyed by a licensed surveyor, and the survey report is included in Appendix D.

5.5.1.3 Surface water

Surface water sample BNA05-SW1-01 was collected on March 8, 2018, in the location shown on Figure 8. Water quality parameters were measured as shown in Table 6.

5.5.1.4 Sediment sampling

Following collection of surface water sample BNA05-SW1-01, sediment sample BNA05-SD1-01 was collected from approximately 0.0 to 0.1 ft below the top of sediment, in the same location the surface water sample was collected (Figure 7). The top of the sediment was approximately 0.4 ft below the top of water. The sample was collected using a stainless steel scoop. The sediment sample is described as loose, poorly sorted, black fine sand to medium gravel with grains of lighter mineralogy (an attempt was made to exclude gravel from the sample). Sample BNA05-SD1-01 was analyzed for PFOS/PFOA.

5.5.2 Analytical Results

5.5.2.1 Soil

Two soil samples from BNA05-SB1 were collected and analyzed as described in Section 5.5.1. PFOS and PFHxS were present in both surface and subsurface soil at concentrations exceeding the laboratory detection limit, but the PFOS concentration was below the screening criterion for soil in both samples. There is no screening criterion for PFHxS. PRL 5 soil analytical results are presented in Table 7 and shown on Figure 7.

5.5.2.2 Groundwater well installation and sampling

Groundwater sample MW-BNA0501-01 was collected and analyzed as described in the Section 5.5.1. Analytical results indicate all six PFOS/PFOA compounds exceeded the laboratory detection limit. PFOS, PFOA, and PFBS concentrations were below their individual screening criteria. However, the combined concentration of PFOS and PFOA in sample MW-BNA05-01-01 was 78 ng/L, exceeding the EPA HA screening level of 70 ng/L. PRL 5 groundwater analytical results are presented in Table 8 and shown on Figure 8.

5.5.2.3 Surface water sampling

Surface water sample BNA05-SW1-01 was collected and analyzed as described in Section 5.5.1. All six PFOS/PFOA compounds were detected at concentrations exceeding the laboratory detection limit, and PFOS was detected at a concentration of 250 ng/L, exceeding the EPA drinking water HA screening level of 70 ng/L. The combined PFOS/PFOA concentration in sample BNA05-SW1-01 was 271 ng/L, exceeding the EPA HA screening criteria. PRL 5 surface water analytical results are presented in Table 8 and shown on Figure 8.

5.5.2.4 Sediment sampling

Sediment sample BNA05-SD1-01 was collected and analyzed as described in Section 5.5.1. PFOS, PFOA, and PFHxS each exceeded the laboratory detection limit; however, no compounds exceeded the screening criteria in the sediment sample at PRL 5. PRL 5 sediment analytical results are presented in Table 7 and shown on Figure 7.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

This section presents the SI conclusions and recommendations for each PRL. The recommended DQOs are based on data collected by Leidos during this SI and an evaluation of the analytical results compared to applicable screening criteria.

6.1.1 Potential Release Location 1: Building 736 - Fire Station and Potential Release Location 3: Fire Equipment Test Area

Although there were some detections of PFOS/PFOA compounds in PRLs 1 and 3 soil samples, evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and no calculated residential risk-based screening level exceedances for PFOS or PFOA for soil in PRL 1 and PRL 3.

Evaluation of groundwater data compared to screening criteria indicates an exceedance of the EPA HA (70 ng/L) in MW-BNA01-01 for PFOS and PFOA (combined), with a result of 109 ng/L.

Based on the SI results, the following DQOs are recommended for PRLs 1 and 3:

- Additional surface and subsurface soil samples to determine if a previously undetected source area exists that is contributing to the groundwater exceedances.

- Additional investigation to determine the nature and extent of PFOS/PFOA in groundwater (both laterally and vertically) through sampling of additional new monitoring wells located both upgradient and downgradient of PRLs 1 and 3.

6.1.2 Potential Release Location 4: Flight Apron

Evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and no calculated residential risk-based screening level exceedances for PFOS or PFOA for soil in PRL 4. All results were below the laboratory detection limits. Boring BNA04-SB1 is located in an area of damaged and cracked pavement through which PFOS/PFOA in stormwater flowing from the apron to the nearby curb drain could possibly infiltrate to the underlying soil.

Evaluation of the surface water sample BNA04-SW1-01 data compared to the EPA HA and the EPA RSL for tap water indicated there were no exceedances of screening criteria. Because this sample was collected from a perennial spring flowing at a depth of approximately 16 ft BGS and located downgradient of the flight apron, Leidos, ANG, and the Tennessee Department of Environment and Conservation concurred during the 2017 site visit that a sample from this spring may be representative of groundwater conditions beneath the flight apron.

Groundwater results from MW-PRL05-01 were also evaluated to access impacts to groundwater from upgradient PRLs. PFOS/PFOA compounds were detected above the laboratory detection limit. The combined result for PFOS and PFOA (78 ng/L) was slightly above the EPA HA criterion of 70 ng/L.

Based on the SI results, the following DQOs are recommended for PRL 4:

- Additional surface and subsurface soil samples to determine if a previously undetected source area exists that is contributing to the groundwater exceedances observed at MW-BNA05-01 in PRL 5.

- Although screening criteria were not exceeded in the artesian spring sample from beneath the Aircraft Apron, there were exceedances in the downgradient co-located groundwater well at PRL 5; therefore, additional groundwater sampling is proposed to better define potential groundwater impacts (both vertically and horizontally) through the sampling of additional new monitoring wells.

6.1.3 Potential Release Location 5: Stormwater Outfall 001

Although there were some concentrations of PFOS/PFOA above the laboratory detection limits in soil and sediment at PRL 5, evaluation of soil analytical data compared to soil screening criteria indicates there are no EPA RSL exceedances for PFBS and no calculated residential risk-based screening level exceedances for PFOS or PFOA for soil in PRL 5. There were also no exceedances of soil screening criteria for the sediment sample collected from the drainage channel at PRL 5.

All six PFOS/PFOA compounds were present at concentrations above the laboratory detection limit in MW-BNA05-01. Evaluation of groundwater data compared to screening criteria indicates a slight exceedance of the EPA HA (70 ng/L) in MW-BNA05-01 (78 ng/L) for PFOS and PFOA (combined). Groundwater flows from south to north at Nashville ANGB, and concentrations of PFOS and PFOA (combined) are slightly lower in the groundwater sample from MW-BNA05-01 (78 ng/L) than in MW-BNA01-01 (109 ng/L) to the south.

All six PFOS/PFOA compounds were present at concentrations above the laboratory detection limit in surface water location BNA05-SW1. Evaluation of surface water results compared to screening criteria indicated an exceedance of the EPA HA in the vicinity of PRL 5 for PFOS and FOA (combined), with a result of 250 ng/L. This was the highest reported concentration of PFOS in groundwater or surface water for this SI. However, results of the sediment sample, collected from the same location in the drainage channel, indicated no exceedances of the screening criteria for PFOS or PFOA.

BNA05-SW1 and BNA05-SD1 were located just upstream of an off-site Airport Stormwater Inlet (Figures 7 and 8), which conveys stormwater from off-Base including the Nashville International Airport located immediately to the north.

Based on the SI results, the following DQOs are recommended for PRL 5:

- Additional surface and subsurface soil samples to determine if a previously undetected source area exists that is contributing to the groundwater exceedances.

- Additional investigation to determine the nature and extent of PFOS/PFOA in groundwater (both laterally and vertically) through sampling of additional new monitoring wells located both upgradient and downgradient of PRL 5.

- Additional investigation to further evaluate the concentrations of PFOS/PFOA in surface water. This should include additional upstream sampling of surface water and sediment within the drainage channel to further evaluate the PFOS/PFOA impact to the stream channel.

Care should be taken in selecting downgradient locations for additional groundwater and surface water/sediment locations. Nashville International Airport is located immediately downgradient based on

both surface water and groundwater flow directions. The presence of PFOS/PFOA compounds from downgradient locations within the Nashville International Airport footprint may identify an additional source of contamination that is beyond the scope of this SI.

6.2 SUMMARY AND RECOMMENDATIONS

In summary, additional investigations are recommended for soil and groundwater at PRLs 1 and 3, PRL 4, and PRL 5, and surface water at PRL 5. The recommendations are summarized in Table 9 and described briefly below:

- Conduct further investigation at all four PRLs to determine the nature and extent of PFOS/PFOA contamination due to detectable levels at all PRLs.

- Develop an expanded conceptual site model that considers localized groundwater and surface water flow paths to select future sampling locations.

- Complete the nature and extent evaluation of PFOS/PFOA as part of an expanded SI or a remedial investigation that could consist of:

    - An expanded groundwater sampling program to complete horizontal and vertical delineation of the PFOS/PFOA impacts. Further groundwater investigation at the Base boundary is recommended due to the presence of PFOS/PFOA in groundwater above respective screening levels.

    - The installation and sampling of new and existing upgradient and downgradient off-Base monitoring wells to better define the upgradient source of PFOS/PFOA, as well as impacts of PFOS/PFOA that have migrated off-Base.

    - Additional soil and sediment sampling and analysis of an expanded list of PFOS/PFOA constituents (in addition to the six UCMR3 constituents) for the purpose of determining if significant source areas related to precursor substances are present. Precursor substances have been demonstrated to oxidize into PFOS and PFOA and, thus, could provide a lingering source of these compounds to soil and groundwater.

- Conduct preliminary site-specific risk assessment calculations to identify chemicals of potential concern in all media and establish preliminary remedial goals for screening purposes.

DQOs are proposed based on the results of the SI and are presented in Table 9. In general, additional samples are required at each PRL to establish the nature and extent of PFOA/PFOS constituents for each applicable medium and to determine if there is a complete receptor pathway. For soil, additional samples are proposed to determine if a source area exists, and if so, what the vertical and horizontal extents for both the vadose and saturated zones are. Additional surface water and sediment samples should be collected at PRL 5, taking care to sample upstream of the Nashville International Airport storm water inlet.

The conceptual site model should take into consideration that the Nashville International Airport is located immediately downgradient based on both surface water and groundwater flow directions. The presence of PFOS/PFOA compounds from downgradient locations within the Nashville International Airport footprint may identify an additional source of contamination that is beyond the scope of this SI.

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TABLES

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Table 1. Preliminary Assessment Report Summary and Recommendations

PRL Number	Potential AFFF PRL	Rationale	Recommendation
1	Building 736 - Fire Station	Former Base Fire Station from 1961 to 2012. ARFF vehicles and 5-gal containers of AFFF stored in the bays	Proceed to SI. Sample soil and groundwater
2	Building 723 - Former Fire Hall	Former Base Fire Station until 1961. Based on the dates of use as a fire hall, AFFF use is not suspected	NFA
3	Fire Equipment Test Area	Nozzle testing with water was conducted in this area, as well as periodic washing of ARFF vehicles	Proceed to SI. Sample soil and groundwater
4	Flight Apron	Historic aircraft storage and use	Proceed to SI. Sample soil and groundwater
5	Stormwater Outfall 001	Receives stormwater from Base and apron areas	Proceed to SI. Sample sediment and stormwater

AFFF = Aqueous film-forming foam.
ARFF = Aircraft rescue firefighting.
gal = Gallon.
NFA = No further action.
PRL = Potential release location.
SI = Site inspection.

Table 2. PFOS/PFOA SI Screening Criteria

Parameter	Chemical Abstract Service Number	EPA RSL for Tap Water[a] (ng/L)	EPA Health Advisory[b] (ng/L)	Residential Risk-based Soil Screening Level[c] (µg/kg)
PFOS	1763-23-1	NA	70.0[d]	1,260
PFOA	335-67-1	NA		1,260
PFBS	375-73-5	400,000	NA	1,260,000

[a]EPA RSL for tap water, November 2017.
[b]*Drinking Water Health Advisory for Perfluorooctanoic Acid* (EPA 2016b) and *Drinking Water Health Advisory for Perfluorooctane Sulfonate* (EPA 2016a).
[c]Residential risk-based soil screening levels determined by using the EPA RSL calculator (https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search) and the November 2017 EPA RSL tables (https://epa.gov/risk/regional-screening-levels-rsls-generic-tables-november-2017) for soil and sediment.
[d]When PFOA and PFOS are both present, the combined detected concentrations of the compounds are compared with the 70-ng/L health advisory value. Analytical results for groundwater and stormwater have been compared to the tap water screening levels.
EPA = U.S. Environmental Protection Agency.
µg/kg = Micrograms per kilogram.
NA = Not available.
ng/L = Nanograms per liter.
PFBS = Perfluorobutane sulfonate.
PFOA = Perfluorooctanoic acid.
PFOS = Perfluorooctane sulfonate.
RSL = Regional screening level.
SI = Site inspection.

Table 3. Summary of SI Activities

PRL Name	Analyzed Parameters[a]	Soil Borings	Soil Samples	Groundwater Samples[b]	Stormwater Samples	Sediment Samples
1. Building 736 - Fire Station	PFOS/PFOA	1	2	1	0	0
3. Fire Equipment Test Area	PFOS/PFOA	2	4	0	0	0
4. Flight Apron	PFOS/PFOA	1	2	0	0	0
5. Stormwater Outfall 001	PFOS/PFOA	1	2	1	1	1

[a]PFOS/PFOA is used generically in this SI Report to include the following six 2012 third Unregulated Contaminant Monitoring Rule emerging contaminants: PFOS, PFOA, perfluorobutane sulfonate, perfluorononanoic acid, perfluoroheptanoic acid, and perfluorohexane sulfonate. All samples were analyzed for PFOS/PFOA using U.S. Environmental Protection Agency, Method 537, revision 1.1.
[b]Groundwater from PRLs 1, 3, and 4 is also evaluated by co-located samples from PRL 5.
PFOA = Perfluorooctanoic acid.
PFOS = Perfluorooctane sulfonate.
PRL = Potential release location.
SI = Site inspection.

Table 4. Well Construction Details for Nashville ANGB SI

Monitoring Well	Top of Casing Elevation (ft AMSL)	Ground Elevation (ft AMSL)	Screened Interval (ft BGS)	Total Well Depth (ft BTOC)	Well Diameter (in.)	Casing
PRL 1						
MW-BNA01-01	571.033	571.232	15.25 – 25.25	26.20	2	PVC
PRL 5						
MW-BNA05-01	537.449	537.916	2.8 – 7.8	8.0	2	PVC

Source: Top of casing elevation and ground surface elevation data are from the monitoring well survey on April 4, 2018, by Jim McAleer, Surveyor (see Appendix D). Screened interval, total depth, and well diameter data in this table were obtained from the well construction diagrams provided in Appendix A.
AMSL = Above mean sea level.
ANGB = Air National Guard Base.
BGS = Below ground surface.
BTOC = Below top of casing.
ft = Feet.
in. = Inch.
PRL = Potential release location.
PVC = Polyvinyl chloride.
SI = Site inspection.

Table 5. Water Level Measurements

Monitoring Well Identifier	TOC Elevation (ft AMSL)	Screened Interval	March 2018	
			Depth to Water (ft BTOC)	Groundwater Elevation (ft AMSL)
MW-BNA01-01	571.033	15.25 – 25.25	15.09	555.943
MW-BNA05-01	537.449	2.8 – 7.8	4.55	532.899

Source: TOC elevation and ground surface elevation data are from the monitoring well survey on April 4, 2018 by Jim McAleer, Surveyor (See Appendix D). Screened interval, total depth, and well diameter data in this table were obtained from the well construction diagrams provided in Appendix A.
AMSL = Above mean sea level.
BTOC = Below top of casing.
ft = Feet.
TOC = Top of casing.

Table 6. Water Quality Parameters

Parameter	Groundwater			Surface Water	
	MW-BNA01-01	**MW-BNA05-01**	**MW-BNA05-01D**	**BNA04-SW1**	**BNA05-SW1**
Dissolved oxygen	0.37	0.0	0.0	8.18	0.0
ORP (mV)	-49	-123	-123	-91	-7
pH (S.U.)	5.86	6.98	6.98	6.31	4.7
Conductivity (mS/cm)	0.865	0.98	0.98	0.652	0.568
Temperature (ºC)	21.55	15.15	15.15	23.3	20.10
Turbidity (NTU)	46.9	9.5	9.5	75.0	0.6

ºC = Degrees Celsius.
mS/cm = MicroSiemens per centimeter.
mV = Millivolt.
NTU = Nephelometric turbidity unit.
ORP = Oxidation-reduction potential.
S.U. = Standard unit.

Table 7. Summary of Soil and Sediment Analytical Results

					Analyte	Perfluorooctane Sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorobutane Sulfonate (PFBS)	Perfluoroheptanoic Acid (PFHpA)	Perfluorohexane Sulfonate (PFHxS)	Perfluorononanoic Acid (PFNA)
					Screening Level[a]	1,260	1,260	1,260,000	NA	NA	NA
PRL	Location	Sample Identifier	Sample Date	Sample Depth (ft)	Sample Type	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
Soil											
1	BNA01-SB1	BNA01-SB1-01	03/05/18	1.8 – 3.8	REG	**27J**	**0.4**	**0.99**	**0.19J**	**6.0J**	0.25U
		BNA01-SB1-02	03/05/18	20.9 – 21.6	REG	0.64U	0.25U	0.23U	0.25U	**0.22J**	0.25U
3	BNA03-SB1	BNA03-SB1-01	03/06/18	1.7 – 2.7	REG	0.63U	0.25U	0.23U	0.25U	**0.19J**	0.25U
		BNA03-SB1-01D	03/06/18	1.7 – 2.7	FD	0.64U	0.26U	0.23U	0.26U	**0.17J**	0.26U
		BNA03-SB1-02	03/06/18	13.0 – 13.7	REG	0.64U	0.26U	0.23U	0.26U	0.26U	0.26U
	BNA03-SB2	BNA03-SB2-01	03/06/18	1.8 – 3.1	REG	0.66U	0.26U	0.24U	0.26U	**0.10J**	0.26U
		BNA03-SB2-01D	03/06/18	1.8 – 3.1	FD	0.67U	0.27U	0.23U	0.27U	**0.095J**	0.27U
		BNA03-SB2-02	03/06/18	12.0 – 12.5	REG	0.63U	0.25U	0.23U	0.25U	0.25U	0.25U
4	BNA04-SB1	BNA04-SB1-01	03/06/18	1.8 – 2.5	REG	0.64U	0.26U	0.23U	0.26U	0.26U	0.26U
		BNA04-SB1-02	03/06/18	13.8 – 14.4	REG	0.71U	0.29U	0.26U	0.29U	0.29U	0.25U
5	BNA05-SB1	BNA05-SB1-01	03/07/18	1.6 – 2.6	REG	**4.8**	0.25U	0.23U	0.25U	**0.26J**	0.25U
		BNA05-SB1-02	03/07/18	5.1 – 5.6	REG	**1.8**	0.25U	0.22U	0.25U	**0.66**	0.25U
Sediment											
5	BNA05-SD1	BNA05-SD1-01	03/08/18	0.0 – 0.1	REG	**4.2**	**0.15J**	0.24U	0.26U	**0.5**	0.26U

[a]U.S. Environmental Protection Agency (EPA) residential risk-based soil screening level determined using the EPA regional screening level (RSL) calculator and November 2017 EPA RSL tables.

Bold denotes detected concentration.

FD = Field duplicate.
ft = Feet.
µg/kg = Micrograms per kilogram.
NA = Not applicable.
PRL = Potential release location.
REG = Regular.

Data Qualifiers:
J = Estimated concentration.
U = Chemical not detected above the laboratory detection limit.

Table 8. Summary of Groundwater and Stormwater Analytical Results

					Analyte	Perfluorooctane Sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)	PFOS+PFOA	Perfluorobutane Sulfonate (PFBS)	Perfluoroheptanoic Acid (PFHpA)	Perfluorohexane Sulfonate (PFHxS)	Perfluorononanoic Acid (PFNA)
					Health Advisory[a]	70	70	70	NA	NA	NA	NA
					EPA RSL Tap Water[b]	NA	NA	NA	400,000	NA	NA	NA
PRL	Location	Sample Identifier	Sample Date	Sample Depth (ft)	Sample Type	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
Groundwater												
1	MW-BNA01-01	MW-BNA01-01-01	03/09/18	15.5 – 25.5	REG	**96**	**13**	**109**	**27**	**5.1**	**130**	1.4 U
5	MW-BNA05-01	MW-BNA05-01-01	03/09/18	2.8 – 7.8	REG	**66**	**12**	**78**	**5.1**	**3.2**	**75**	**1.3 J**
		MW-BNA05-01-01D	03/09/18	2.8 – 7.8	FD	**61**	**11**	**72**	**4.4**	**3.6**	**68**	**1.4 J**
Stormwater												
4	BNA04-SW1	BNA04-SW1-01	03/09/18	NA	REG	**50**	**7.3**	**57.3**	**11**	**3.5**	**59**	**0.8 J**
5	BNA05-SW1	BNA05-SW1-01	03/09/18	NA	REG	**250**	**21**	**271**	**22**	**8.4**	**190**	**1.3 J**

[a]May 2016 EPA health advisory for PFOS/PFOA combined.
[b]November 2017 EPA RSL for tap water.
Bold denotes detected concentration.
Bold highlighted denotes concentration that exceeds screening criteria.
EPA = U.S. Environmental Protection Agency.
FD = Field duplicate.
ft = Feet.
NA = Not applicable.
ng/L = Nanograms per liter.
PRL = Potential release location.
REG = Regular.
RSL = Regional screening level.
Data Qualifiers:
J = Estimated concentration.
U = Chemical not detected above the laboratory detection limit.

Table 9. SI Recommendation Summary Table

PRL Number	PRL Description	Constituents Above Screening Criteria	Sampling Recommendations and Objectives
1 and 3	Building 736 - Fire Station and Fire Equipment Test Area	Groundwater: PFOS + PFOA	Soil: Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists, and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration Groundwater: Determine the nature and extent (both vertically and horizontally) through the sampling of existing and additional new monitoring wells
4	Flight Apron	Groundwater: PFOS + PFOA	Soil: Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists, and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration Groundwater: Although screening criteria were not exceeded in the artesian spring sample from beneath the Aircraft Apron, there were exceedances in the downgradient co-located groundwater well at PRL 5. Therefore, additional groundwater sampling is proposed to better define potential groundwater impacts both vertically and horizontally through the sampling of additional new monitoring wells
5	Stormwater Outfall 001	Groundwater: PFOS + PFOA	Soil: Although screening criteria were not exceeded, additional surface and subsurface soil samples are proposed to determine if an unidentified source exists, and if so, to determine the nature and extent in the vertical and horizontal directions given the potential for soil to groundwater migration Groundwater: Determine the nature and extent (both vertically and horizontally) through the sampling of existing and additional new monitoring wells Surface Water and Sediment: Additional sampling to determine the extent of surface water impacts and to support the evaluation of whether there are unacceptable risks to ecological or human health receptors
General			Groundwater: (1) Collect additional groundwater samples in upgradient locations to quantify potential impacts from upgradient sources. (2) Collect additional groundwater samples off-Base through the installation of a limited number of new monitoring wells to determine if PFOS/PFOA impacts beyond the Base boundary are increasing or decreasing Surface Water: (1) Collect additional groundwater samples in upgradient locations to quantify potential impacts from upgradient sources. (2) Collect additional groundwater samples off-Base through the installation of a limited number of new monitoring wells to determine if PFOS/PFOA impacts beyond the Base boundary are increasing or decreasing Care should be taken in choosing locations for additional downgradient samples for both groundwater and surface water. The Nashville International Airport is located immediately downgradient based on both surface water and groundwater flow directions. The presence of PFOS/PFOA compounds from downgradient locations within the Nashville International Airport footprint may identify an additional source of contamination that is beyond the scope of this SI

PFOA = Perfluorooctanoic acid.
PFOS = Perfluorooctane sulfonate.
PRL = Potential release location.
SI = Site inspection.

FIGURES

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LEGEND:

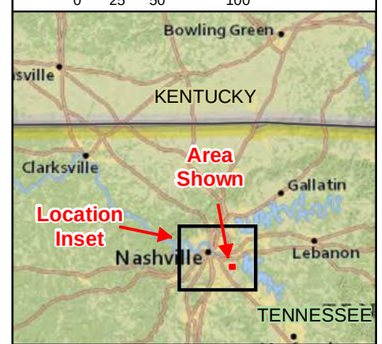
- Potential Release Location (PRL)
- Installation Boundary*
- Building*
- Fence*

NOTES:

* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 08/22/2017.

1. Background Source: ESRI World Imagery (DigitalGlobe, 09/2017).

0 100 200 400 Feet
0 25 50 100 Meters



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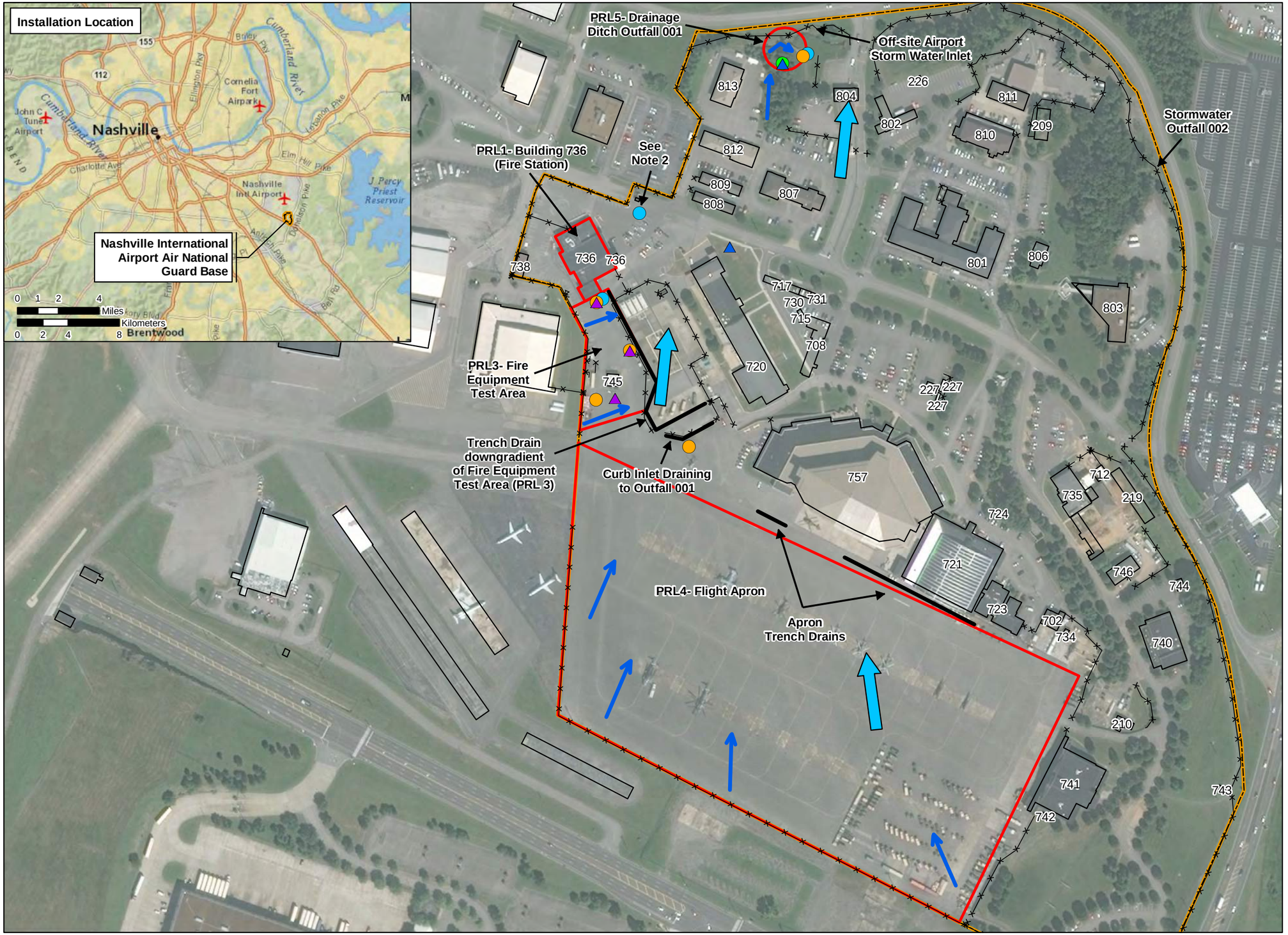
NASHVILLE INTERNATIONAL AIRPORT
AIR NATIONAL GUARD BASE
NASHVILLE, TENNESSEE

NASHVILLE ANGB
LOCATION MAP

FIGURE: 1 | DATE: 4/13/2018

PROJECT: \DO_0009_Phase4_PFC\z_GIS\Nashville\Projects\SI\Figure 1 PRL Location Map_11x17.mxd



LEGEND:

- Monitoring Well
- Soil Boring
- Sediment Sample
- Surface Water Sample
- Temporary Piezometer
- Potential Release Location (PRL)
- Installation Boundary*
- Building*
- Curb Inlet or Trench Drain
- Fence*
- Estimated Surface Water Flow
- Estimated Groundwater Flow

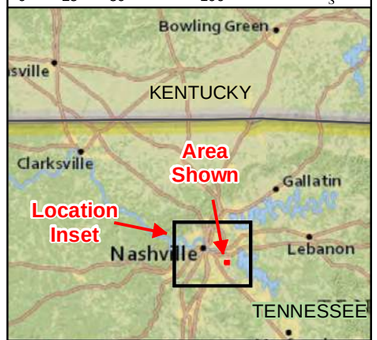
NOTES:

* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 08/22/2017.

1. Background Source: ESRI World Imagery (DigitalGlobe, 09/2017).
2. Planned location of MW-BNA01-01 was dry. Based on discussions with TDEC, BNA01-PZ1 was converted to MW-BNA01-01.

0 100 200 400 Feet

0 25 50 100 Meters



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NASHVILLE INTERNATIONAL AIRPORT
AIR NATIONAL GUARD BASE
NASHVILLE, TENNESSEE

NASHVILLE ANGB SI
SAMPLING OVERVIEW MAP

FIGURE: 2	DATE: 6/1/2018

PROJECT: \DO_0009_Phase4_PFC\z_GIS\Nashville\Projects\SI\Figure 2 SI Sample Overview Map_11x17.mxd

Soil/Sediment Screening Criteria[a]	µg/kg
PFOS	1,260
PFOA	1,260
PFBS	1,260,000
PFHpA	NA
PFHxS	NA
PFNA	NA

[a]EPA residential risk-based soil screening level determined using the EPA RSL calculator and November 2017 EPA RSL tables

BNA01-SB1	REG	REG
	µg/kg	µg/kg
Sample Date	03/08/18	03/08/18
Sample Depth	1.8-3.8	20.9-21.6
PFOS	**27**	0.64U
PFOA	**0.4**	0.25U
PFBS	**0.99**	0.23U
PFHpA	**0.19J**	0.25U
PFHxS	**6.0J**	**0.22J**
PFNA	0.25U	0.25U

BNA03-SB1	REG	DUP	REG
	µg/kg	µg/kg	µg/kg
Sample Date	03/08/18	03/08/18	03/08/18
Sample Depth	1.7-2.7	1.7-2.7	13.0-13.7
PFOS	0.63U	0.64U	0.64U
PFOA	0.25U	0.26U	0.26U
PFBS	0.23U	0.23U	0.23U
PFHpA	0.25U	0.26U	0.26U
PFHxS	**0.19J**	**0.17J**	0.26U
PFNA	0.25U	0.26U	0.26U

BNA03-SB2	REG	DUP	REG
	µg/kg	µg/kg	µg/kg
Sample Date	03/08/18	03/08/18	03/08/18
Sample Depth	1.8-3.1	1.8-3.1	12.0-12.5
PFOS	0.66U	0.67U	0.63U
PFOA	0.26U	0.27U	0.25U
PFBS	0.24U	0.23U	0.23U
PFHpA	0.26U	0.27U	0.25U
PFHxS	**0.10J**	**0.095J**	0.25U
PFNA	0.26U	0.27U	0.25U

PRL1- Building 736 (Fire Station)

PRL3- Fire Equipment Test Area

BNA01-SB1

BNA01-PZ1

MW-BNA01-01

BNA03-SB1

BNA03-PZ1

BNA03-PZ2

BNA03-SB2

BNA04-SW1

736

738

745

809

807

808

717

715

757

0 25 50 100 Feet

0 5 10 20 Meters

N W E S

LEGEND:

- Monitoring Well
- Soil Boring
- Surface Water Sample
- Temporary Piezometer
- Potential Release Location (PRL)
- Installation Boundary*
- Building*
- Trench Drain
- Fence*
- Estimated Surface Water Flow
- Estimated Groundwater Flow
- **BNA03-SB1** Location Identifier

NOTES:

* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 08/22/2017.

1. Background Source: ESRI World Imagery (DigitalGlobe, 09/2017).

PFOS = Perfluorooctanesulfonic acid
PFOA = Perfluorooctanoic acid
PFBS = Perfluorobutanesulfonic acid
PFHpA = Perfluoroheptanoic acid
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
BOLD = Detected concentration
BOLD + highlight = exceeds criteria

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NASHVILLE INTERNATIONAL AIRPORT
AIR NATIONAL GUARD BASE
NASHVILLE, TENNESSEE

PRLS 1 AND 3 SI
SOIL ANALYTICAL RESULTS

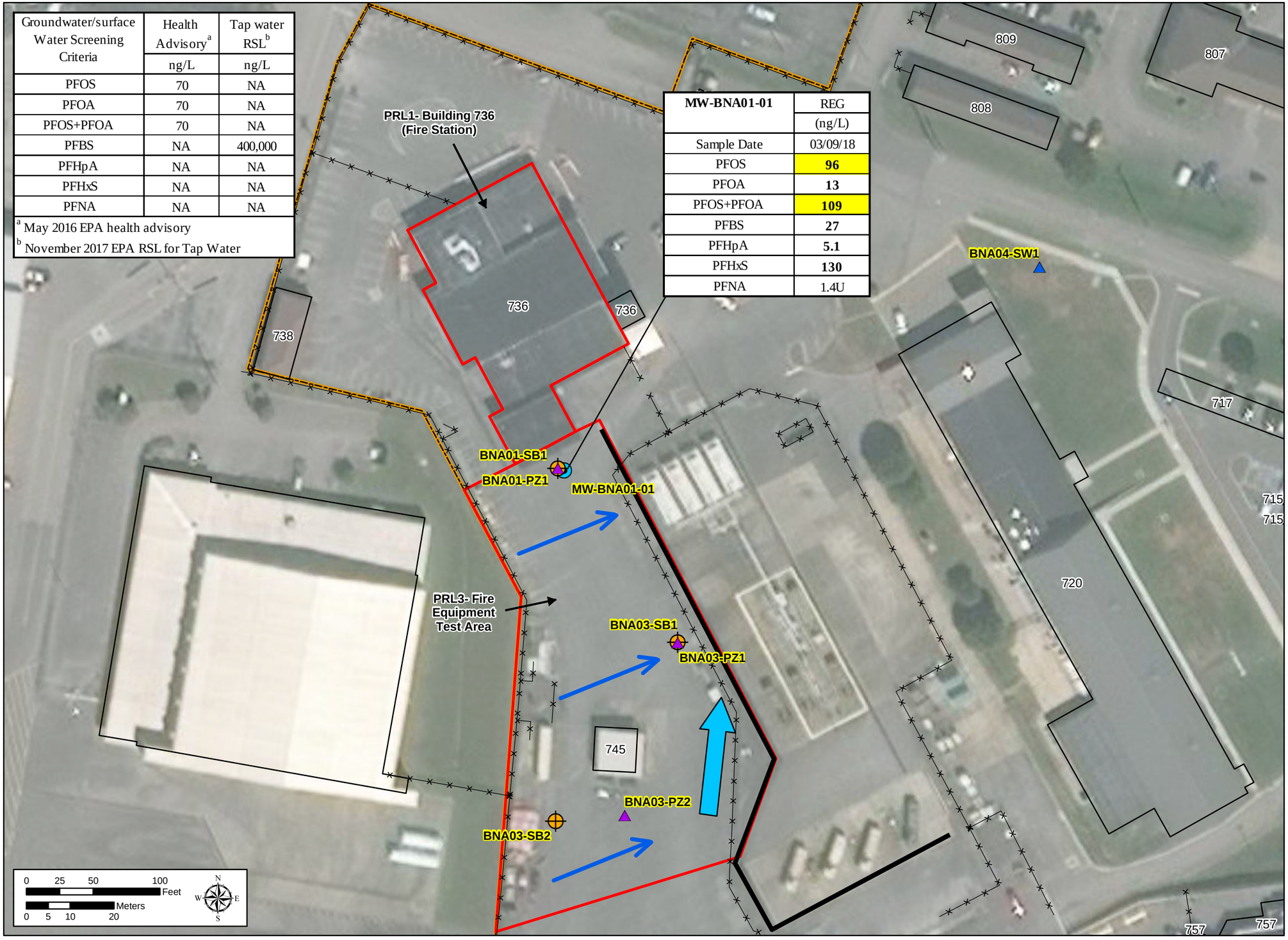
FIGURE: 3 | DATE: 4/20/2018

PROJECT: \DO_0009_Phase4_PFC\z_GIS\Nashville\Projects\SI\Figure 3 PRL 1 and 3 Soil Results_11x17.mxd

Groundwater/surface Water Screening Criteria	Health Advisory[a]	Tap water RSL[b]
	ng/L	ng/L
PFOS	70	NA
PFOA	70	NA
PFOS+PFOA	70	NA
PFBS	NA	400,000
PFHpA	NA	NA
PFHxS	NA	NA
PFNA	NA	NA

[a] May 2016 EPA health advisory
[b] November 2017 EPA RSL for Tap Water

MW-BNA01-01	REG
	(ng/L)
Sample Date	03/09/18
PFOS	**96**
PFOA	**13**
PFOS+PFOA	**109**
PFBS	**27**
PFHpA	**5.1**
PFHxS	**130**
PFNA	1.4U



LEGEND:

- Monitoring Well
- Soil Boring
- Surface Water Sample
- Temporary Piezometer
- Potential Release Location (PRL)
- Installation Boundary*
- Building*
- Trench Drain
- Fence*
- Estimated Surface Water Flow
- Estimated Groundwater Flow
- **BNA03-SB1** Location Identifier

NOTES:

* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 08/22/2017.
1. Background Source: ESRI World Imagery (DigitalGlobe, 09/2017).

PFOS = Perfluorooctanesulfonic acid
PFOA = Perfluorooctanoic acid
PFBS = Perfluorobutanesulfonic acid
PFHpA = Perfluoroheptanoic acid
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
BOLD = Detected concentration
BOLD + highlight = exceeds criteria

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PRLS 1 AND 3 SI GROUNDWATER ANALYTICAL RESULTS

FIGURE: 4	DATE: 4/13/2018

PROJECT: \DO_0009_Phase4_PFC\z_GIS\Nashville\Projects\SI\Figure 4 PRL 1 and 3 GW Results_11x17.mxd

Soil/Sediment Screening Criteria[a]	µg/kg
PFOS	1,260
PFOA	1,260
PFBS	1,260,000
PFHpA	NA
PFHxS	NA
PFNA	NA

[a]EPA residential risk-based soil screening level determined using the EPA RSL calculator and November 2017 EPA RSL tables

BNA04-SB1	REG	REG
	µg/kg	µg/kg
Sample Date	03/08/18	03/08/18
Sample Depth	1.8-2.5	13.8-14.4
PFOS	0.64U	0.71U
PFOA	0.26U	0.29U
PFBS	0.23U	0.26U
PFHpA	0.26U	0.29U
PFHxS	0.26U	0.29U
PFNA	0.26U	0.25U

BNA04-SW1
BNA01-SB1
BNA01-PZ1
MW-BNA01-01
BNA03-SB1
BNA03-PZ1
BNA03-SB2
BNA03-PZ2
BNA04-SB1
Trench Drain downgradient of Fire Equipment Test Area (PRL 3)
Curb Inlet Draining to Outfall 001
Apron Trench Drains (See Note 2)
PRL4- Flight Apron
736
738
745
720
717
730
731
715
708
801
806
803
227
757
735
219
724
721
746
744
723
702
734
740
210
741
742
743

0 50 100 200 Feet
0 20 40 80 Meters
N W E S

LEGEND:

- Monitoring Well
- Soil Boring
- Surface Water Sample
- Temporary Piezometer
- Potential Release Location (PRL)
- Installation Boundary*
- Building*
- Curb Inlet or Trench Drain
- Fence*
- Estimated Surface Water Flow
- Estimated Groundwater Flow

BNA03-SB1 Location Identifier

NOTES:

* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 08/22/2017.
1. Background Source: ESRI World Imagery (DigitalGlobe, 09/2017).
2. The apron was designed for surface flow to drain toward trench drains and curb inlet that discharge to Outfall 001.

PFOS = Perfluorooctanesulfonic acid
PFOA = Perfluorooctanoic acid
PFBS = Perfluorobutanesulfonic acid
PFHpA = Perfluoroheptanoic acid
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
BOLD = Detected concentration
BOLD + highlight = exceeds criteria

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NASHVILLE, TENNESSEE

PRL 4 SI
SOIL ANALYTICAL RESULTS

FIGURE: 5 | DATE: 4/13/2018

PROJECT: \DO_0009_Phase4_PFC\z_GIS\Nashville\Projects\SI\Figure 5 PRL 4 Soil Results_11x17.mxd

Groundwater/surface Water Screening Criteria	Health Advisory[a]	Tap water RSL[b]
	ng/L	ng/L
PFOS	70	NA
PFOA	70	NA
PFOS+PFOA	70	NA
PFBS	NA	400,000
PFHpA	NA	NA
PFHxS	NA	NA
PFNA	NA	NA

[a] May 2016 EPA health advisory
[b] November 2017 EPA RSL for Tap Water

BNA04-SW1	REG
	(ng/L)
Sample Date	03/08/18
PFOS	**50**
PFOA	**7.3**
PFOS+PFOA	**57.3**
PFBS	**11**
PFHpA	**3.5**
PFHxS	**59**
PFNA	**0.8J**

BNA04-SW1
BNA01-SB1
BNA01-PZ1
MW-BNA01-01
BNA03-SB1
BNA03-PZ1
BNA03-SB2
BNA03-PZ2
BNA04-SB1
Trench Drain downgradient of Fire Equipment Test Area (PRL 3)
Curb Inlet Draining to Outfall 001
Apron Trench Drains (See Note 2)
PRL4- Flight Apron
736
745
720
717
730
731
715
708
801
806
803
757
724
721
723
702
734
740
746
744
712
735
219
210
741
742
743

0 50 100 200 Feet
0 20 40 80 Meters
N W E S

LEGEND:

- Monitoring Well
- Soil Boring
- Surface Water Sample
- Temporary Piezometer
- Potential Release Location (PRL)
- Installation Boundary*
- Building*
- Curb Inlet or Trench Drain
- Fence*
- Estimated Surface Water Flow
- Estimated Groundwater Flow

BNA03-SB1 Location Identifier

NOTES:

* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 08/22/2017.
1. Background Source: ESRI World Imagery (DigitalGlobe, 09/2017).
2. The apron was designed for surface flow to drain toward trench drains and curb inlet that discharge to Outfall 001.

PFOS = Perfluorooctanesulfonic acid
PFOA = Perfluorooctanoic acid
PFBS = Perfluorobutanesulfonic acid
PFHpA = Perfluoroheptanoic acid
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
BOLD = Detected concentration
BOLD + highlight = exceeds criteria

NASHVILLE INTERNATIONAL AIRPORT
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NASHVILLE, TENNESSEE

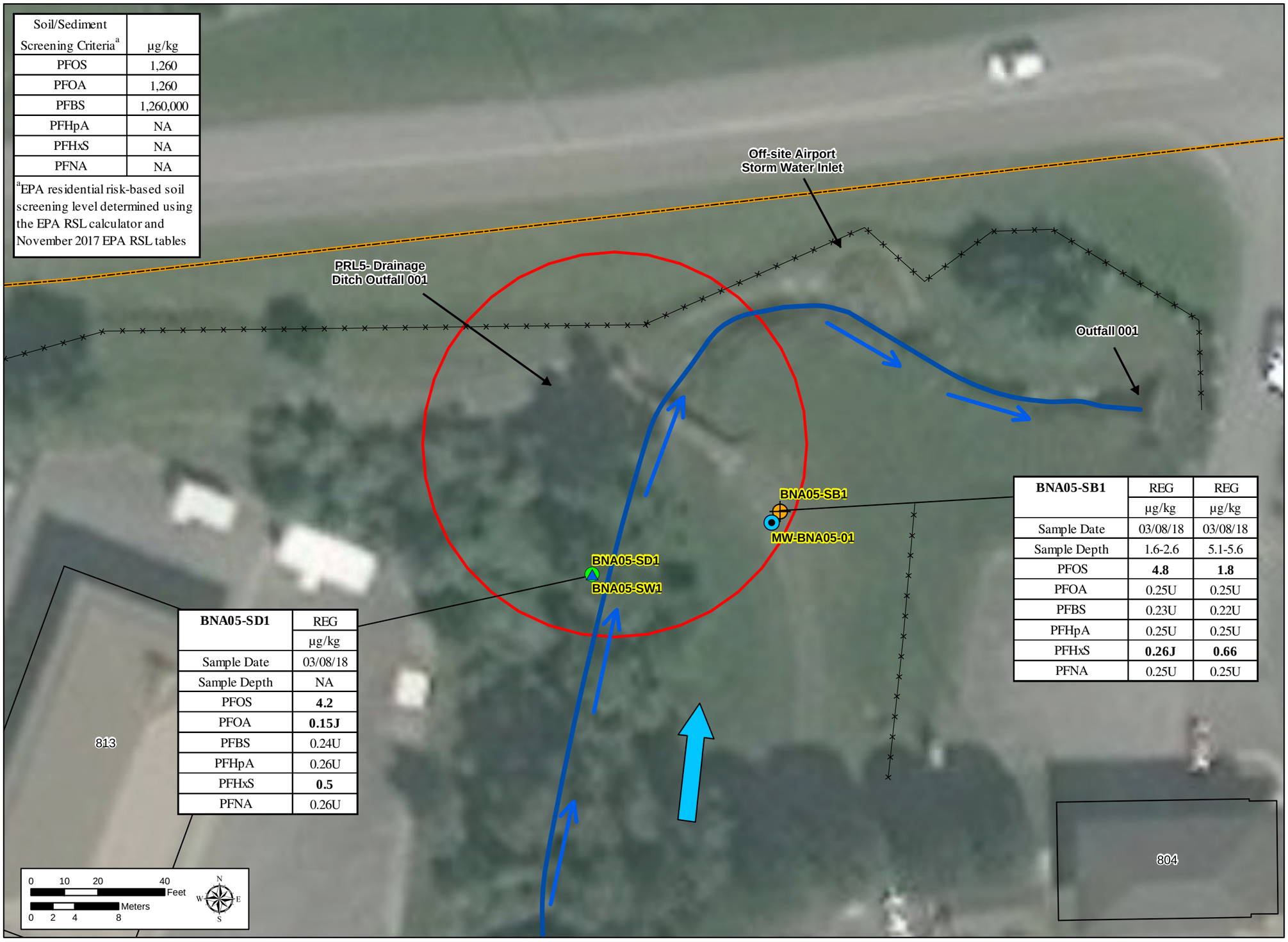
PRL 4 SI SURFACE WATER ANALYTICAL RESULTS

FIGURE: 6 | DATE: 4/13/2018

PROJECT: \DO_0009_Phase4_PFC\z_GIS\Nashville\Projects\SI\Figure 6 PRL 4 SW Results_11x17.mxd

Soil/Sediment Screening Criteria[a]	µg/kg
PFOS	1,260
PFOA	1,260
PFBS	1,260,000
PFHpA	NA
PFHxS	NA
PFNA	NA

[a]EPA residential risk-based soil screening level determined using the EPA RSL calculator and November 2017 EPA RSL tables



BNA05-SD1	REG
	µg/kg
Sample Date	03/08/18
Sample Depth	NA
PFOS	**4.2**
PFOA	**0.15J**
PFBS	0.24U
PFHpA	0.26U
PFHxS	**0.5**
PFNA	0.26U

BNA05-SB1	REG	REG
	µg/kg	µg/kg
Sample Date	03/08/18	03/08/18
Sample Depth	1.6-2.6	5.1-5.6
PFOS	**4.8**	**1.8**
PFOA	0.25U	0.25U
PFBS	0.23U	0.22U
PFHpA	0.25U	0.25U
PFHxS	**0.26J**	**0.66**
PFNA	0.25U	0.25U

LEGEND:

- Monitoring Well
- Soil Boring
- Sediment Sample
- Surface Water Sample
- Potential Release Location (PRL)
- Installation Boundary*
- Building*
- Drainage Ditch*
- Fence*
- Surface Water Flow Direction
- Estimated Groundwater Flow

BNA05-SB1 Location Identifier

NOTES:

* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 08/22/2017.

1. Background Source: ESRI World Imagery (DigitalGlobe, 09/2017).

PFOS = Perfluorooctanesulfonic acid
PFOA = Perfluorooctanoic acid
PFBS = Perfluorobutanesulfonic acid
PFHpA = Perfluoroheptanoic acid
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
BOLD = Detected concentration
BOLD + highlight = exceeds criteria

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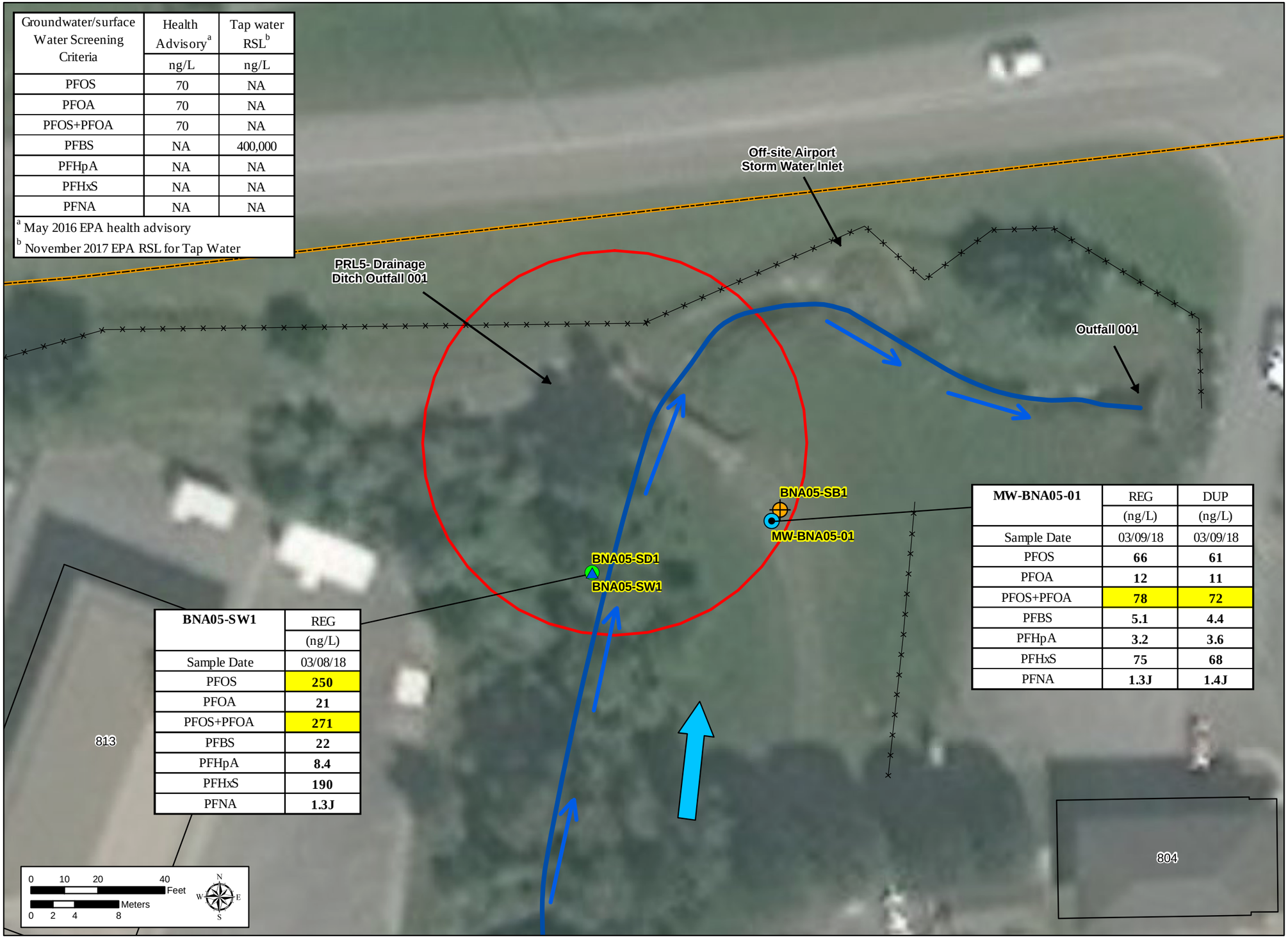
PRL 5 SI SOIL/SEDIMENT ANALYTICAL RESULTS

FIGURE: 7 | DATE: 4/13/2018

PROJECT: \DO_0009_Phase4_PFC\z_GIS\Nashville\Projects\SI\Figure 7 PRL 5 Soil and Sediment Results_11x17.mxd

Groundwater/surface Water Screening Criteria	Health Advisory[a]	Tap water RSL[b]
	ng/L	ng/L
PFOS	70	NA
PFOA	70	NA
PFOS+PFOA	70	NA
PFBS	NA	400,000
PFHpA	NA	NA
PFHxS	NA	NA
PFNA	NA	NA

[a] May 2016 EPA health advisory
[b] November 2017 EPA RSL for Tap Water



BNA05-SW1	REG
	(ng/L)
Sample Date	03/08/18
PFOS	**250**
PFOA	**21**
PFOS+PFOA	**271**
PFBS	**22**
PFHpA	**8.4**
PFHxS	**190**
PFNA	**1.3J**

MW-BNA05-01	REG	DUP
	(ng/L)	(ng/L)
Sample Date	03/09/18	03/09/18
PFOS	**66**	**61**
PFOA	**12**	**11**
PFOS+PFOA	**78**	**72**
PFBS	**5.1**	**4.4**
PFHpA	**3.2**	**3.6**
PFHxS	**75**	**68**
PFNA	**1.3J**	**1.4J**

LEGEND:

- Monitoring Well
- Soil Boring
- Sediment Sample
- Surface Water Sample
- Potential Release Location (PRL)
- Installation Boundary*
- Building*
- Drainage Ditch*
- Fence*
- Surface Water Flow Direction
- Estimated Groundwater Flow

BNA05-SB1 Location Identifier

NOTES:

* Source: Common Installation Picture (CIP) geodatabase provided by ANG GeoBase on 08/22/2017.
1. Background Source: ESRI World Imagery (DigitalGlobe, 09/2017).

PFOS = Perfluorooctanesulfonic acid
PFOA = Perfluorooctanoic acid
PFBS = Perfluorobutanesulfonic acid
PFHpA = Perfluoroheptanoic acid
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
BOLD = Detected concentration
BOLD + highlight = exceeds criteria

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PRL 5 SI
GROUNDWATER/SURFACE WATER ANALYTICAL RESULTS

FIGURE: 8 | DATE: 4/13/2018

PROJECT: \DO_0009_Phase4_PFC\z_GIS\Nashville\Projects\SI\Figure 8 PRL 5 GW and SW Results_11x17.mxd

APPENDIX A
SOIL BORINGS AND WELL CONSTRUCTION LOGS

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Client/Installation	Oversight Contractor	Borehole Number
ANG/Nashville ANGB	Leidos	BNA01-SB 1
Project	**Driller**	**Page**
FY17 Phase 4 Regional SI for PFOS/PFOA	M&W Drilling	Page 1 of 4

Sizes and Type of Drilling and Sampling Equipment	Borehole Location Description
Geoprobe ← Schram T450W ROTADRILL S/N: J102-B134	ASPHALT COVERED LOT

Date/Time Started (MM-DD-YYYY)/(0000)	Date/Time Finished (MM-DD-YYYY)/(0000)
3/5/18 1406	3/5/18 1620

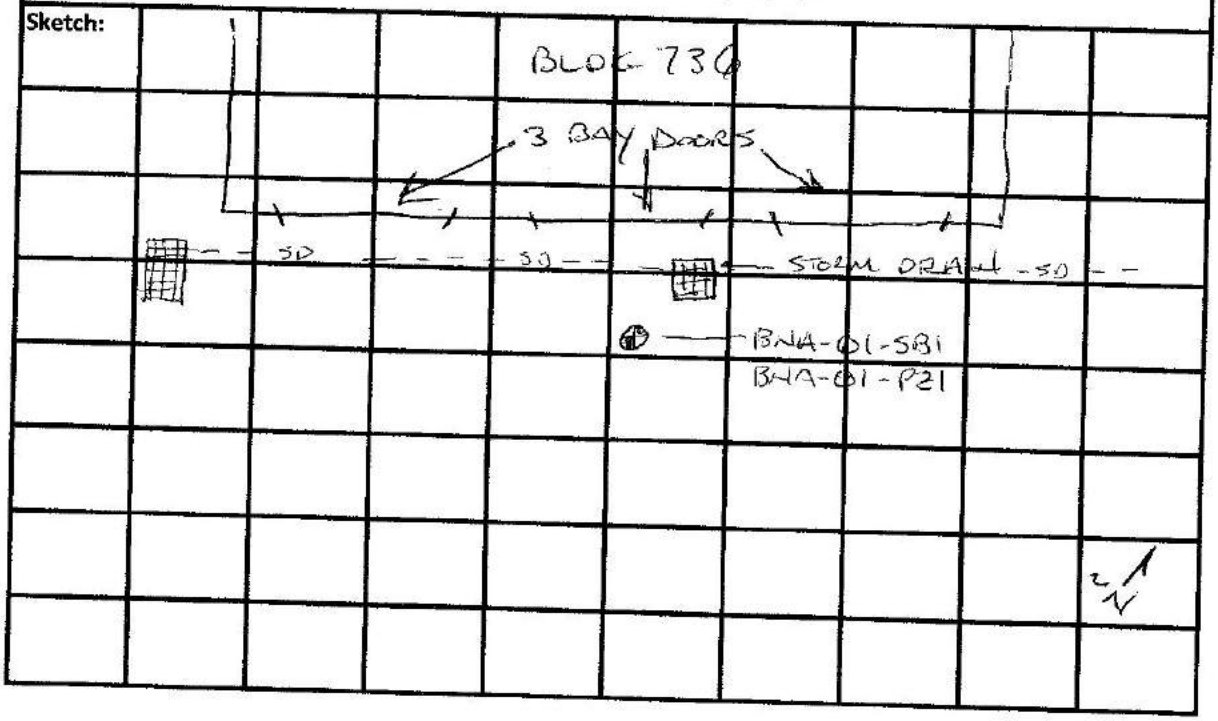
Overburden Thickness	Depth to Groundwater	Total Depth
24.9 FT	FIRST WET SOIL = 21.7 FT MEASURED WL IN PZ = 14.71	26.2 FT

Sample for PFOS/PFOA Analysis	Sample for PFOS/PFOA Analysis
Sample ID: BNA01-SB1-01	Sample ID: BNA01-SB1-02
Sample Interval: 0 to 2 ft (1.8-3.8 FT BGS)	Sample Interval: 20.9 to 21.6 ft
Sample ID: BNA ~~01~~ -SB ~~1~~ -03 (if required) MC 3/5/18	Sample ID: BNA ~~01~~ -SB ~~1~~ -04 (if required) MC 3/5/18
Sample Interval: ___ to ___ ft	Sample Interval: ___ to ___ ft
Inspector Name	**Inspector Signature**
Mike Klidzejs	

Monitoring Well ID:	Backfill Type	Date Backfilled (MM-DD-YYYY)
MW-BNA01-01	N/A	N/A
Latitude	**Longitude**	**Elevation**

Notes: TEMP PIEZOMETER SET IN BOREHOLE, PERMANENT MON WELL CONSTRUCTED ON 3/7/18.

Sketch:



MMP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA 01-SB 1	Page 2 of 4
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/5/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
0.5	0.0 - 0.5FT: ASPHALT			AIR-ROTARY DRILLING DRILL THROUGH ASPHALT AND BASE
1	0.5 - 1.9FT: ROADBASE GRAVEL + SILT			PUSH 0.2FT DIAM 2.0 FT LENGTH SPLITSPOON
1.5	1.9 - 3.8FT:		(BNA01-SB1-01 w/ MS/MSD 1.8-3.8ft	1.8 - 3.8FT REC: 2.1FT
2	SILTY CLAY (CL) MOD PLASTIC, STIFF TO VERY STIFF COLORS MOTTLED DARK YELLOWISH BROWN (10YR4/6) AND GRAY (2.5Y/4/1) V. SL. MOIST			
2.5		BZ = 0.0 ppm		
3		SS = 0.0 ppm		
3.5				
4				
4.5				
5				DRILL TO 8FT
5.5				
6				
6.5				
7				
7.5				
8	8.0 - 9.6FT:			
8.5	SILTY, SANDY, CLAY (CL) SOFT, MOD PLASTIC DARK YELLOWISH ORANGE (10YR 4/6) V. MOIST	BZ = 0.0 ppm SS = 0.0 ppm		SPLITSPOON: 8-12FT REC: 1.6FT
9				
9.5				
10				

MPP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA 01 -SB 1	Page 3 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/5/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
10.5				
11.0				
11.5				
12.0				DRILL TO 13 FT
12.5				
13.0	13.0-15.0FT	BZ= 0.0ppm		SPLIT SPOON 13-15FT
13.5	SAME AS AT 8FT	SS: 0.0ppm		REC 2.0FT
14.0				
14.5				DRILL TO 16 FT
15.0				
15.5				
16.0	16.0-18.0FT.			DRILLER REPORTS ROCKER DRILLING AT 16 FT
16.5	SAME AS ABOVE. TRACE COARSE GRAVEL FROM 16.0- 16.4 FT, SL. MOIST	BZ= 0.0ppm		SPLIT SPOON 16-18FT
17.0		SS: 0.0ppm		REC: 2.0FT
17.5				
18.0				DRILL TO 20 FT NO 3/5/18
18.5				SPLIT SPOON 18-20
19.0				
19.5				
20.0				

MPP

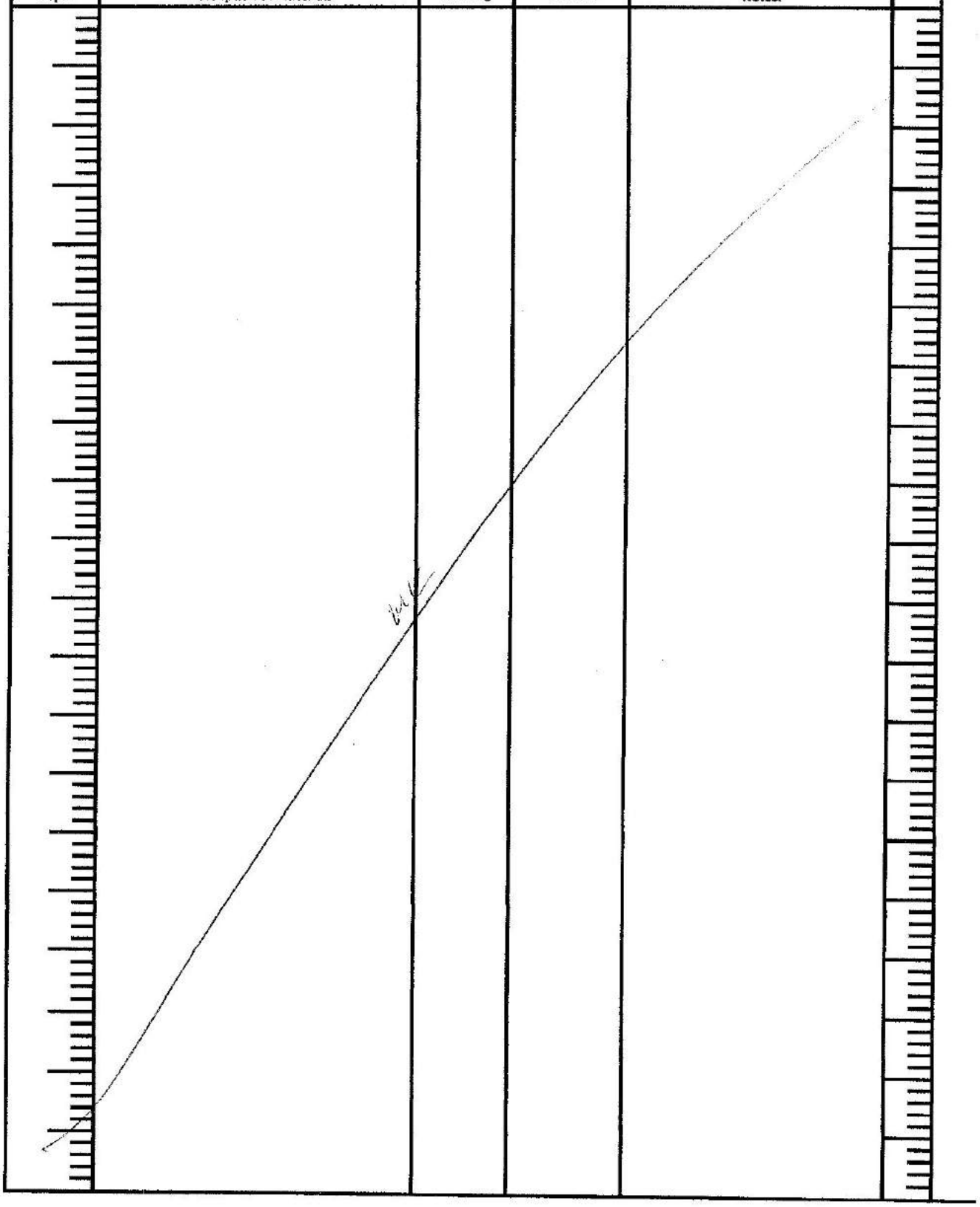
Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA01-SB1	Page 4 of 4
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/5/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
20.5	20-22FT.			SPLIT SPOON 20-22FT
21	SILTY CLAY (CL) SOFT TO V. SOFT MOD. PLASTIC			REC: 2.0FT
21.5	AT 20.1FT COLOR CHANGES FROM ABOVE TO GRAYISH BROWN (2.5Y 5/2)	BZ= 0.0PPM SS= 0.0PPM	1550 BNA01-SB1-02 20.9-21.4FT	DRILL TO 24FT
22	V. MOIST TO 21.7 WET BELOW			
22.5				
23				SPLIT SPOON 24-26 FT REC: 2.0FT
23.5				
24	24-26FT.			
24.5	CLAYEY SILT (CL) MED. STIFF, SL PLASTIC MOTTLED			
25	MOTTLED GRAY (10YR 6/1) AND LIGHT OLIVE			MK 3/5/18 ~~TOR AT 24.9FT BGS~~ 3/5/18
25.5	BROWN (2.5Y/5/3			
26	WET			MK 3/5/18 ~~TD=25FT~~ TD=26.2FT BGS
26.5				
27				
27.5				
28				
28.5				
29				
29.5				
30				

MAP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA 01 -SB 1	Page 5 of 5
Project	Inspector Name	Date (MM-DD-YYYY)
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:



Client/Installation	Oversight Contractor	Borehole Number
ANG/Nashville ANGB	Leidos	BHA 03 -SB 1
Project	**Driller**	**Page**
FY17 Phase 4 Regional SI for PFOS/PFOA	M&W Drilling	Page 1 of 5

Sizes and Type of Drilling and Sampling Equipment	Borehole Location Description
Geoprobe _____ Schram THSOIL	ASPHALT LOT, HOLE IS NE OF BLDG 745

Date/Time Started (MM-DD-YYYY)/(0000)	Date/Time Finished (MM-DD-YYYY)/(0000)
3/6/18 0700	

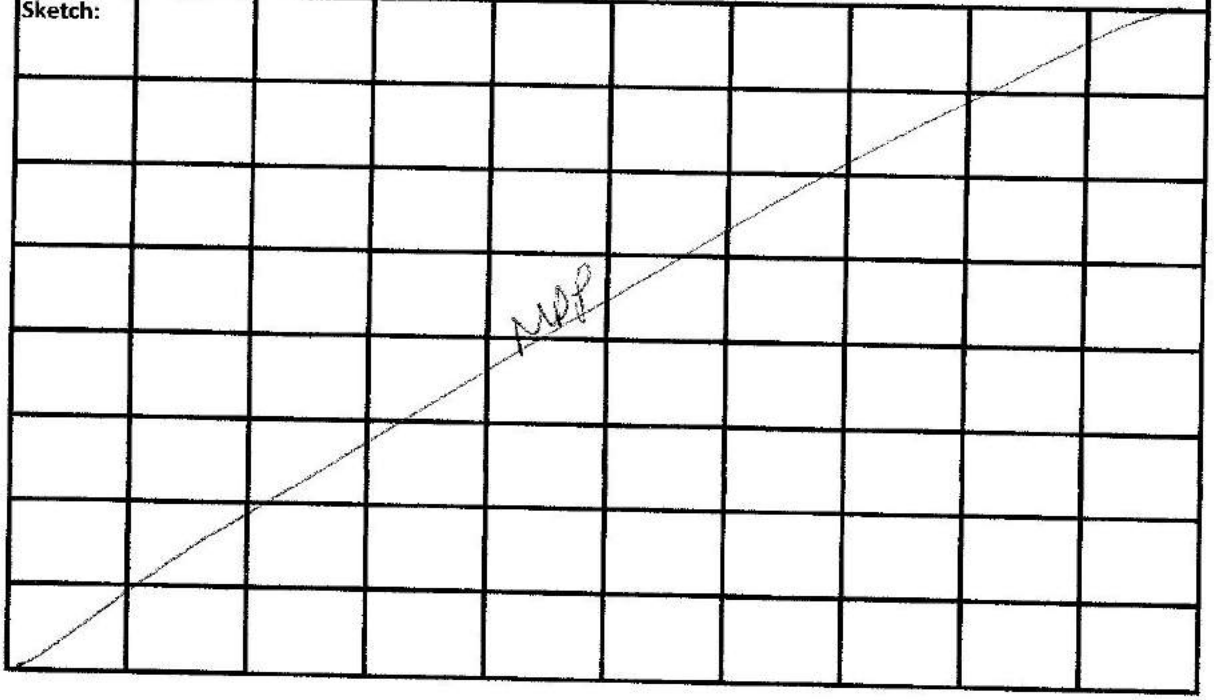
Overburden Thickness	Depth to Groundwater	Total Depth
	WET SOIL BELOW 13.7 FT MEASURED WL FROM PIEZ: DSL	21.5 FT BGS

Sample for PFOS/PFOA Analysis	Sample for PFOS/PFOA Analysis
Sample ID: BHA 03 -SB 01 -01	Sample ID: BHA 03 -SB 01 -02
Sample Interval: 0 to 2 ft (1.7-2.7FT)	Sample Interval: 13.0 to 13.7 ft
~~Sample ID: BHA ____ -SB ____ -03 (if required)~~ MK 3/6/18 Sample Interval: ____ to ____ ft	~~Sample ID: BHA ____ -SB ____ 04 (if required)~~ MK 3/6/18 Sample Interval: ____ to ____ ft
Inspector Name	**Inspector Signature**
Mike Klidzejs	MK

Monitoring Well ID:	Backfill Type	Date Backfilled (MM-DD-YYYY)
N/A	Hole	3/8/18
Latitude	**Longitude**	**Elevation**

Notes: TEMP PIEZOMETER INSTALLED.

Sketch:



MPP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA 03 SB 1	Page 2 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/6/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
0.5	0.0-0.04FT: ASPHALT			AIR ROTARY/ DRILLING DRILL TO 1.5FT THROUGH ASPHALT AND BASE GRAVEL
1	0.04-1.4FT: ROAD BASE GRAVEL AND SILT	BZ = 0.0ppm	BNA03-SB1-01 W OUP 1.7-2.7FT	
1.5	1.4-2.7FT:			SPLIT SPOON ~~1.5-3.5FT~~ 1.7-3.7FT REC: 1.3FT
2	SILTY CLAY, MED. STIFF SL TO MOD. PLASTIC, DARK YELLOWISH BROWN (10YR 4/4) V. SL. MOIST	SS = 0.0ppm		
2.5				DRILL TO 12FT
3				
3.5				
4				
4.5				
5		BZ = 0.0ppm		
5.5				
6				
6.5				
7				
7.5				
8		BZ = 0.0ppm		
8.5				
9				
9.5				
10				

MPK 2

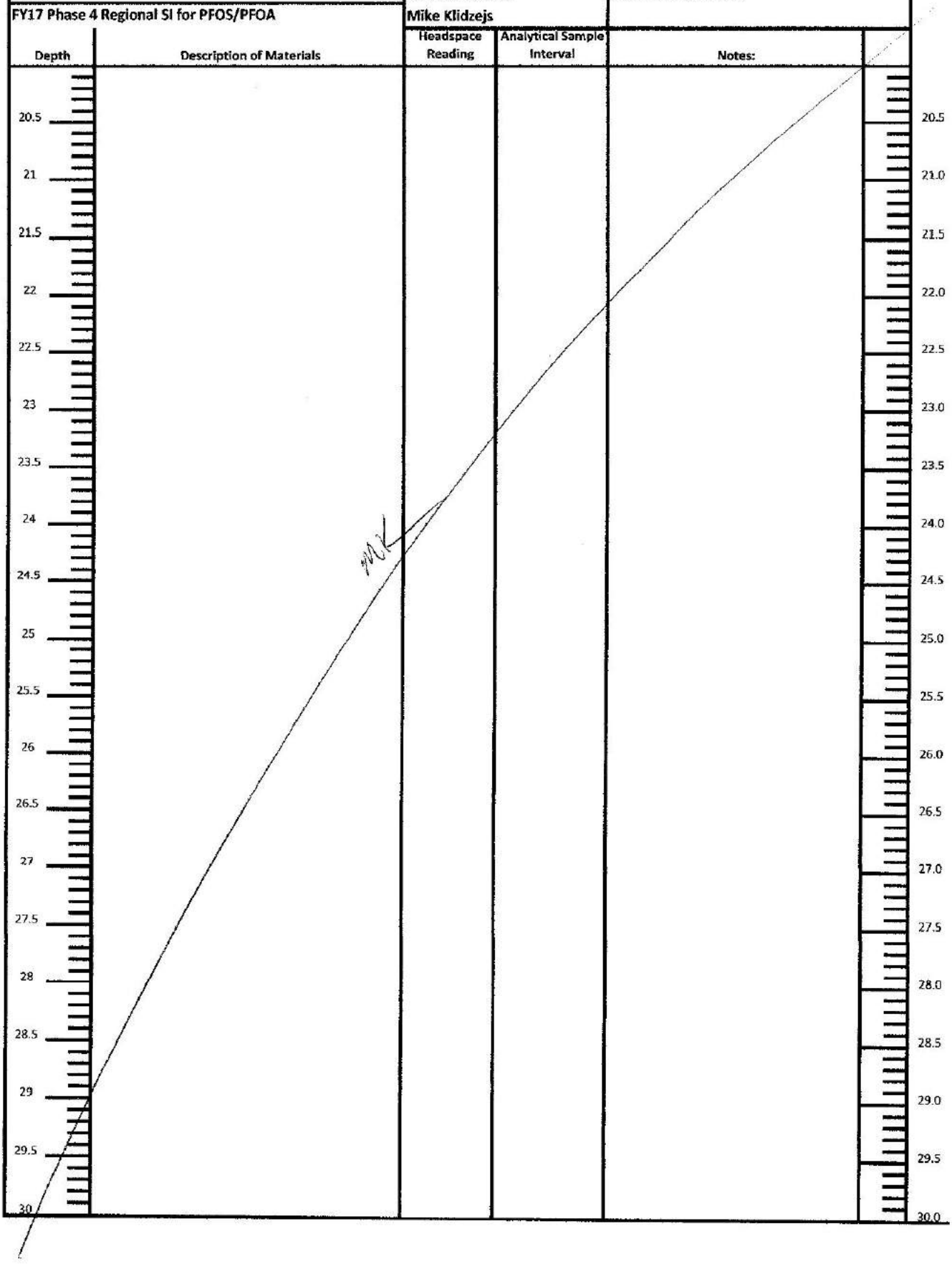
Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA03-SB1	Page 3 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/6/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
10.5				
11.0		BZ = 0.0 PPM		
11.5				
12.0	12-14FT:			SPLIT SPOON 12-14 FT BGS
12.5	SILTY, SANDY CLAY (CL) W/ TRACE GRAVEL FRAGMENTS. MED. STIFF, V. SL. PLASTIC PRDOM. YELLOWISH BROWN (10YR 5/4) W/ MINOR MOTTLING OF LIGHTER VALUES. SL. MOIST. WET BELOW 13.7 FT	SS = 0.0 PPM	BNA03-SB1-02	REC: 2.0 FT
13.0			13.0-13.7FT	
13.5				DRILLER REPORTS
14.0				GOOD WATER BY 17 FT BGS
14.5				
15.0				
15.5				
16.0				ADVANCE HOLE TO 20FT BGS
16.5				MEASURED TD = 21.5 FT BGS
17.0				TEMP. PIEZOMETER SET IN WELL
17.5				
18.0				
18.5				
19.0				
19.5				
20.0				

MP

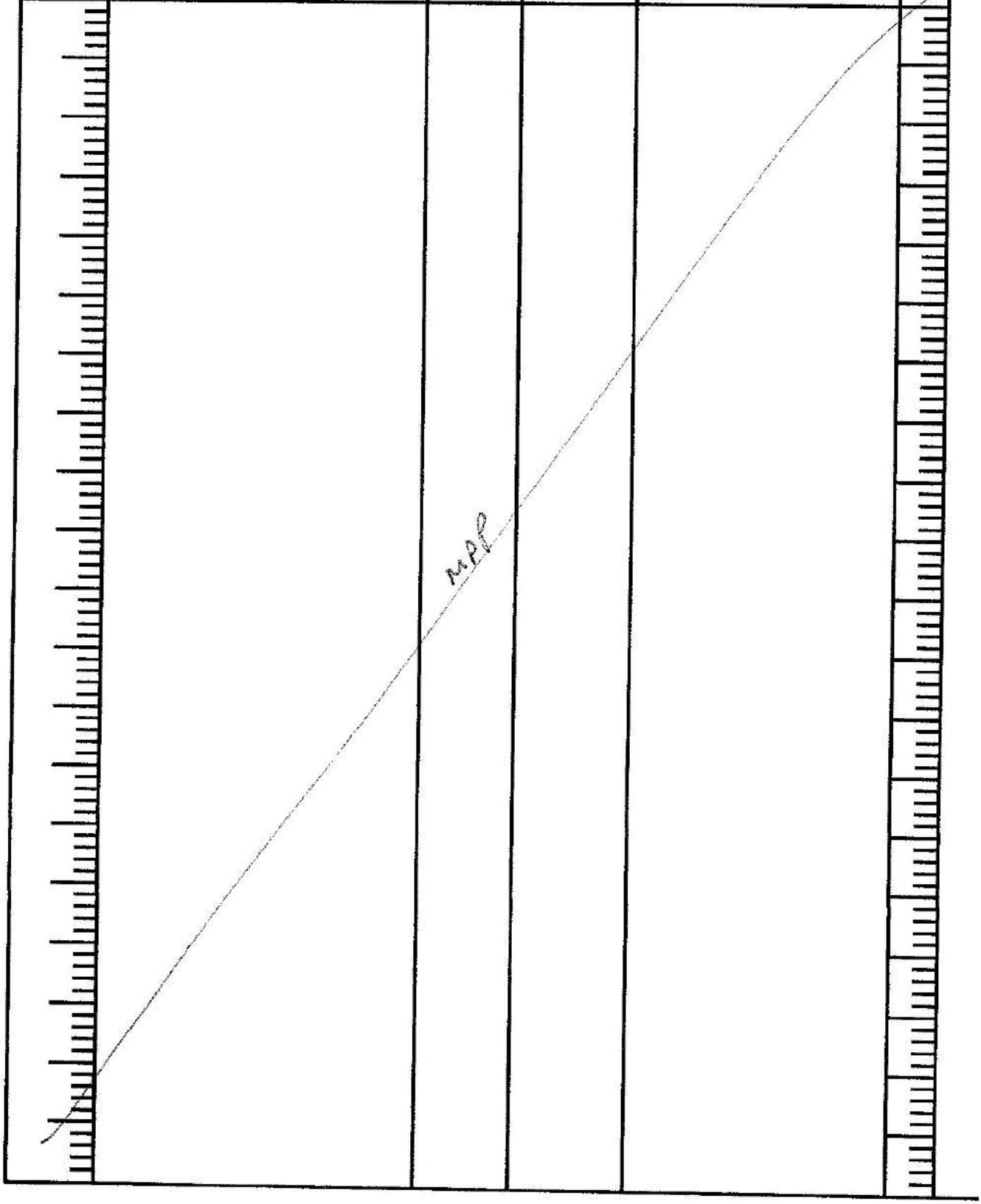
Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA____-SB_____	Page __4___ of __5___
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
20.5 – 30				



Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA___-SB___	Page 5 of 5
Project	Inspector Name	Date (MM-DD-YYYY)
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:



Client/Installation	Oversight Contractor	Borehole Number
ANG/Nashville ANGB	Leidos	BNA03-SB2
Project	**Driller**	**Page**
FY17 Phase 4 Regional SI for PFOS/PFOA	M&W Drilling	Page 1 of 3

Sizes and Type of Drilling and Sampling Equipment	Borehole Location Description
Geoprobe — Schram 7450 LL	ASPHALT COVERED LOT

Date/Time Started (MM-DD-YYYY)/(0000)	Date/Time Finished (MM-DD-YYYY)/(0000)
3/6/18 0845	3/6/18

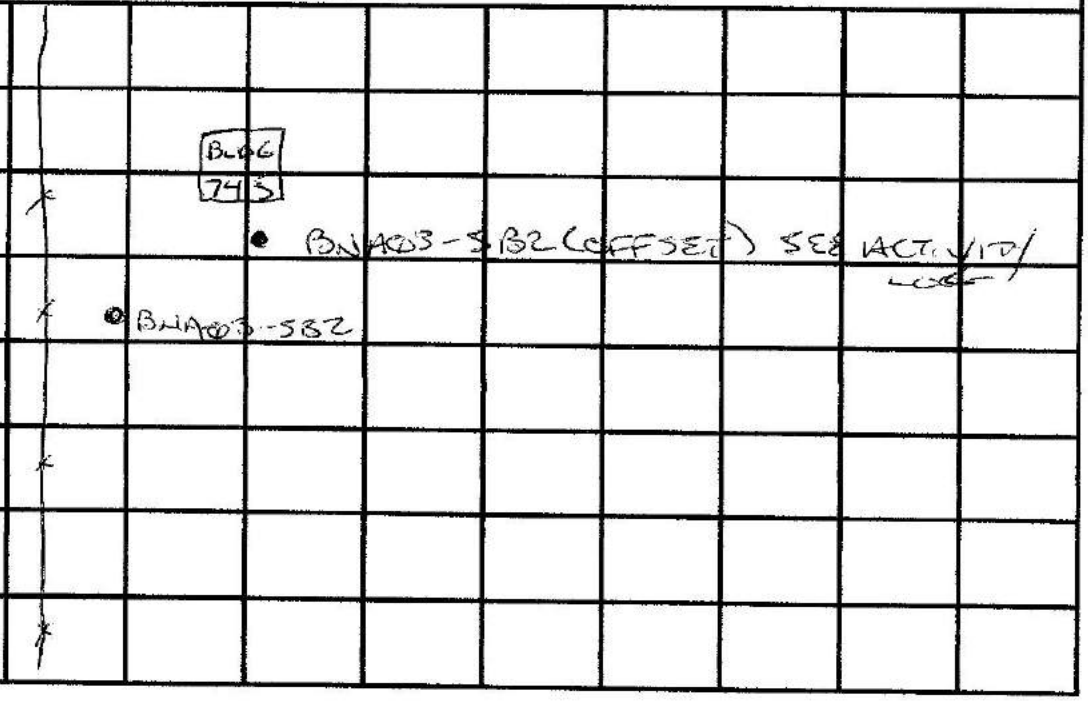
Overburden Thickness	Depth to Groundwater	Total Depth
22.9 FT	WET SOIL BELOW 18 FT 10.55 FT FROM PIEZ	22.9 FT BGS

Sample for PFOS/PFOA Analysis	Sample for PFOS/PFOA Analysis
Sample ID: BNA03-SB2-01	Sample ID: BNA03-SB2-02
Sample Interval: 0 to 2 ft (1.8-3.1 FT)	Sample Interval: 12.0 to 12.5 ft
Sample ID: BNA____-SB____-03 (if required) MK 3/6/18	Sample ID: BNA____-SB____04 (if required) MK 3/6/18
Sample Interval: ____ to ____ ft	Sample Interval: ____ to ____ ft
Inspector Name Mike Klidzejs	Inspector Signature

Monitoring Well ID:	Backfill Type	Date Backfilled (MM-DD-YYYY)
N/A		3/8/18
Latitude	**Longitude**	**Elevation**

Notes: SEE ACTIVITY LOG. ORIGINAL BORING FLOWED TO SURFACE (ARTESIAN). HOLE PLUGGED ON 3/6/18. PIEZOMETER SET IN OFFSET AND PLUGGED ON 3/8/18.

Sketch:



MPP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA03-SB 2	Page 2 of 3
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/6/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
	0.0-0.4FT			AIR ROTARY DRILLING
0.5	ASPHALT	BZ= 0.0ppm		DRILL TO 1.5FT TO CLEAR ASPHALT AND GRAVEL BASE
1	0.4-1.8FT: ROAD BASE GRAVEL + SILT			
1.5			BNA03-SB2-01 W/ DUP 1.8-3.1FT	
2	1.8-3.6FT:	SS= 0.0ppm		SPLT SPOON 1.8-3.6FT REC: 2.0FT
2.5	SILTY SAND (CL) TRACE CLAY, MED STIFF, SL TO MOD PLASTIC, LIGHT OLIVE BROWN (2.5Y 5/3) MOIST			OUTSIDE OF SPOON RETURNED WET
3				
3.5				
4				
4.5				DRILL TO 6FT
5				
5.5				
6	6.0-8.0FT:			SPLIT SPOON 6-8FT
6.5	SILTY CLAY, AS ABOVE NO SAND; DARK YELLOWISH BROWN (10YR 4/6) V. MOIST			
7		SS= 0.0ppm		OUTSIDE OF SPOON RECOVERED WET
7.5				DRILL TO 12FT
8				
8.5				
9				
9.5		BZ= 0.0ppm		
10				

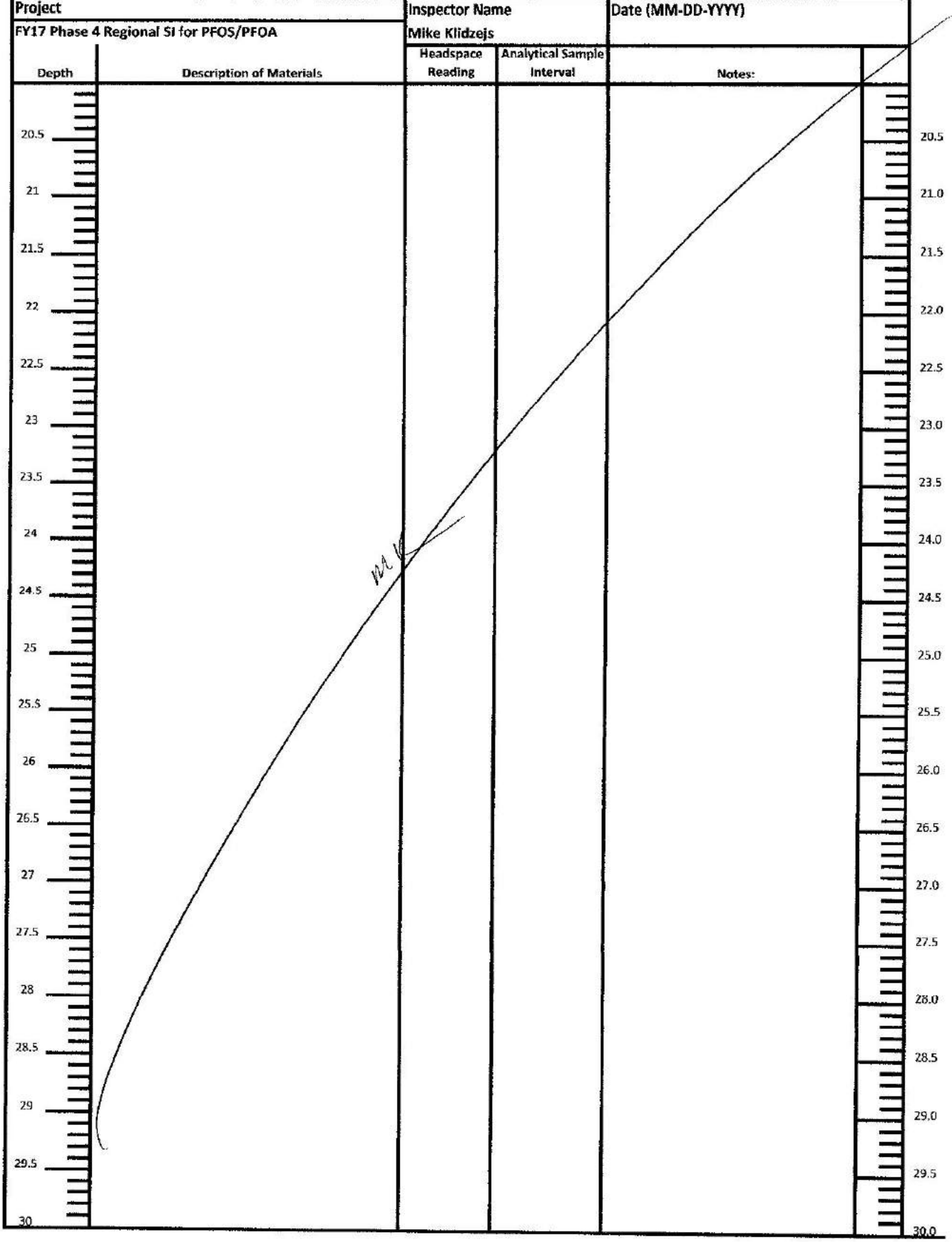
MP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA003-SB-2	Page 3 of 3
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/6/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
10.5				
11.0				
11.5				
12.0	12.0-14.0FT		BHAD3-SB2-02-	
12.5	SILTY, SANDY CLAY(C) TRACE FINE GRAVEL SOFT, YELLOWISH BROWN (10YR 5/4) W/ SOME BLACK OXIDATION. MOIST TO 13.1FT WET BELOW 13.1FT		12.0-12.5FT	SPLIT SPOON 12-14FT
13.0		SS= 0.0PPM		SPLIT SPOON RETURNED DRY
13.5				DRILL BEYOND 14FT TO FIND WATER OR TOR
14.0				
14.5				
15.0				
15.5				
16.0				
16.5				
17.0		BZ= 0.0PPM		
17.5				SEE ACTIVITY LOG ORIGINAL PIEZOMETER SET IN BORING FLOWED (ARTESIAN) HOLE PLUGGED AND NEW PIEZOMETER SET IN OFFSET
18.0				
18.5				
19.0				
19.5				DRILLER REPORTS TOR AT ~21 FT BGS
20.0				TD = 22.9FT

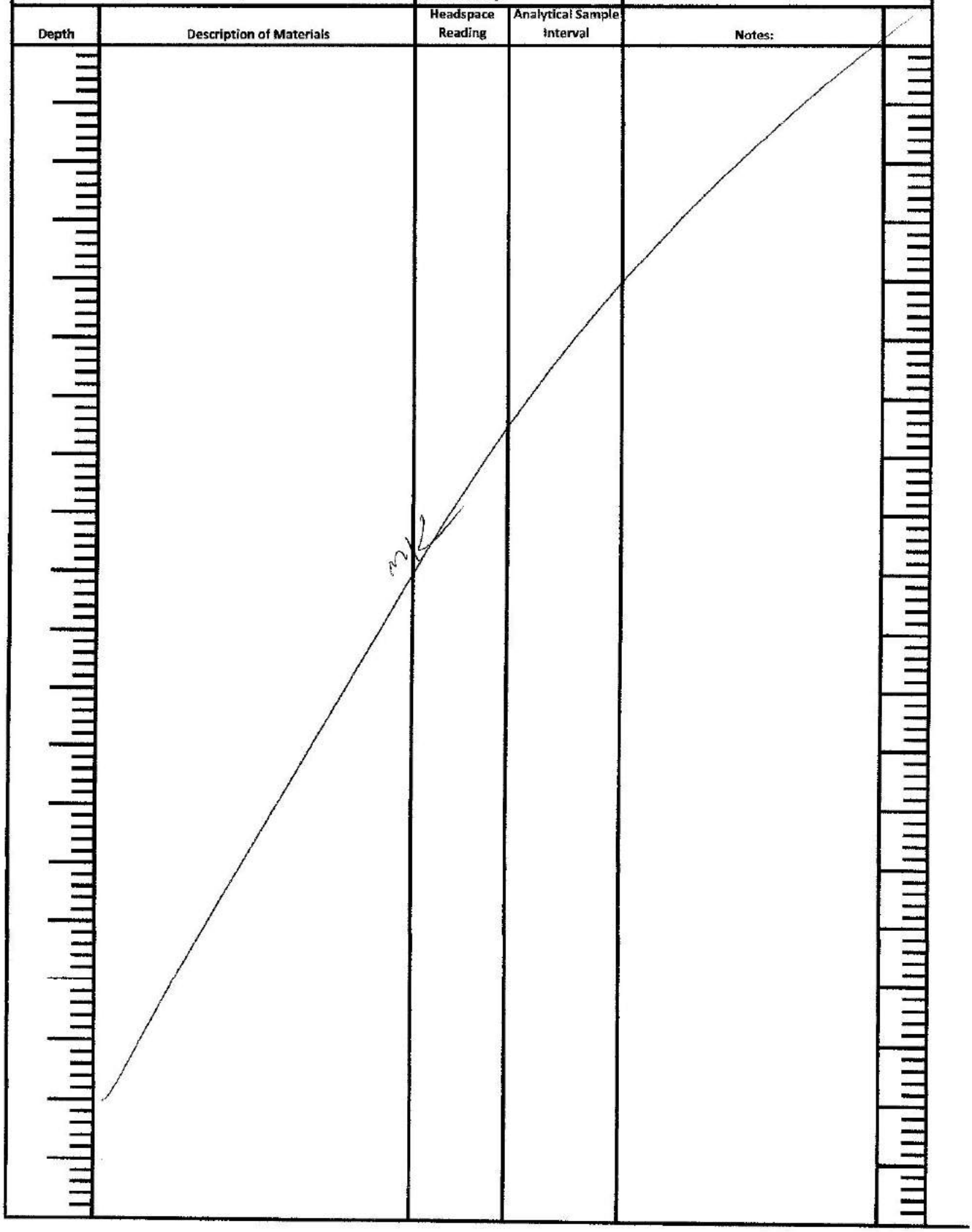
Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA____-SB_____	Page __4__ of __5__
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
20.5 – 30				



Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA____-SB____	Page __5__ of __5__
Project	Inspector Name	Date (MM-DD-YYYY)
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:



Client/Installation	Oversight Contractor	Borehole Number
ANG/Nashville ANGB	Leidos	BNA 04-SB 1
Project	**Driller**	**Page**
FY17 Phase 4 Regional SI for PFOS/PFOA	M&W Drilling	Page 1 of 3

Sizes and Type of Drilling and Sampling Equipment	Borehole Location Description
Geoprobe —	ASPHALT LOT
Schram THSOIW	

Date/Time Started (MM-DD-YYYY)/(0000)	Date/Time Finished (MM-DD-YYYY)/(0000)
3/6/18	

Overburden Thickness	Depth to Groundwater	Total Depth
~15 FT	WET SOIL BELOW 14.4 FT	15 FT BGS

Sample for PFOS/PFOA Analysis	Sample for PFOS/PFOA Analysis
Sample ID: BNA 04-SB 1 -01	Sample ID: BNA 04-SB 1 -02
Sample Interval: 0 to 2 ft (1.8-2.5FT)	Sample Interval: 13.8 to 14.4 ft
~~Sample ID: BNA -SB -03 (if required)~~ MLK 3/6/18	~~Sample ID: BNA -SB 04 (if required)~~ MLK 3/6/18
Sample Interval: ____ to ____ ft	Sample Interval: ____ to ____ ft

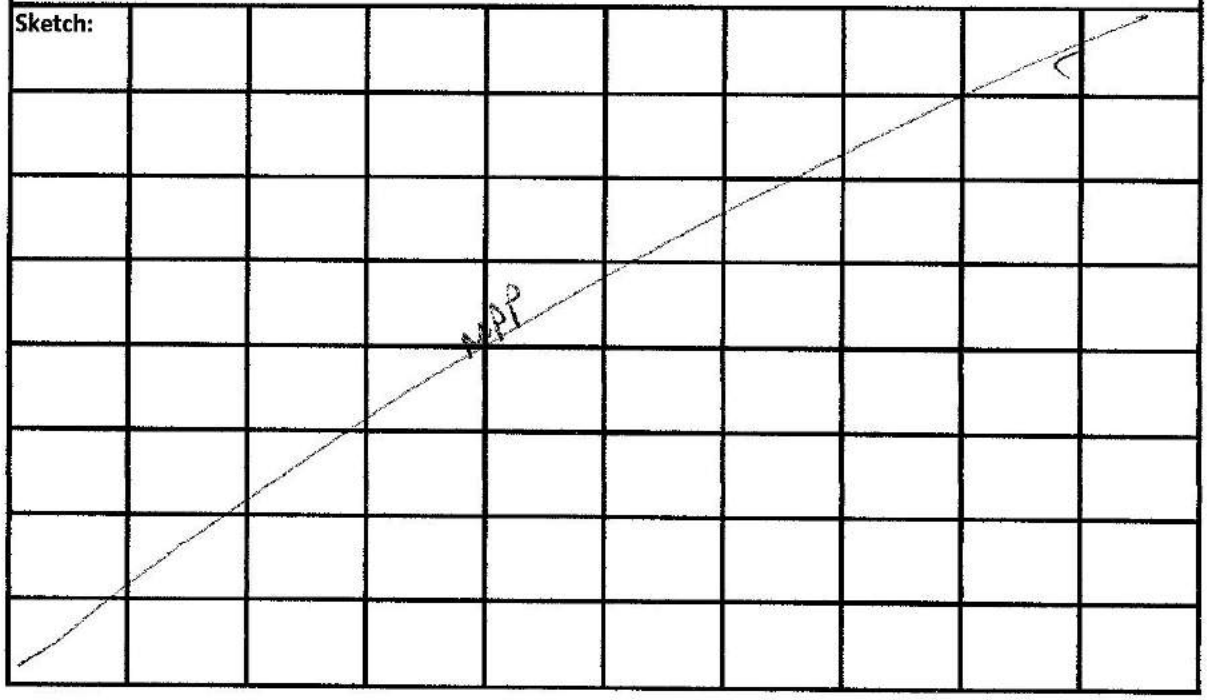
Inspector Name	Inspector Signature
Mike Klidzejs	

Monitoring Well ID:	Backfill Type	Date Backfilled (MM-DD-YYYY)
	CEMENT/BENTONITE GROUT CONCRETE CAP	3/6/18

Latitude	Longitude	Elevation

Notes:

Sketch:



Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA 04-SB 1	Page 2 of 3
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/6/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
0.5	0.0 – 1.8 FT: ASPHALT + GRAVEL BASE			AIR ROTARY/ DRILLING DRILL TO CLEAR ASPHALT AND GRAVEL BASE
1				
1.5		SS= 0.0ppm	BNA04-SB1-01 1.8-2.5 FT	
2	1.8 – 3.6FT: SILTY CLAY (CL) TRACE SAND, TRACE GRAVEL, MED STIFF SL PLASTIC DARK YELLOWISH BROWN (10YR 4/6) SL. MOIST			SPLIT SPOON 1.6 – 3.6 FT
2.5				
3		BZ= 0.0ppm		
3.5				DRILL TO 6FT
4				
4.5				
5				
5.5				
6	6.0 – 8.0FT: SILTY CLAY (CL) MED STIFF, LOW PLASTICITY, DARK YELLOWISH BROWN (10YR 4/6) SOME BLEBS OF BLACK V. SL. MOIST	SS= 0.0ppm BZ= 0.0 ppm		SPLIT SPOON 6 – 8FT REC: 2.0FT
6.5				
7				
7.5				DRILL TO 11FT
8				
8.5				
9				
9.5				
10				

MPP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA04-SB1	Page 3 of 3
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/6/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
11.0	11.0 – 15FT SAME AS 6-8FT MOIST TO 14.4FT WET BELOW	SS = 0.0ppm BZ = 0.0ppm	BNA04-SB1-02 13.8 – 14.4FT	SPLIT SPOON 11 – 13FT REC: 2.0FT DRILL TO 13FT SPLIT SPOON 13 – 15FT REC: 2.0FT TD = 15FT

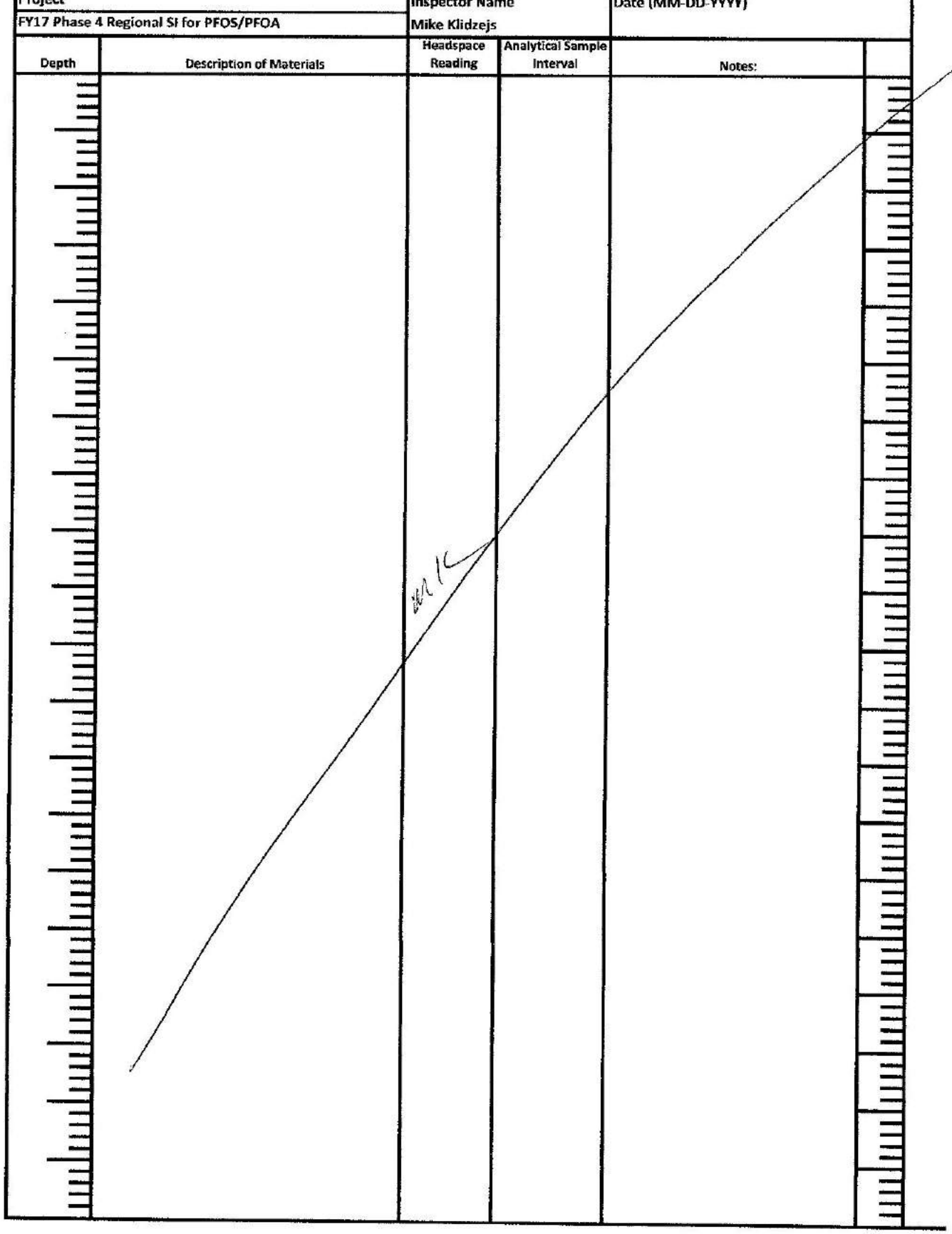
MPP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA 04-SB 1	Page 4 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/6/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
20.5 – 30	MK			

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA____-SB_____	Page __5__ of __5__
Project	Inspector Name	Date (MM-DD-YYYY)
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:



Client/Installation	Oversight Contractor	Borehole Number
ANG/Nashville ANGB	Leidos	BNA05-SB1
Project	**Driller**	**Page**
FY17 Phase 4 Regional SI for PFOS/PFOA	M&W Drilling	Page 1 of 3

Sizes and Type of Drilling and Sampling Equipment	Borehole Location Description
Geoprobe — Schram TH50W	CENTER OF ASPHALT ROAD WAY LEADING TO BRIDGE

Date/Time Started (MM-DD-YYYY)/(0000)	Date/Time Finished (MM-DD-YYYY)/(0000)
3/7/18 0813	3/7/18 0840

Overburden Thickness	Depth to Groundwater	Total Depth
8.0 FT	4.83 FT PRIOR TO DEVELOPMENT	8.0 FT

Sample for PFOS/PFOA Analysis	Sample for PFOS/PFOA Analysis
Sample ID: BNA05-SB1-01	Sample ID: BNA05-SB1-02
Sample Interval: 0 to 2 ft (1.6-2.6 FT BGS)	Sample Interval: 5.1 to 5.6 ft
Sample ID: BNA-SB-03 (if required) MK 3/7/18	Sample ID: BNA-SB-04 (if required) MK 3/7/18
Sample Interval: ____ to ____ ft	Sample Interval: ____ to ____ ft

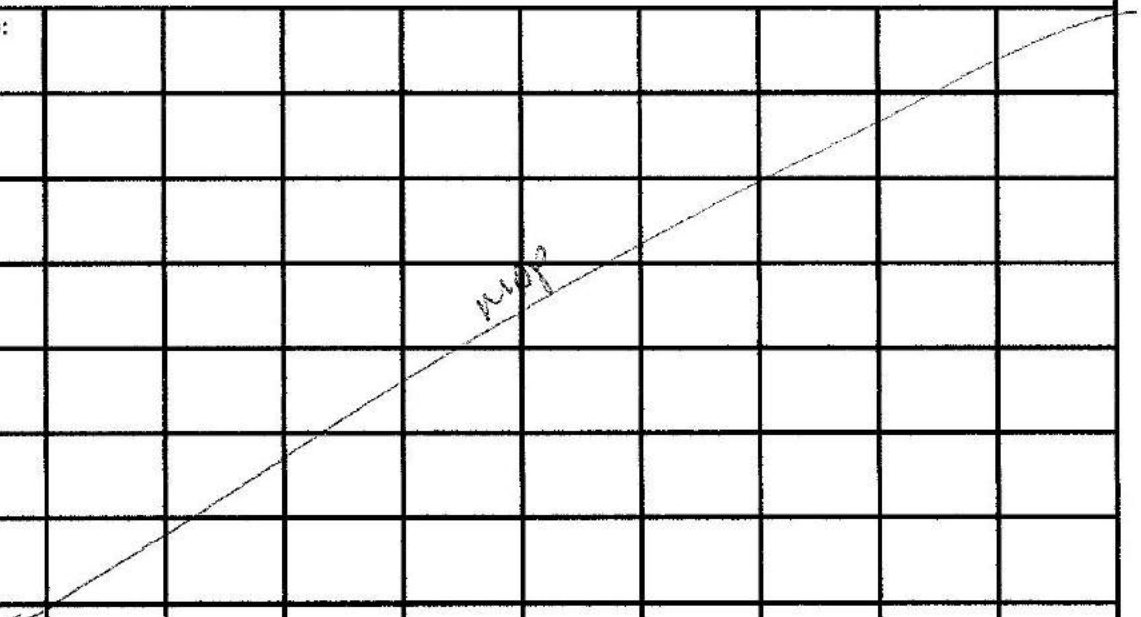
Inspector Name	Inspector Signature
Mike Klidzejs	

Monitoring Well ID:	Backfill Type	Date Backfilled (MM-DD-YYYY)
MW-BNA05-01	N/A	N/A

Latitude	Longitude	Elevation

Notes:

Sketch:



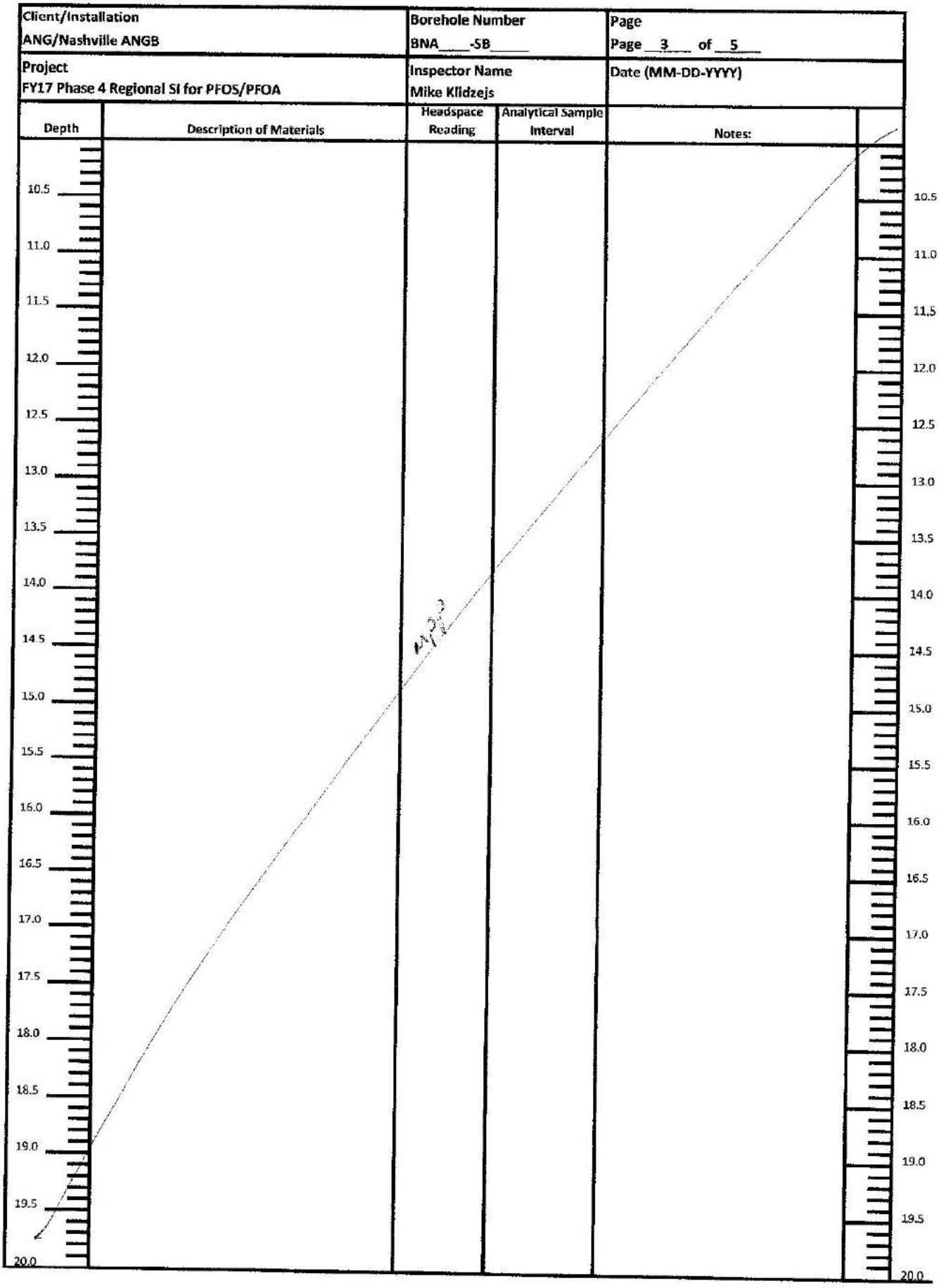
Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA05-SB1	Page 2 of 3
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	3/7/18

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
0.5	0.0 - 1.6 FT: ASPHALT AND ROAD-BASE GRAVEL			AIR ROTARY DRILLING DRILL TO 1.6 FT THROUGH ASPHALT AND ROAD-BASE GRAVEL
1	1.6 - 2.0 FT: SILTY CLAY (CL) w/ COARSE GRAVEL STIFT, V. SL. PLASTIC DARK YELLOWISH BROWN (10YR 4/4) V. SL. MOIST.			
1.5			BHA05-SB1-01	SPLIT SPOON 1.3 - 3.3 FT REC: 1.5 FT
2		SS = 0.0 ppm	1.6 - 2.6 FT	
2.5	2.0 - 2.4 FT: CLAYEY SILT (SC) SOME ORGANIC MATERIAL TRACE GRAVEL NON-PLASTIC, LOOSE, BLACK, V. SL. MOIST	BZ = 0.0 ppm		
3				
3.5				
4	2.4 - 2.8 FT: SILTY CLAY (CL) STIFT, V. LOW PLASTICITY, DARK GRAYISH BROWN (2.5Y 4/2) DRY			
4.5				
5				DRILL TO 5 FT SPLIT SPOON 5-7 FT
5.5	2.8 - 3.3 FT: LOSS	SS = 0.0 ppm	BHA05-SB1-02 5.1 - 5.4 FT	
6				
6.5	5.0 - 7.0 FT: SILTY CLAY (CL) SOFT, LOW PLASTICITY DARK GRAYISH BROWN (2.5Y 4/2) V. MOIST TO 5.7 FT WET BELOW 5.7 FT			WET CORE AT 5.7 FT
7				
7.5				
8				TOR = 8.0 FT
8.5				TD = 8.0 FT
9				
9.5				
10				

MDP

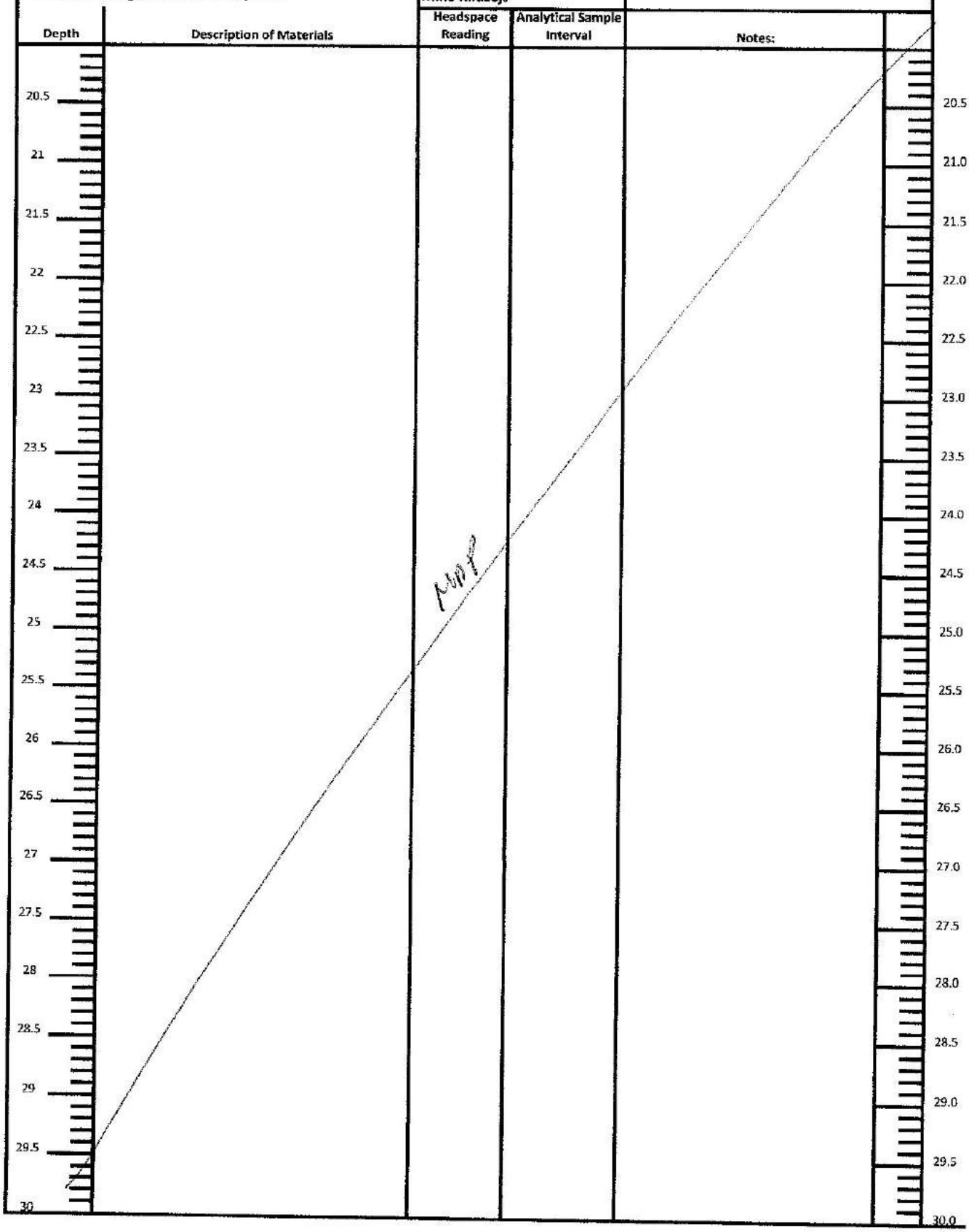
Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA____-SB_____	Page 3 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
10.5 – 20.0				



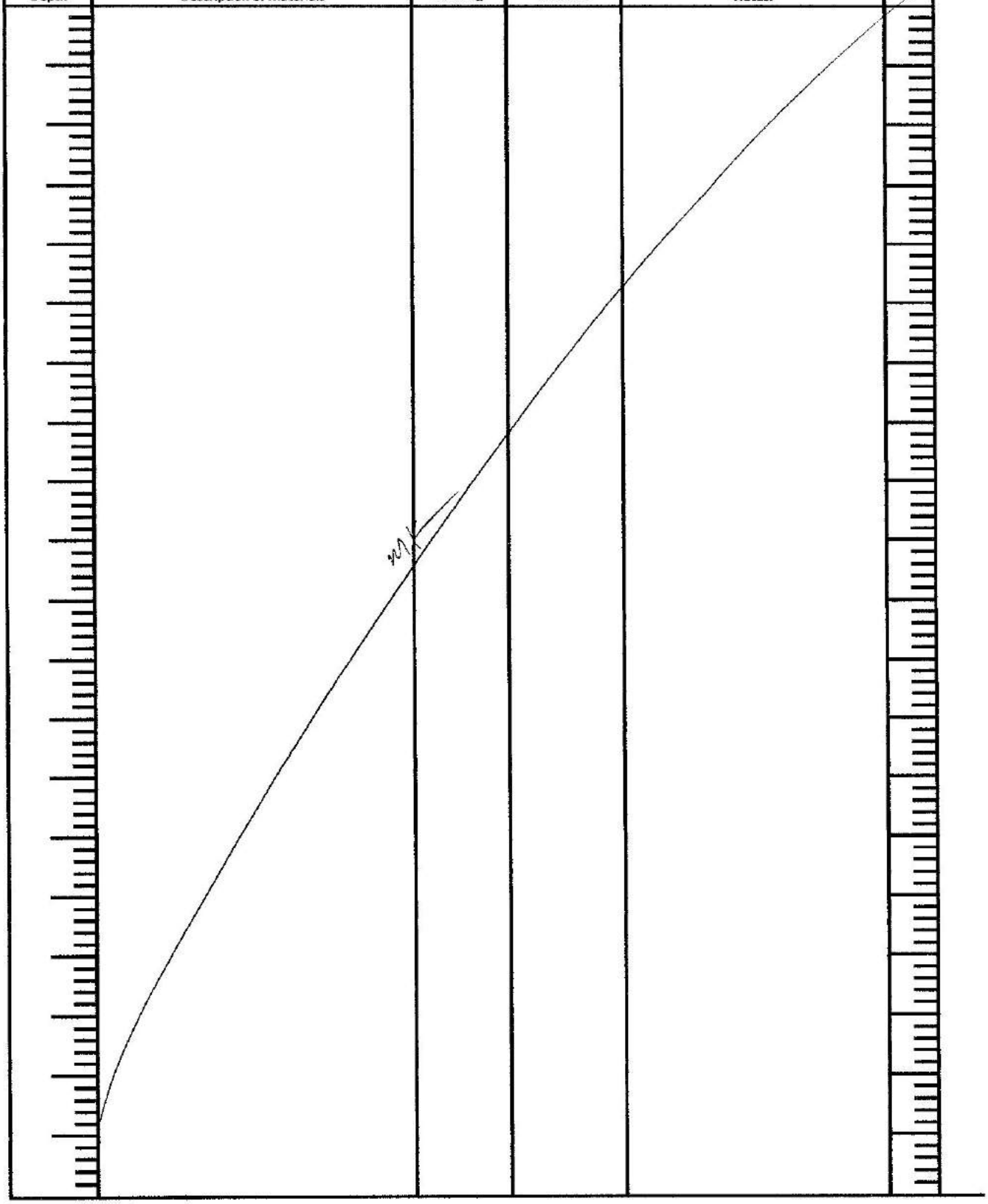
Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA____-SB____	Page 4 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
20.5 – 30		MP?		



Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA___-SB___	Page 5 of 5
Project	Inspector Name	Date (MM-DD-YYYY)
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:



Client/Installation	Oversight Contractor	Borehole Number
ANG/Nashville ANGB	Leidos	~~BNA~~ ~~SB~~ MW1-BNA01-01 (PLANNED)
Project	**Driller**	**Page**
FY17 Phase 4 Regional SI for PFOS/PFOA	M&W Drilling	Page 1 of 5

Sizes and Type of Drilling and Sampling Equipment	Borehole Location Description
Geoprobe ← Schram T450W	ASPHALT LOT SE OF BLDG 814

Date/Time Started (MM-DD-YYYY)/(0000)	Date/Time Finished (MM-DD-YYYY)/(0000)
3/7/18 1030	

Overburden Thickness	Depth to Groundwater	Total Depth
10.1 FT	NOT ENCOUNTERED	36.0 FT BGS

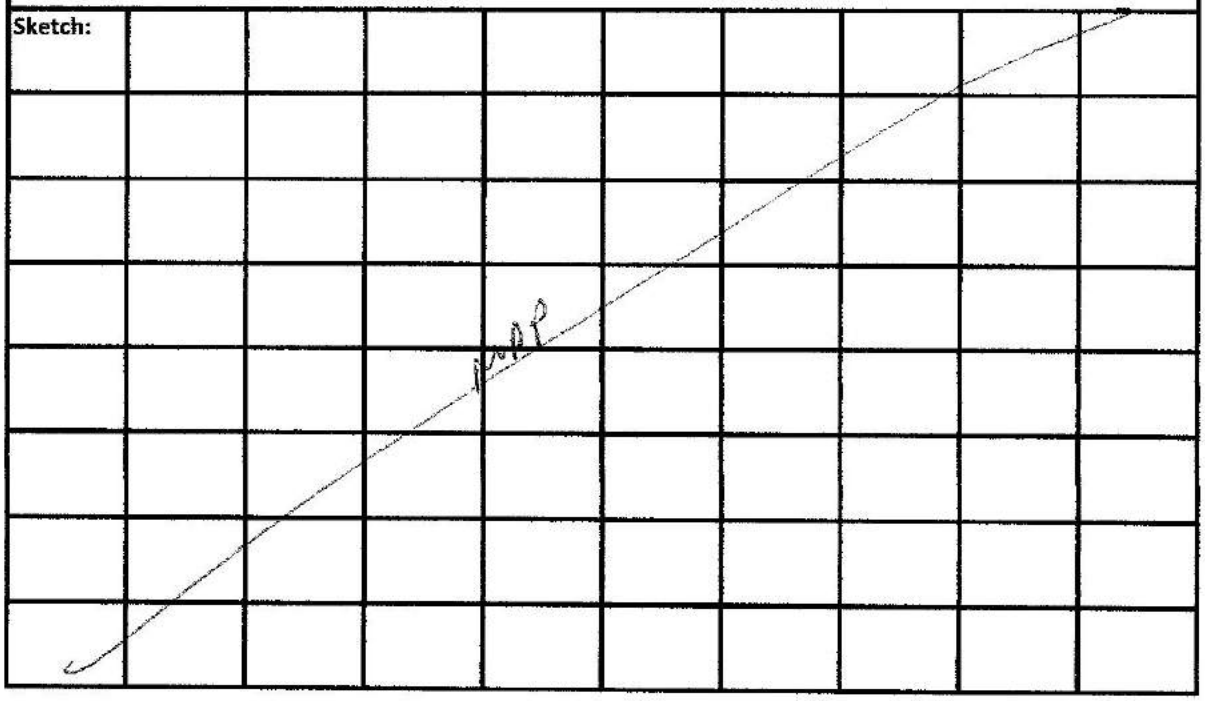
Sample for PFOS/PFOA Analysis	Sample for PFOS/PFOA Analysis
~~Sample ID: BNA -SB -01~~ MK 3/7/18 Sample Interval: 0 to 2 ft	~~Sample ID: BNA -SB -02~~ MK 3/7/18 Sample Interval: ___ to ___ ft
~~Sample ID: BNA -SB -03 (if required)~~ MK 3/7/18 Sample Interval: ___ to ___ ft	~~Sample ID: BNA -SB 04 (if required)~~ MK 3/7/18 Sample Interval: ___ to ___ ft
Inspector Name Mike Klidzejs	Inspector Signature

Monitoring Well ID:	Backfill Type	Date Backfilled (MM-DD-YYYY)
~~MW-BNA01-01~~ MK 3/8/18	PORTLAND CEMENT/BENTONITE GROUT MK 3/8/18	~~N/A~~ 3/8/18

Latitude	Longitude	Elevation

Notes:

Sketch:



Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA 001-B001-0 -SB	Page 2 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
0.5	0.0-0.8FT: ASPHALT AND ROAD BASE GRAVEL	BZ= 0.0ppm		AIR ROTARY DRILLING, SPLIT SPOONS DRIVEN FOR LITHOLOGY ONLY
1	SILTY CLAY (CL)			DRILL TO 3FT
1.5				
2				
2.5				
3	3.0-5.0FT:			SPLIT SPOON 3-5FT
3.5	SILTY CLAY (CL) TRACE ROCK MED STIFF, LOW PLAC PLASTICITY, YELLOWISH BROWN (10YR5/6) MOIST	SS= 0.0ppm		REC: 3.0FT
4				
4.5				
5				
5.5				DRILL TO 8FT
6		BZ= 0.0ppm		
6.5				
7				
7.5				
8	8.0-8.4FT: SAME AS 3-5FT			SPLIT SPOON 8-10FT
8.5	8.4-9.8FT: ~~CHANGES FROM ABOVE TO~~ SILTY CLAY (CL) LESS SILT THAN ABOVE, MED. STIFF MOD. PLASTIC, DARK YELLOWISH BROWN (10YR4/4) V. SL. MOIST	SS=		REC: 1.8FT
9				
9.5	9.8-10.0FT: LOSS			
10				

MPP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	BNA MW-BNA01-01 SB	Page 3 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
10.5				DRILLER REPORTS TOP AT ~10 FT BGS
11.0				~~DRILL TO 13 FT~~
11.5				CHANGE FROM TRI-CONE TO AIR HAMMER
12.0				
12.5		BZ=0.0 ppm		
13.0	10.1-36.0 FT BGS			
13.5	LIMESTONE			~~SPLIT SPOON~~ 13-15 FT
14.0				ROCK LOGGED FROM AIR HAMMER CUTTINGS
14.5				
15.0				
15.5				DRILLER REPORTS NUMEROUS FRACTURES FROM 10-19 FT
16.0				
16.5				
17.0				
17.5		BZ= 0.0 ppm		
18.0				
18.5				11:40 DRILL TO 19 FT BGS
19.0				STOP DRILLING TO DETERMINE IF HOLE MAKES WATER
19.5				12:10 HOLE IS DRY
20.0				

MPP

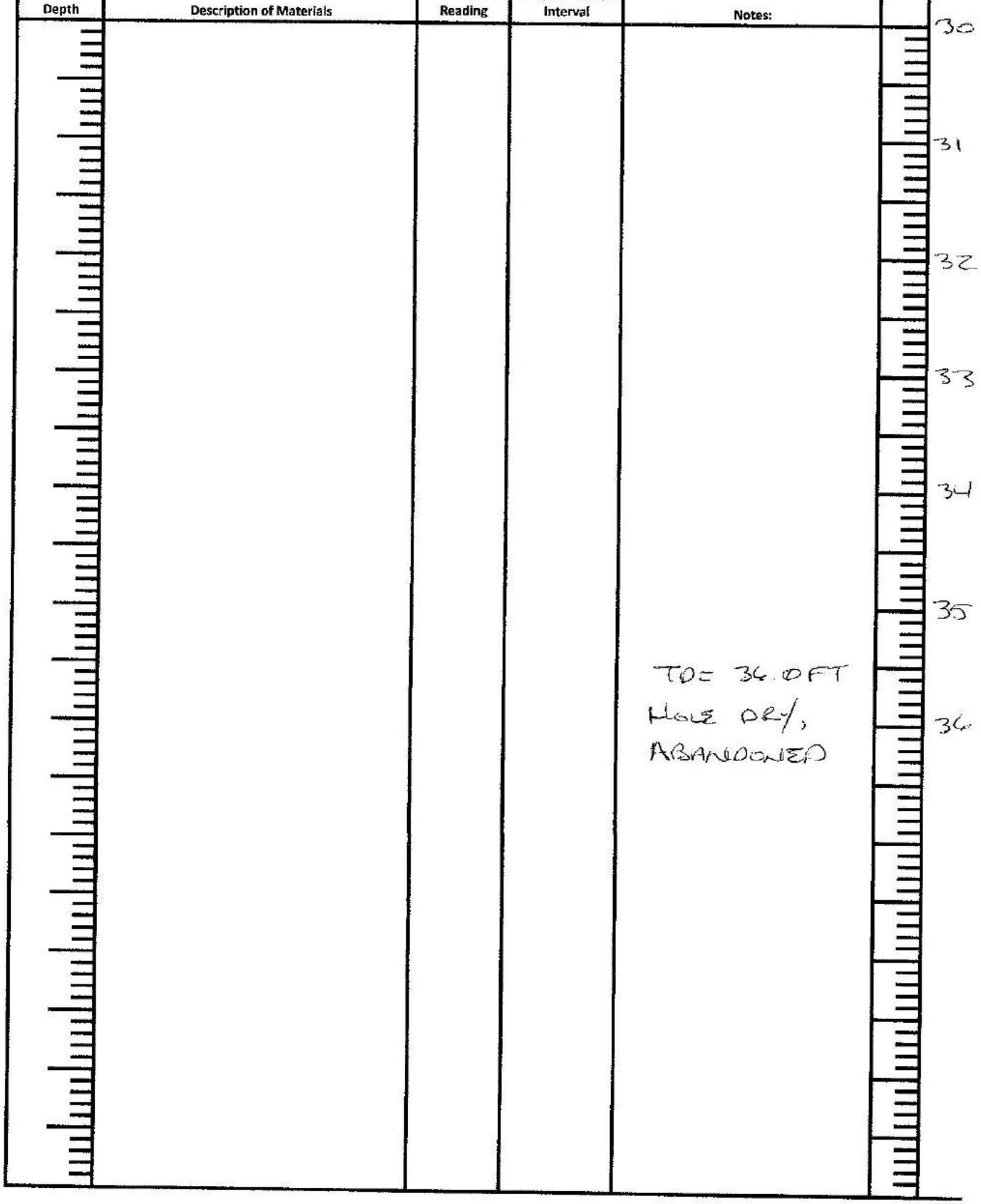
Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	MW-BNA-01 BNA ___-SB___	Page 4 of 5
Project	**Inspector Name**	**Date (MM-DD-YYYY)**
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
20.5				CONTINUE DRILLING (AT 12:17) DRILLER INJECTING WATER FOR DUST SUPRESSION
21				
21.5				
22				
22.5		BZ= 0 ppm		
23				
23.5				
24	LIMESTONE			
24.5				
25				
25.5				
26				
26.5				
27				
27.5				
28		BZ= 0. ppm		
28.5				
29				
29.5				
30				

MPP

Client/Installation	Borehole Number	Page
ANG/Nashville ANGB	MW-BNA01-01 BNA ~~SB~~	Page 5 of 5
Project	Inspector Name	Date (MM-DD-YYYY)
FY17 Phase 4 Regional SI for PFOS/PFOA	Mike Klidzejs	

Depth	Description of Materials	Headspace Reading	Analytical Sample Interval	Notes:
				TD= 36.0 FT HOLE DRY, ABANDONED

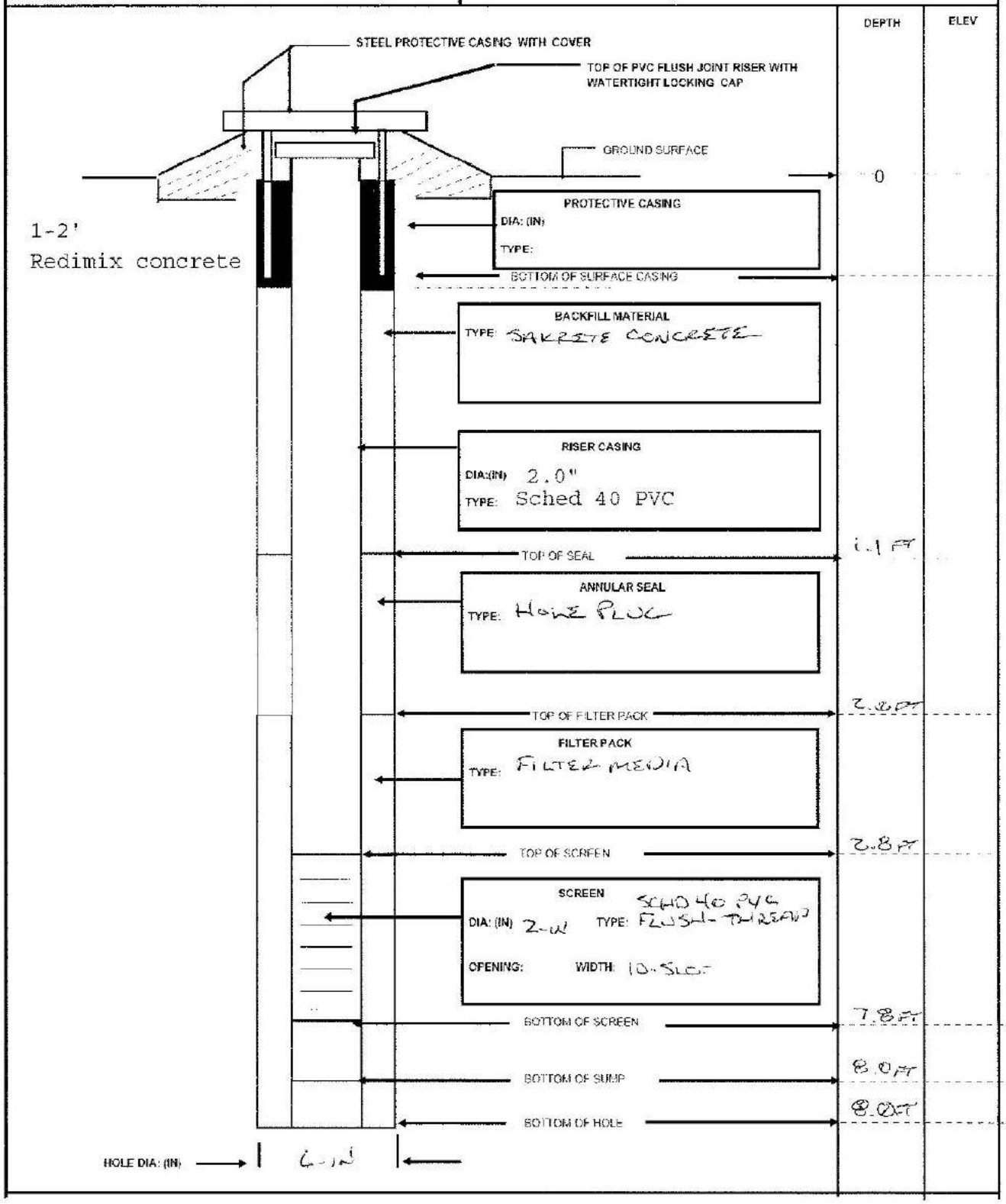


MDP

MONITORING WELL

PROJECT NAME: PHASE IV PFOS/PFOA SI - NASHVILLE DELIVERY ORDER NO:

WELL NUMBER: MWBNA05-01	BEGIN: 3/7/18	END: 3/7/18
COORDINATES: N: E:	REFERENCE POINT:	ELEVATION:

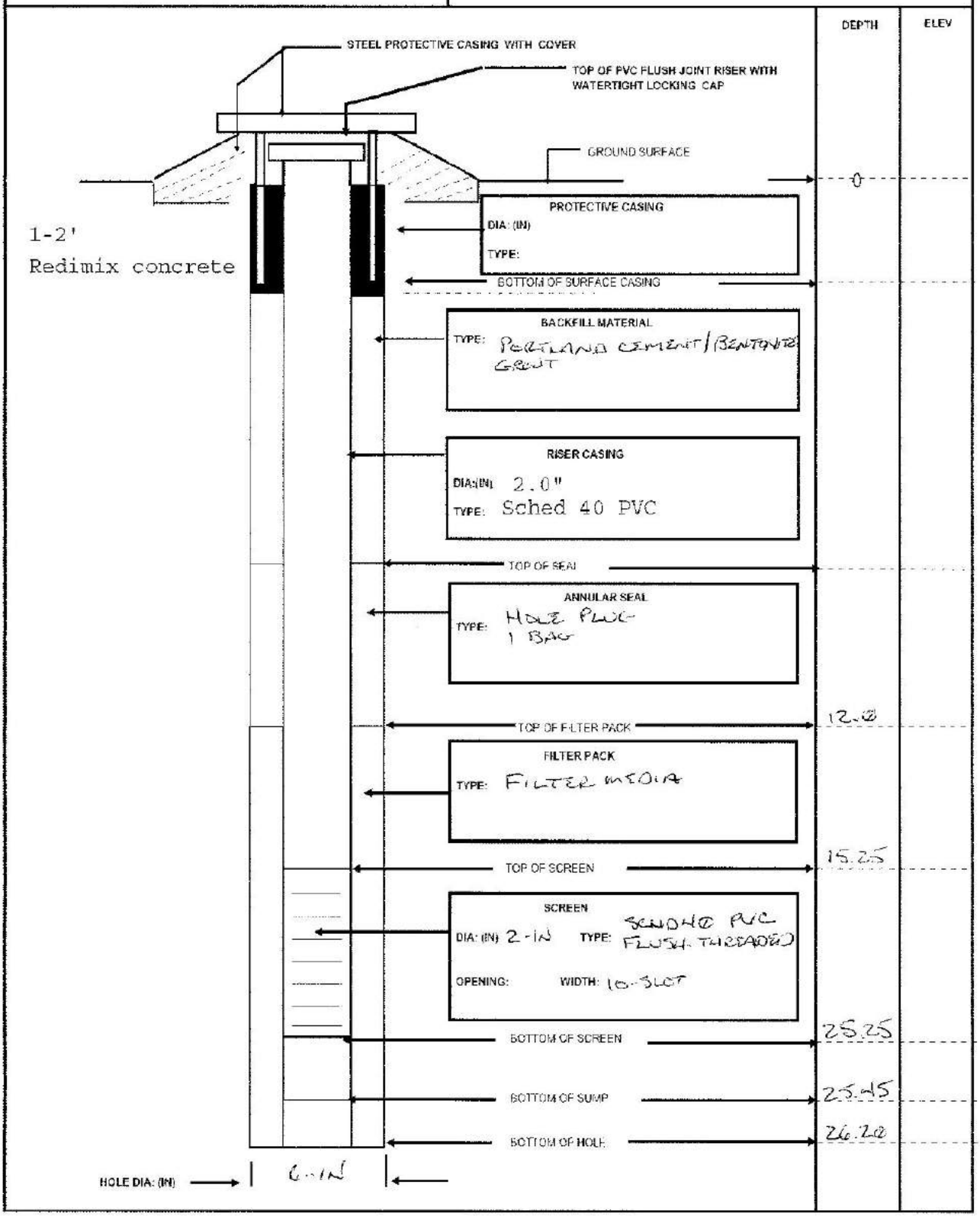


MPP

MONITORING WELL

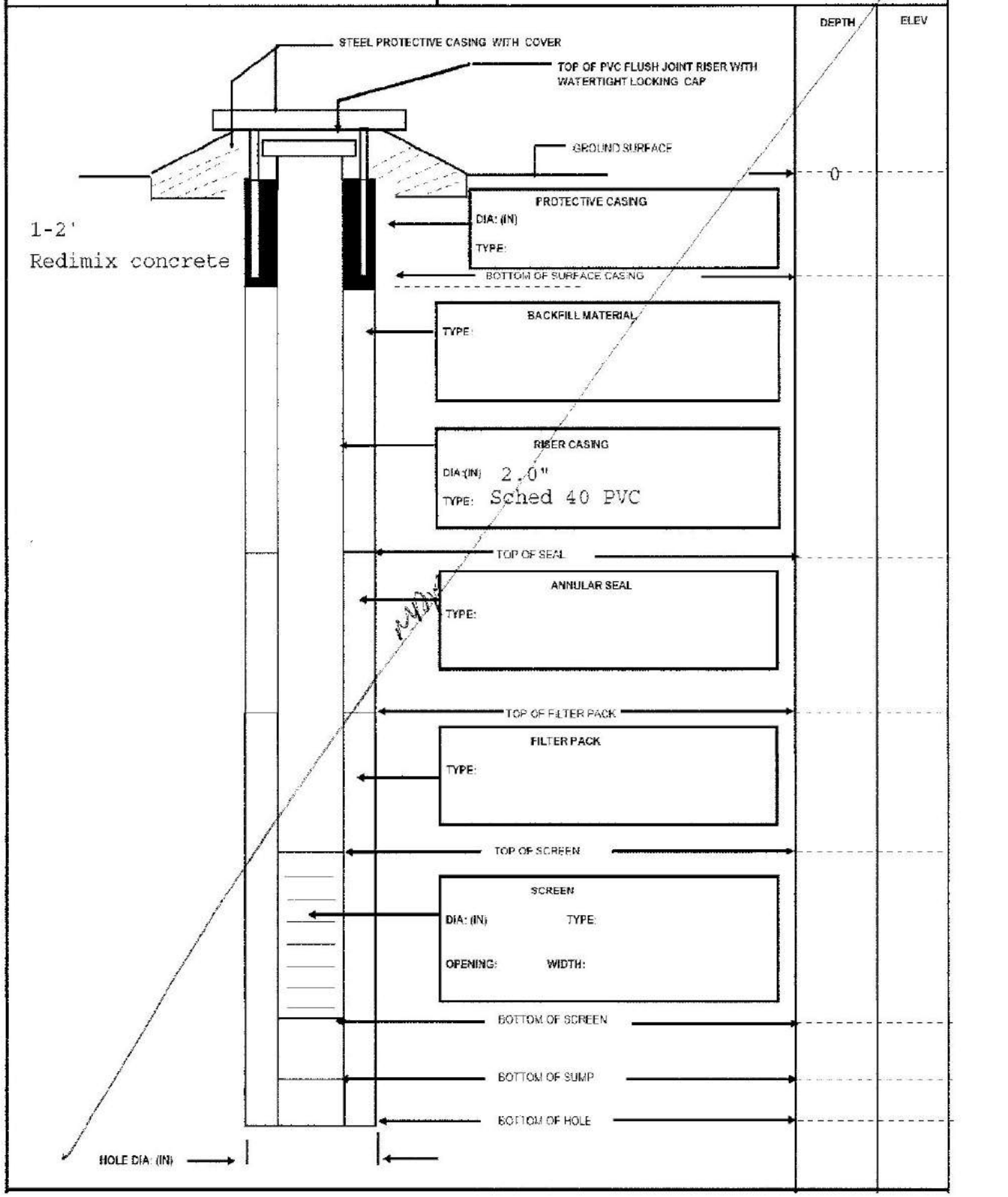
PROJECT NAME: PHASE IV PFOS/PFOA SI - NASHVILLE **DELIVERY ORDER NO:**

WELL NUMBER: MW-BNA01-01	BEGIN: 3/5/18	END: 3/7/18
COORDINATES: N: E:	REFERENCE POINT:	ELEVATION:



MPP

MONITORING WELL		
PROJECT NAME:	DELIVERY ORDER NO:	
WELL NUMBER:	BEGIN:	END:
COORDINATES: N: E:	REFERENCE POINT:	ELEVATION:



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APPENDIX B
GROUNDWATER SAMPLING LOGS

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GROUND WATER MICRO PURGE SHEET

PROJECT NAME: Nashville Airport DELIVERY ORDER 0009

DATE (mm/dd/yy): 03/09/18 TIME: 09 : 02

WELL ID NUMBER: MW-BNA05-01 WELL LOCATION: NASHVILLE AWG 15.15E PRL05

DEPTH OF SCREENED INTERVAL (toc notch): SEE LOGBOOK ft. to ft.

INNER CASING: TYPE: (PVC) or Steel ID: 0.75 inches (2 inches) 4 inches

WATER QUALITY METER ID: T0090004

WATER LEVEL INDICATOR ID: 223319

PUMP ID: N/A

TURBIDITY ID: N/A

PID ID: 110-001518

DEPTH TO WATER: 4.55 FT FROM MEASURE POINT

TOTAL WELL DEPTH: 7.64 FT FROM MEASURE POINT

DEPTH TO PUMP INTAKE: ~6FT FT FROM MEASURE POINT

PURGE/SAMPLE METHOD: [ ] Bailer [ ] Bladder Pump [X] Other Pump Type MINI-MONSOON SUBMERSIBLE

PURGE START TIME: 0753 PURGE END TIME: 0900

TOTAL VOLUME PURGED: 28 L

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ~~[X]~~ Yes [X] No IF NO, WHY WAS A DEVIATION NECESSARY: ~~N/A~~

~~S/C~~ D.O. DID NOT CALIBRATE AND IS NOT READING (CLICKS 0.0). NOT USED FOR PARAMETER STABILIZATION DECISION. ALL OTHER PARAMETERS WERE STABLE.

RECORDED BY: 3/9/18 (Signature) QA CHECKED BY: (Signature)

B-3

GROUND WATER MICRO PURGE LOG

WELL ID: ~~BGH~~ MW-BNA05-01 (MC 3/9/18)

PROJECT NAME: Nashville Airport

DELIVERY ORDER 0009

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (RECORD UNITS)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
0754	1ST WATER	190	-42	13.81	5.82	0.92 ms/cm ~~or S/m~~	0.00	24.5	5.60	
0800	~1	190	-61	14.25	5.96	0.93 ms/cm ~~or S/m~~	0.00	24.3	5.62	
0810	~5	190	-68	14.17	6.11	0.97 ms/cm ~~or S/m~~	0.00	22.8	5.65	
0820	~7.5	190	-112	15.37	6.73	0.98 ms/cm ~~or S/m~~	0.0	18.0	5.78	
0830	13	190	-122	15.33	6.89	0.98 ms/cm ~~or S/m~~	0.0	9.9	5.85	
0840	18	190	-124	15.22	6.97	0.98 ms/cm ~~or S/m~~	0.0	9.8	5.86	
0850	23	190	-124	15.18	6.98	0.98 ms/cm ~~or S/m~~	0.0	9.3	5.86	
0900	28	190	-123	15.18	6.98	0.98 ms/cm ~~or S/m~~	0.0	9.5	5.86	
		✓	✓	✓	✓	✓ ms/cm or S/m	✓	✓	✓	
						ms/cm or S/m				
						~~ms/cm or S/m~~				
						ms/cm or S/m	3/9/18			
						ms/cm or S/m				
						ms/cm or S/m				
						ms/cm or S/m				

RECORDED BY: _____ 3/9/18
(Signature)

QA CHECKED BY: _____
(Signature)

B-4

GROUND WATER MICRO PURGE SHEET

PROJECT NAME: Nashville Airport DELIVERY ORDER 0009

DATE (mm/dd/yy): 3/9/18 TIME: 11 : 32

WELL ID NUMBER: MW-BNA01-01 WELL LOCATION: NASHVILLE PRL01

DEPTH OF SCREENED INTERVAL (toc notch): SEE WELL LOG ft. to ft.

INNER CASING: TYPE: (PVC) or Steel ID: 0.75 inches (2 inches) 4 inches

WATER QUALITY METER ID: TROLL9000

WATER LEVEL INDICATOR ID: 223319

PUMP ID: N/A

TURBIDITY ID: N/A

PID ID: 110-001518

DEPTH TO WATER: 15.09 FT FROM MEASURE POINT

TOTAL WELL DEPTH: 25.24 FT FROM MEASURE POINT

DEPTH TO PUMP INTAKE: ~20.57 FT FROM MEASURE POINT

PURGE/SAMPLE METHOD: [ ] Bailer [ ] Bladder Pump [X] Other Pump Type MINI-MONSOON SUBMERSIBLE

PURGE START TIME: 1038 PURGE END TIME: 1132

TOTAL VOLUME PURGED: 17 L

S&A PLAN SAMPLING PROCEDURE FOLLOWED: [X] Yes [ ] No IF NO, WHY WAS A DEVIATION NECESSARY: N/A

RECORDED BY: [signature] 3/9/18 (Signature)

QA CHECKED BY: [signature] (Signature)

B-5

GROUND WATER MICRO PURGE LOG

WELL ID: ~~BW4~~ MW-BWA01-01 MK 3/9/18

PROJECT NAME: Nashville Airport

DELIVERY ORDER 0009

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (RECORD UNITS)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1032	1ST WATER	~400	-42	21.97	5.71	0.790 ms/cm ~~or S/m~~	0.00	78.4	15.62	
1042	~2.5	~400	-37	21.68	5.70	0.822 ms/cm ~~or S/m~~	0.12	50.9	17.30	
1052	6	~200	-31	21.59	5.66	0.826 ms/cm or S/m	0.33	44.4	16.52	
1104	9	~200	-34	21.60	5.72	0.833 ms/cm ~~or S/m~~	0.32	46.2	16.85	
1112	11	~200	-40	21.48	5.78	0.840 ms/cm ~~or S/m~~	0.35	46.7	16.87	
1122	14	~200	-44	21.59	5.80	0.849 ms/cm ~~or S/m~~	0.34	47.2	16.91	
1132	17	~200	-49	21.55	5.86	0.865 ms/cm or S/m	0.37	46.9	17.03	
		✓	✓	✓	✓	✓ ms/cm or S/m	✓	✓	✓	
						ms/cm or S/m				
						ms/cm or S/m				
						ms/cm or S/m				
						ms/cm or S/m				
						ms/cm or S/m				
						ms/cm or S/m				
						ms/cm or S/m				
						ms/cm or S/m				

MK 3/9/18

RECORDED BY: M K 3/9/18 (Signature)

QA CHECKED BY: (Signature)

10 MP

APPENDIX C
SITE INSPECTION FIELD ACTIVITIES PHOTOGRAPHY LOG

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1. BNA03-SB1_PZ1 location, looking north

2. BNA03-SB2_PZ2 offset location, looking north-northwest

3. BNA03-SB2_PZ2 planned location, artesian, abandoned, looking west

4. BNA04-SB1 location, looking northwest

5. Drilling of planned MW-BNA01-01 location; boring abandoned, looking west

6. MW-BNA05-01 drilling, looking west (first view)

7. MW-BNA05-01 drilling, looking west (second view)

8. MW-BNA05-01 drilling, looking northwest

APPENDIX D
SURVEY REPORT FOR NEW MONITORING WELLS

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Information shown is based on Tennessee State Plane Coordinate System using the TDOT Reference Network. Horizontal Datum NAD83. Vertical Datum NAVD88.
Well casing information taken at majic marker marking on outside of casing.

ID	Northing	Easting	Elevation
MW-BNA01-01	648284.165	1768289.238	Top of Casing=571.033 Top of Well=571.232
MW-BNA05-01	648942.601	1768850.579	Top of Casing=537.449 Top of Well=537.916

I hereby certify that the data used to perform this survey was obtained using GPS/GNSS technology and the following information applies to these measurements: Type of Receiver - GRS-1; Geoid Model - G03TN50; Method - RTK; Relative Positional Accuracy of 3mm+0.8ppm horizontal and 4mm+1.0ppm vertical; Tennessee Zone 4100; No grid factor was applied.

Nashville Air National Guard Base
Monitoring Well Locations
240 Knapp Blvd.
Nashville, Tennessee

LEIDOS
301 Laboratory Road
Oak Ridge, TN 37830

Jim McAleer-Surveyor
6395 Highway 109 North
Lebanon, Tennessee 37087
615-513-5302

Scale: 1"=100' April 4, 2018 Job No. 022-18

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APPENDIX E
DATA VALIDATION REPORTS

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LEIDOS
Laboratory Data Verification Checklist

Project: Nashville

SDG No: J36960

Analyte Group: PFAS
Sample Matrix: Soil, Water, Field QC blanks
EDD (Y/N):

Disposition of Data Package:
NCR No. (if applicable):

Note: Package included TCLP VOCs that did not require validation (IDW samples)

1. Case Narrative

Read SDG Case Narrative	Y
Check Laboratory sample ID vs. Project sample ID lists	
Check that discussion covers each analytical type included in the SDG	
Check for identified nonconforming items (e.g., missed holding times, etc.)	

2. Chain-of-Custody (COC)

Check COC sample collection, shipping, and receiving dates	
Check that COC signature blocks are complete	
Check COC project sample IDs vs. Lab IDs and Result Form IDs	
Match COC requested analyses with Case Narrative and with data package content (Result Forms)	

3. Analytical Results Form

Verify that a Result Form is present for each sample and analysis	
On each Result Form check:	
SDG No.	
Sample ID	
Lab ID	
Date Collected	
Date Extracted	
Date Analyzed	
Result Matrix	
Result Units	

4. Project Verification

Note: IDW (TCLP VOCs not validated

Check project analyte list vs. analytes reported	Y
Check project requested methods vs. analytical methods performed	
Check analyte reporting levels vs. project reporting level goals	

5. Analytical Quality Control Information

Check for surrogate recovery results (e.g., org. form II)	
Check for LCS results (e.g., org. form III, inorg. form XII)	
Check for method blank results (e.g., org. form IV, inorg. form III)	
Check for MS/MSD results (e.g., inorg. form V)	
Check for laboratory duplicate results (e.g., inorg. form VI)	NA
Check for Method Calibration and Run Documentation	
organic: instrument performance check	Y
initial calibration data	
continuing calibration data + CCBs	
internal standard areas	
internal standard retention times	
sample clean-up documentation (org. forms V through X)	
metal: initial calibration data	
continuing calibration data	
method detection limits	
method linear range	
sample run sequence (inorg. forms II, IV, and VIII through XIV)	
other: initial calibration data	
continuing calibration data	
method detection limits	
sample run sequence	

6. Incorrect Information

Identify missing items or incorrect information (i.e., missing forms, unsigned forms, incorrect sample IDs, etc.)

Contact the laboratory or project personnel to obtain missing information or correct information

Document corrections below:

7. Nonconforming Items

Document all nonconforming items that can not be resolved above in a Non-Conformance Report (NCR), complete form, file, and follow-up

NCR # Item

Reviewed By: Joseph C Peters Date: 4/14/18

QA Review By: Date:

LEIDOS
Laboratory Data Package Detail Form

Project: Nashville

SDG No: J36960

Analyte Group: PFAS

See attached

Field Sample ID	Lab ID #	Matrix	Analysis	Notes:

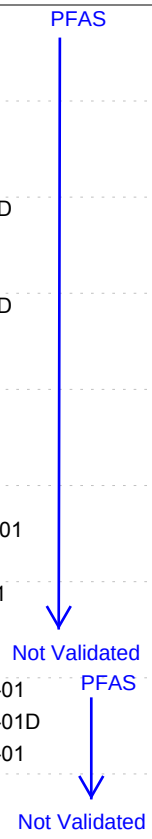
Comments:

Sample Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-36960-1	BNA-ER-SB-01	Water	03/05/18 10:45	03/10/18 09:30
320-36960-2	BNA-FB-01	Water	03/05/18 10:55	03/10/18 09:30
320-36960-3	BNA-RB-01	Water	03/05/18 11:05	03/10/18 09:30
320-36960-4	BNA01-SB1-01	Solid	03/05/18 14:15	03/10/18 09:30
320-36960-5	BNA01-SB1-02	Solid	03/05/18 15:50	03/10/18 09:30
320-36960-6	BNA03-SB1-01	Solid	03/06/18 07:20	03/10/18 09:30
320-36960-7	BNA03-SB1-01D	Solid	03/06/18 07:20	03/10/18 09:30
320-36960-8	BNA03-SB1-02	Solid	03/06/18 07:35	03/10/18 09:30
320-36960-9	BNA03-SB2-01	Solid	03/06/18 09:20	03/10/18 09:30
320-36960-10	BNA03-SB2-01D	Solid	03/06/18 09:20	03/10/18 09:30
320-36960-11	BNA03-SB2-02	Solid	03/06/18 09:40	03/10/18 09:30
320-36960-12	BNA04-SB1-01	Solid	03/06/18 13:30	03/10/18 09:30
320-36960-13	BNA04-SB1-02	Solid	03/06/18 14:20	03/10/18 09:30
320-36960-14	BNA05-SB1-01	Solid	03/07/18 08:25	03/10/18 09:30
320-36960-15	BNA05-SB1-02	Solid	03/07/18 08:35	03/10/18 09:30
320-36960-16	BNA05-SW1-01	Water	03/08/18 11:45	03/10/18 09:30
320-36960-17	BNA05-ER-SD-01	Water	03/08/18 12:05	03/10/18 09:30
320-36960-18	BNA05-SD1-01	Solid	03/08/18 12:10	03/10/18 09:30
320-36960-19	BNA-ER-GW-01	Water	03/08/18 16:35	03/10/18 09:30
320-36960-20	BNA-FB-02	Water	03/08/18 16:45	03/10/18 09:30
320-36960-21	BNA-IDW-5-01	Solid	03/08/18 16:55	03/10/18 09:30
320-36960-22	MW-BNA05-01-01	Water	03/09/18 09:02	03/10/18 09:30
320-36960-23	MW-BNA05-01-01D	Water	03/09/18 09:02	03/10/18 09:30
320-36960-24	MW-BNA01-01-01	Water	03/09/18 11:34	03/10/18 09:30
320-36960-25	BNA04-SW1-01	Water	03/09/18 13:40	03/10/18 09:30
320-36960-26	BNA-IDW-W-01	Water	03/09/18 15:20	03/10/18 09:30



Leidos - Horsham Project Specific
PFASs by LC/MS/MS Methods Data Verification/Validation

Project: Nashville

SDG No: J36960 **Analysis:** PFAS

Method: Mod 537.1

Laboratory: TestAmerica **Matrix:** Aqueous and Soil

The above data package has been reviewed and the analytical quality control/quality assurance performance data have been summarized. The general criteria used to assess the analytical integrityof the data were based on DOD QSM 5.1 guidance and examination of the following:

Case Narrative	Instrument Sensitivity Checks
Analytical Holding Times	Internal Standard Performance
Sample Preservation	MS/MSD Recoveries and Differences
Method Calibration	LCS Recoveries
Method and Project Blanks	Re-analysis and Secondary Dilution

Project Specific QA/QC or contract requirements may take priority over validation criteria in this procedure.

* **If this SDG requires full validation; recalculations from the raw data are required for one point for each ICAL, one CCV, one of each QC sample, and one field sample.**

Data verification and data validation are essentially identical, with the exception that validation requires results to be recalculated from the raw data.

Remarks: DOD QSM 5.1 and QAPP guidance

No results were rejected

Data validation qualifiers due to QC outliers for injection internal standard (ISTD) recovery, MS recoveries, and LCS recovery.

Definition of Qualifiers:

"U", not detected at the associated level
"UJ", not detected and associated value estimated
"J", associated value estimated
"R", associated value unusable or analyte identity unfounded

Verification/Validation by: Joseph C Peters Date: 4/14/18

QA Reviewed by: _____ Date: _____

Case Narrative

Verify direct statements made within the Laboratory Case Narrative (note discrepancies).

Remarks: Case narrative is accurate, but you need to read through the entire narrative because they will provide more than paragraph for some QC issues, so in some cases you need to look at multiple paragraphs to verify that the case narrative does reflect QC issues.

Re-analysis and Secondary Dilutions

Verify that re-analysis and secondary dilutions were performed and reported as necessary. Determine appropriate results to report.

Remarks: Re-analysis and dilutions performed as necessary.

Holding Times

Waters - Cool 4°C; 14 days to extraction; 28 days to analysis
collection. Note: Trizma preservative is recommended for aqueous samples, but not required.

Soils - Cool 4°C ; extraction within 28 days of sample collection; analysis within 28 days of sample extraction

Deviations: None

Sample #	Date Collected	Date Analyzed	Comments

Actions:

1. If holding times are exceeded, all results are qualified as estimated (J/UJ)
2. If holding times are exceeded by more than 2X, reviewer may qualify non-detected results as unusable (R)

Remarks: _____

Injection Internal Standards (IS)

List any field samples, field QC samples, or laboratory QC samples where injection internal standards are not within 50 to 150% of the peak areas from the ICAL midpoint or daily inititial CCV, as applicable.

TestAmerica uses one Injection internal standard (ISTD) (13C2-PFOA) that applies to all 6 PFAS compounds of interest.

Deviations: Lab provided area counts; so deviations are provided as > or a range.

Sample #	Injection IS/% Rec	Affected PFAS Compounds
MW-BNA05-01-01 RE	> 150%	All compounds, but sample not used
MW-BNA05-01-01 MS RE	> 150%	All compounds, MS RE ISTD outlier does not result
		in field sample qualifiers
BNA01-SB1-01 DL	<25%	PFOS - J; other compounds from undiluted results
BNA01-SB1-01 MS DL	< 25%	QC sample; diluted for PFOS; > 4 times spike level; no qual
BNA01-SB1-01 MSD DL	<25%	QC diluted for PFOS; PFOS > 4 times spike, no qualifiers
	0…….+	

Actions:

If any injection IS is <25%, qualify detects as J; non-detects as R

If any Injection IS is > upper control limit; qualify detects as J, no action for non-detects

If any surrogate is ≥ 25%, but < the lower control limit, then qualify detects as J, non-detects as UJ

Remarks:

Surrogates/Extraction Internal Standards (IS)

List any field samples, field QC samples, or laboratory QC samples where surrogates/extraction internal standards are not within 50% ± of their true value.
Note: Extraction Internal Standards and surrogates are the same thing. For purposes of data validation and applying validation reason codes, they will be treated as surrogates. Injection internal standards will be treated as internal standards and the use of internal standard reason codes will be used.

Deviations:

Sample #	Surrogate - % Rec	Affected PFAS Compounds
MW-BNA05-01-01 RE	All < 25%	None - original extraction used

Actions:

If any injection IS is <25%, qualify detects as J; non-detects as R

If any Injection IS is > upper control limit; qualify detects as J, no action for non-detects

If any surrogate is ≥ 25%, but < the lower control limit, then qualify detects as J, non-detects as UJ

Remarks:

VI. Blanks

A method blank was reported for each aqueous analytical batch and one method blank was reported for each soil extraction batch? (Y/N)
Review associated laboratory and project blank samples. List documented contamination below:

Laboratory Method Blanks: Free from contamination

Date:	Sample ID #	Compound	Conc.

Associated Project Blanks (e.g., equipment rinsates, field reagent blanks, source blanks, etc.)

Date	Sample ID #	Compound	Conc.
3/8/16	BNA-FB-02	PFBS	0.65
↓	↓	PFHxS	0.53
↓	↓	PFOS	1.2

Remarks:

VI. Blanks (continued)

Calculate the action level based on 5X the highest blank concentration

Sample weights, volumes, and dilution factors must be taken into account when applying the 5X criteria.

See field blank calculations/conversion for soils on following pages

See attached pages for aqueous CCB evaluation

Deviations:

Compound	Maximum Conc. Detected, (ppb) ng/L	Action Level (ppb) ng/L	Samples Affected
FB02 PFBS	0.65	3.25	None; field aqueous samples> action level
~~PFHxS~~	~~1.53~~	~~2.65~~	ND due to CCB
PFOS	1.2	6	
CCB 3/19 @10:10 PFHxS	0.00762	0.0381	None; soil and water ND or > action level
CCB 3/24 @ 19:03 PFHxS	0.00655	0.03275	
CCB 4/7 @ 09:01 PFHxS	0.00593	0.0265	

Actions:

1. If compound results exceed the action levels, the data are not qualified
2. If compound results are below the required reporting level, report results as non-detect (U) at the LOD
3. If the compound is detected above the reporting level, but below the action level, qualify as not-detected (U)
4. If contamination exists in method blanks < 1/2 LOQ, samples must be re-extracted and reanalyzed. Unlesss the MB results are < 1/10 the amount in associated samples or < 10 the action level, which ever is greater

Remarks:

TestAmerica MB and FB SDG J36960

Blank ID	Compound	Blank Concentration (ng/L)	Action Level (ug/Kg)	Soil samples afffected
FB02	PFBS	0.65	0.0065	None; all ND or > action level
FB02	PFHxS	0.53	0.0053	ND due to CCB
FB02	PFOS	1.2	0.012	None; all ND or > action level

Where conversion of soil to water =
5g soil extracted to final volume of 10 ml

Using PFBS above as an example
0.65 ng/L = 0.00065 ug/L

= (0.00065 ug/L x 1L/1000ml x final volume 10 ml)/0.005 Kg soil extracted = 0.0013 ug.Kg X5 action level = 0.0065 ug/kg

TestAmerica blank detect evaluation - TestAmerica SDG J36960

Blank ID	Compound	CCB ug/ml	Blank Concentration (ng/L)	Soil Action Level (ug/Kg)	Samples afffected	Aqueous Action Level
FB02	PFHxS		0.53	0.0053	None; FB ND due to CCB	2.65
ICB 3/17 @00:04	PFHxS	0.00935	0.374	0.00374		1.87
ICB 3/21 @ 19:19	PFHxS	0.0116	0.464	0.00464		2.32
ICB 3/21 @ 19:19	PfHpA	0.00864	0.3456	0.003456		1.728
ICB 3/29 @ 18:22	PFHxS	0.00852	0.3408	0.003408		1.704
CCB 3/19 @ 10:10	PFHxS	0.00762	0.3048	0.003048		1.524
CCB 3/24 @ 19:03	PFHxS	0.00655	0.262	0.00262		1.31
CCB 4/7 @ 09:01	PFHxS	0.00593	0.2372	0.002372		1.186
CCB 4/2 @ 21:02	PFHxS	0.0053	0.212	0.00212	None; all ND or > action level	1.06
CCB 4/9 @ 21:19	PFHxS	0.00674	0.2696	0.002696	None; all ND or > action level	1.348

Note: CCB units are reported on Forrm I as ng/ml and converted for spreadsheet above.
CCB 4/2 @ 21:02 PFHxS = 0.0053 ug/ml = .0053ug/m;*5ml/.25L = ng/L X 5x action level

Where conversion of soil to water =
5g soil extracted to final volume of 10 ml

Example conversion
0.65 ng/L = 0.00065 ug/L

= (0.00065 ug/L x 1L/1000ml x final volume 10 ml)/0.005 Kg soil extracted = 0.0013 ug.Kg X5 action level = 0.0065 ug/kg

Note: conversions for soils are not corrected for exact sample prepped (in grams) or % moisture;
Qualifying soils at such low levels does not require significant accuracy as action levels are considerably higher and the value added does not impact overall data usability.

VII. Initial & Contining Calibration

Date of initial calibration: 3/16/18 3/21/18 3/29/18

%RSD of RFs < 20% or $r^2 \geq 0.99$ for each analyte? Y

Analytes within 70-130% of their true value in each ICAL standard? Y

ICV within ± 30% of true value? Y

Date(s) of continuing calibration: 3/19/18 3/21/18 3/24/18 3/29/18 4/7/18

CCV analyzed at beginning and end of analytical sequence and after every 10 field samples?

CCV within ± 30% of true value?

Instrument sensitivity check (ISC) performed at the LOQ prior to analysis and every 12 hours?

ICS within ± 30% of true value?

Deviations: None

Compound	Date	r value	%Drift	Samples Affected

Actions:

1. If initial calibration curve criteria are not met, qualify positive results as estimated (J) and non-detects as estimated (UJ), using professional judgement (i.e. if only the low standard is out, and the higher stards are in, then only qualify those results near the low standard).
2. Only evaluate the ICV if it brackets field samples. If the ICV does bracket field samples, then CCV actions apply
3. If a CCV is above the upper control limit, qualify detects as estimated (J). Nondects require no action.
4. If a CCV is below the lower control limit but > 40% recovery, qualify results as estimated (J/UJ).
5. If a CCV is ≤ 40% recovery, qualify detects as estimated (J) and nondetects as rejected (R)
6. If CCVs were not analyzed at the proper frequency, use professional judgement.
7. If ISC is > UCL, estimate (J) detects, no action for non-detects; If ISC is < LCL, estimate data (J/UJ), if ISC is < 30% reject (R) non-detects

Remarks:

IX. Matrix Spike/Matrix Spike Duplicate Information

General MS/MSD Criteria:
percent recovery (%R) in-house limits
relative percent difference (RPD) 30% RPD

Project Sample(s) Spiked: MW-BNA05-01-01, BNA01-~~AB~~SB1-01

Deviations:

Compound	%R	%R Limits	RPD	RPD Limits	Samples Affected
PFOA	111/113	80-117	OK		MW-BNA05-01-01; J H01 (Original analysis)
PFOS	116/OK	82-112	OK		↓
PFHxS	OK/108	81-106	OK		
PFHxS	OK/28	75-121	OK		BNA01-SB-01, j H02 (original analysis)
PFOS	OK -54	69-131	OK		; spike < 1/4 native concentration; no quals

Actions:

1. If the spike recovery is above the upper control limit (UCL), qualify all positive values in the unspiked sample as estimated (J) and non-detects as estimated (UJ).
2. If the spike recovery is below the lower control limit (LCL), qualifty positive values as estimated (J). And non-detects as estimated (UJ).
3. If the spike recovery is <10%, qualify non-detect values as unusable (R)
4. If the RPD does not meet criteria, qualify positive values in the unspiked sample as estimated (J)
5. Use professional judgement to qualify additional samples in the analytical group based on MS/MSD results
6. Use professional judgement for qualification of data for unspiked compounds

* **If this SDG requires full validation; recalculate at least one % recovery and one % RPD from the raw data. Attach all calculations at the end of the validation checklist.**

Remarks:

MS/MSD analyzed at a dilution for PFOS, but PFOS spike was <1/4 native concentration, so undiluted was documented above since no qualifiers are required.

X. Laboratory Control Sample Information

General LCS Criteria:
Percent recovery (%R) = in-house limits
RPD if LCSD performed = 30% RPD

Laboratory LCS Identifications: See attached QC associations

Deviations:

Limits

Compound	~~Date~~	%R	Samples Affected/Qualifiers Applied
waters PFOA	80-107	116	MW-BN05-01-01; All other aqueous samples ND
soil PFNA (prep batch 213404)			No qualifiers; LCS high, samples in prep batch ND

Actions:

* **If this SDG requires full validation; recalculate at least one % recovery and one % RPD (if LCSD was performed) from the raw data. Attach all calculations at the end of the validation checklist.**

Action should be based on both the number of compounds outside the criterion and the magnitude of the exceedance.

1. If the LCS recovery is below limits but > one- half the lower limit, qualify valves as estimated (J/UJ).
2. If the LCS recovery is < one-half the lower limit, qualify detect (J) and non-detects (R)
3. If the LCS recovery is greater than the upper limit, qualify positive valves for that analyte as estimated (J).

5. Use professional judgement for qualification of data for compounds with no LCS information

Remarks:

GC/MS VOA

IDW VOCS NOT VALIDATED; ONLY PFAS VALIDATED

Leach Batch: 269508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-21	BNA-IDW-5-01	TCLP	Solid	1311	
MB 580-269508/1-A	Method Blank	TCLP	Solid	1311	
LCS 580-269508/2-A	Lab Control Sample	TCLP	Solid	1311	
LCSD 580-269508/3-A	Lab Control Sample Dup	TCLP	Solid	1311	

Analysis Batch: 269828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-21	BNA-IDW-5-01	TCLP	Solid	8260B	269508
MB 580-269508/1-A	Method Blank	TCLP	Solid	8260B	269508
LCS 580-269508/2-A	Lab Control Sample	TCLP	Solid	8260B	269508
LCSD 580-269508/3-A	Lab Control Sample Dup	TCLP	Solid	8260B	269508

Leach Batch: 408888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-26	BNA-IDW-W-01	TCLP	Water	1311	
LB3 280-408888/1-A	Method Blank	TCLP	Water	1311	
LCS 280-408888/2-A	Lab Control Sample	TCLP	Water	1311	

Analysis Batch: 409141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-26	BNA-IDW-W-01	TCLP	Water	8260B	408888
LB3 280-408888/1-A	Method Blank	TCLP	Water	8260B	408888
LCS 280-408888/2-A	Lab Control Sample	TCLP	Water	8260B	408888

LCMS

Prep Batch: 213387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-1	BNA-ER-SB-01	Total/NA	Water	3535	
320-36960-2	BNA-FB-01	Total/NA	Water	3535	
320-36960-3	BNA-RB-01	Total/NA	Water	3535	
320-36960-17	BNA05-ER-SD-01	Total/NA	Water	3535	
320-36960-19	BNA-ER-GW-01	Total/NA	Water	3535	
320-36960-20	BNA-FB-02	Total/NA	Water	3535	
320-36960-22	MW-BNA05-01-01	Total/NA	Water	3535	
MB 320-213387/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-213387/2-A	Lab Control Sample	Total/NA	Water	3535	
320-36960-22 MS	MW-BNA05-01-01	Total/NA	Water	3535	
320-36960-22 MSD	MW-BNA05-01-01	Total/NA	Water	3535	

Prep Batch: 213404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-4 - DL	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-4	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-5	BNA01-SB1-02	Total/NA	Solid	SHAKE	
320-36960-6	BNA03-SB1-01	Total/NA	Solid	SHAKE	
320-36960-7	BNA03-SB1-01D	Total/NA	Solid	SHAKE	
320-36960-8	BNA03-SB1-02	Total/NA	Solid	SHAKE	
320-36960-9	BNA03-SB2-01	Total/NA	Solid	SHAKE	
320-36960-10	BNA03-SB2-01D	Total/NA	Solid	SHAKE	

LCMS (Continued)

Prep Batch: 213404 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-11	BNA03-SB2-02	Total/NA	Solid	SHAKE	
320-36960-12	BNA04-SB1-01	Total/NA	Solid	SHAKE	
320-36960-13	BNA04-SB1-02	Total/NA	Solid	SHAKE	
320-36960-14	BNA05-SB1-01	Total/NA	Solid	SHAKE	
320-36960-15	BNA05-SB1-02	Total/NA	Solid	SHAKE	
320-36960-18	BNA05-SD1-01	Total/NA	Solid	SHAKE	
MB 320-213404/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-213404/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-36960-4 MS - DL	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-4 MS	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-4 MSD - DL	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-4 MSD	BNA01-SB1-01	Total/NA	Solid	SHAKE	

Analysis Batch: 213672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-213387/1-A	Method Blank	Total/NA	Water	EPA 537 (Mod)	213387

Analysis Batch: 213706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-213387/2-A	Lab Control Sample	Total/NA	Water	EPA 537 (Mod)	213387

Analysis Batch: 213789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-1	BNA-ER-SB-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-2	BNA-FB-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-3	BNA-RB-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-17	BNA05-ER-SD-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-19	BNA-ER-GW-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-20	BNA-FB-02	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-22	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-22 MS	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-22 MSD	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	213387

Prep Batch: 214457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-16	BNA05-SW1-01	Total/NA	Water	3535	
320-36960-22 - RE	MW-BNA05-01-01	Total/NA	Water	3535	
320-36960-23	MW-BNA05-01-01D	Total/NA	Water	3535	
320-36960-24	MW-BNA01-01-01	Total/NA	Water	3535	
320-36960-25	BNA04-SW1-01	Total/NA	Water	3535	
MB 320-214457/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-214457/2-A	Lab Control Sample	Total/NA	Water	3535	
320-36960-22 MS - RE	MW-BNA05-01-01	Total/NA	Water	3535	
320-36960-22 MSD - RE	MW-BNA05-01-01	Total/NA	Water	3535	

Analysis Batch: 214716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-16	BNA05-SW1-01	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-22 - RE	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-23	MW-BNA05-01-01D	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-24	MW-BNA01-01-01	Total/NA	Water	EPA 537 (Mod)	214457

LCMS (Continued)

Analysis Batch: 214716 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-25	BNA04-SW1-01	Total/NA	Water	EPA 537 (Mod)	214457
MB 320-214457/1-A	Method Blank	Total/NA	Water	EPA 537 (Mod)	214457
LCS 320-214457/2-A	Lab Control Sample	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-22 MS - RE	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-22 MSD - RE	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	214457

Analysis Batch: 216821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-4	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-5	BNA01-SB1-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-6	BNA03-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-7	BNA03-SB1-01D	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-8	BNA03-SB1-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-9	BNA03-SB2-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-10	BNA03-SB2-01D	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-11	BNA03-SB2-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-12	BNA04-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-13	BNA04-SB1-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-14	BNA05-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-15	BNA05-SB1-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-18	BNA05-SD1-01	Total/NA	Solid	EPA 537 (Mod)	213404
MB 320-213404/1-A	Method Blank	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-4 MS	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-4 MSD	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404

Analysis Batch: 216849

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-4 - DL	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
LCS 320-213404/2-A	Lab Control Sample	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-4 MS - DL	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-4 MSD - DL	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404

General Chemistry

Analysis Batch: 212716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-4	BNA01-SB1-01	Total/NA	Solid	D 2216	
320-36960-5	BNA01-SB1-02	Total/NA	Solid	D 2216	
320-36960-6	BNA03-SB1-01	Total/NA	Solid	D 2216	
320-36960-7	BNA03-SB1-01D	Total/NA	Solid	D 2216	
320-36960-8	BNA03-SB1-02	Total/NA	Solid	D 2216	
320-36960-9	BNA03-SB2-01	Total/NA	Solid	D 2216	
320-36960-10	BNA03-SB2-01D	Total/NA	Solid	D 2216	
320-36960-11	BNA03-SB2-02	Total/NA	Solid	D 2216	
320-36960-12	BNA04-SB1-01	Total/NA	Solid	D 2216	
320-36960-13	BNA04-SB1-02	Total/NA	Solid	D 2216	
320-36960-14	BNA05-SB1-01	Total/NA	Solid	D 2216	
320-36960-15	BNA05-SB1-02	Total/NA	Solid	D 2216	
320-36960-18	BNA05-SD1-01	Total/NA	Solid	D 2216	
320-36960-4 DU	BNA01-SB1-01	Total/NA	Solid	D 2216	

Client Sample ID: BNA-ER-SB-01

Lab Sample ID: 320-36960-1

Date Collected: 03/05/18 10:45

Matrix: Water

Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.60	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.53	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 19:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*87*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
13C4-PFHpA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
13C4 PFOA	*96*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
13C5 PFNA	*89*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
18O2 PFHxS	*90*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
13C4 PFOS	*89*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*

Client Sample ID: BNA-FB-01

Lab Sample ID: 320-36960-2

Date Collected: 03/05/18 10:55

Matrix: Water

Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.60	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.54	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 19:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*94*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
13C4-PFHpA	*95*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
13C4 PFOA	*94*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
13C5 PFNA	*97*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
18O2 PFHxS	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
13C4 PFOS	*94*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*

Client Sample ID: BNA-RB-01

Lab Sample ID: 320-36960-3

Date Collected: 03/05/18 11:05

Matrix: Water

Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.61	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.54	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 19:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*96*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:41*	*1*
13C4-PFHpA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:41*	*1*

Client Sample ID: BNA-RB-01 — Lab Sample ID: 320-36960-3

Date Collected: 03/05/18 11:05 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	96		50 - 150	03/16/18 10:38	03/19/18 19:41	1
13C5 PFNA	98		50 - 150	03/16/18 10:38	03/19/18 19:41	1
18O2 PFHxS	93		50 - 150	03/16/18 10:38	03/19/18 19:41	1
13C4 PFOS	98		50 - 150	03/16/18 10:38	03/19/18 19:41	1

Client Sample ID: BNA01-SB1-01 — Lab Sample ID: 320-36960-4

Date Collected: 03/05/18 14:15 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 80.2**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**0.19**	**J** J	0.37	0.097	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorooctanoic acid (PFOA)	**0.40**	=	0.37	0.12	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorononanoic acid (PFNA)	0.25	U M Q U	0.37	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorobutanesulfonic acid (PFBS)	**0.99**	=	0.50	0.074	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorohexanesulfonic acid (PFHxS)	**6.0**	**J1** J H02	0.37	0.077	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
~~**Perfluorooctanesulfonic acid (PFOS)**~~	~~**27**~~	~~**E J1**~~	1.2	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1

USE DILUTED RESULT - DO NOT USE

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	55		50 - 150	03/16/18 11:19	04/07/18 09:40	1
13C4-PFHpA	73		50 - 150	03/16/18 11:19	04/07/18 09:40	1
13C4 PFOA	72		50 - 150	03/16/18 11:19	04/07/18 09:40	1
13C5 PFNA	73		50 - 150	03/16/18 11:19	04/07/18 09:40	1
18O2 PFHxS	60		50 - 150	03/16/18 11:19	04/07/18 09:40	1
13C4 PFOS	58		50 - 150	03/16/18 11:19	04/07/18 09:40	1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.2	U M J1	1.9	0.49	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorooctanoic acid (PFOA)	1.2	U M J1	1.9	0.62	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorononanoic acid (PFNA)	1.2	U Q	1.9	0.50	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J D**	2.5	0.37	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorohexanesulfonic acid (PFHxS)	**6.4**	**D J1**	1.9	0.39	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorooctanesulfonic acid (PFOS)	**27**	**D J1** J K01	6.2	1.5	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5

DO NOT USE

USE THIS

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	53		50 - 150	03/16/18 11:19	04/07/18 12:01	5
13C4-PFHpA	73		50 - 150	03/16/18 11:19	04/07/18 12:01	5
13C4 PFOA	71		50 - 150	03/16/18 11:19	04/07/18 12:01	5
13C5 PFNA	75		50 - 150	03/16/18 11:19	04/07/18 12:01	5
18O2 PFHxS	61		50 - 150	03/16/18 11:19	04/07/18 12:01	5
13C4 PFOS	61		50 - 150	03/16/18 11:19	04/07/18 12:01	5

Client Sample ID: BNA01-SB1-02 — Lab Sample ID: 320-36960-5

Date Collected: 03/05/18 15:50 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.5**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	U	0.38	0.099	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorooctanoic acid (PFOA)	0.25	U		0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorononanoic acid (PFNA)	0.25	U M Q		0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U		0.51	0.075	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorohexanesulfonic acid (PFHxS)	**0.22**	**J**	J	0.38	0.079	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U	U	1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*65*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
13C4-PFHpA	*75*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
13C4 PFOA	*79*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
13C5 PFNA	*81*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
18O2 PFHxS	*73*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
13C4 PFOS	*67*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*

Client Sample ID: BNA03-SB1-01 — Lab Sample ID: 320-36960-6

Date Collected: 03/06/18 07:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.3**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	U	0.38	0.099	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorooctanoic acid (PFOA)	0.25	U M		0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorononanoic acid (PFNA)	0.25	U M Q		0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U		0.51	0.075	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorohexanesulfonic acid (PFHxS)	**0.19**	**J**	J	0.38	0.079	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorooctanesulfonic acid (PFOS)	0.63	U	U	1.3	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*60*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
13C4-PFHpA	*71*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
13C4 PFOA	*70*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
13C5 PFNA	*70*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
18O2 PFHxS	*64*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
13C4 PFOS	*60*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*

Client Sample ID: BNA03-SB1-01D — Lab Sample ID: 320-36960-7

Date Collected: 03/06/18 07:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.1**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	U	0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorooctanoic acid (PFOA)	0.26	U		0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorononanoic acid (PFNA)	0.26	U M Q		0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U		0.51	0.075	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorohexanesulfonic acid (PFHxS)	**0.17**	**J**	J	0.38	0.079	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U	U	1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1

Client Sample ID: BNA03-SB1-01D — Lab Sample ID: 320-36960-7

Date Collected: 03/06/18 07:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.1**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	58		50 - 150	03/16/18 11:19	04/07/18 10:19	1
13C4-PFHpA	74		50 - 150	03/16/18 11:19	04/07/18 10:19	1
13C4 PFOA	71		50 - 150	03/16/18 11:19	04/07/18 10:19	1
13C5 PFNA	72		50 - 150	03/16/18 11:19	04/07/18 10:19	1
18O2 PFHxS	63		50 - 150	03/16/18 11:19	04/07/18 10:19	1
13C4 PFOS	63		50 - 150	03/16/18 11:19	04/07/18 10:19	1

Client Sample ID: BNA03-SB1-02 — Lab Sample ID: 320-36960-8

Date Collected: 03/06/18 07:35 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.2**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	U	0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorooctanoic acid (PFOA)	0.26	U		0.39	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorononanoic acid (PFNA)	0.26	U M Q		0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U		0.52	0.076	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	U		0.39	0.080	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U		1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	65		50 - 150	03/16/18 11:19	04/07/18 10:27	1
13C4-PFHpA	71		50 - 150	03/16/18 11:19	04/07/18 10:27	1
13C4 PFOA	75		50 - 150	03/16/18 11:19	04/07/18 10:27	1
13C5 PFNA	78		50 - 150	03/16/18 11:19	04/07/18 10:27	1
18O2 PFHxS	65		50 - 150	03/16/18 11:19	04/07/18 10:27	1
13C4 PFOS	65		50 - 150	03/16/18 11:19	04/07/18 10:27	1

Client Sample ID: BNA03-SB2-01 — Lab Sample ID: 320-36960-9

Date Collected: 03/06/18 09:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 75.8**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	U	0.40	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorooctanoic acid (PFOA)	0.26	U M		0.40	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorononanoic acid (PFNA)	0.26	U Q		0.40	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorobutanesulfonic acid (PFBS)	0.24	U		0.53	0.078	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorohexanesulfonic acid (PFHxS)	**0.10**	**J M**	J	0.40	0.082	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorooctanesulfonic acid (PFOS)	0.66	U M	U	1.3	0.32	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	60		50 - 150	03/16/18 11:19	04/07/18 10:35	1
13C4-PFHpA	70		50 - 150	03/16/18 11:19	04/07/18 10:35	1
13C4 PFOA	68		50 - 150	03/16/18 11:19	04/07/18 10:35	1
13C5 PFNA	73		50 - 150	03/16/18 11:19	04/07/18 10:35	1
18O2 PFHxS	63		50 - 150	03/16/18 11:19	04/07/18 10:35	1
13C4 PFOS	63		50 - 150	03/16/18 11:19	04/07/18 10:35	1

Client Sample ID: BNA03-SB2-01D — Lab Sample ID: 320-36960-10

Date Collected: 03/06/18 09:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 74.6**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.27	U	U	0.40	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorooctanoic acid (PFOA)	0.27	U M		0.40	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorononanoic acid (PFNA)	0.27	U M Q		0.40	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorobutanesulfonic acid (PFBS)	0.24	U		0.54	0.080	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorohexanesulfonic acid (PFHxS)	**0.095**	**J**	J	0.40	0.084	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorooctanesulfonic acid (PFOS)	0.67	U M	U	1.3	0.32	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*64*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
13C4-PFHpA	*71*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
13C4 PFOA	*70*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
13C5 PFNA	*73*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
18O2 PFHxS	*65*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
13C4 PFOS	*66*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*

Client Sample ID: BNA03-SB2-02 — Lab Sample ID: 320-36960-11

Date Collected: 03/06/18 09:40 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 79.5**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	U	0.38	0.098	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorooctanoic acid (PFOA)	0.25	U		0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorononanoic acid (PFNA)	0.25	U Q		0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U		0.50	0.074	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	U		0.38	0.078	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorooctanesulfonic acid (PFOS)	0.63	U M		1.3	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*66*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
13C4-PFHpA	*77*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
13C4 PFOA	*75*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
13C5 PFNA	*77*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
18O2 PFHxS	*74*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
13C4 PFOS	*68*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*

Client Sample ID: BNA04-SB1-01 — Lab Sample ID: 320-36960-12

Date Collected: 03/06/18 13:30 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 78.8**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	U	0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorooctanoic acid (PFOA)	0.26	U M		0.39	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorononanoic acid (PFNA)	0.26	U M Q		0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U		0.51	0.076	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	U M		0.39	0.080	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U		1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*60*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:06*	*1*

Client Sample ID: BNA04-SB1-01 — Lab Sample ID: 320-36960-12

Date Collected: 03/06/18 13:30 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 78.8**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4-PFHpA	71		50 - 150	03/16/18 11:19	04/07/18 11:06	1
13C4 PFOA	69		50 - 150	03/16/18 11:19	04/07/18 11:06	1
13C5 PFNA	71		50 - 150	03/16/18 11:19	04/07/18 11:06	1
18O2 PFHxS	65		50 - 150	03/16/18 11:19	04/07/18 11:06	1
13C4 PFOS	65		50 - 150	03/16/18 11:19	04/07/18 11:06	1

Client Sample ID: BNA04-SB1-02 — Lab Sample ID: 320-36960-13

Date Collected: 03/06/18 14:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 70.7**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.29	U	U	0.43	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorooctanoic acid (PFOA)	0.29	U M		0.43	0.14	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorononanoic acid (PFNA)	0.29	U Q		0.43	0.12	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorobutanesulfonic acid (PFBS)	0.26	U		0.57	0.084	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorohexanesulfonic acid (PFHxS)	0.29	U M		0.43	0.088	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorooctanesulfonic acid (PFOS)	0.71	U		1.4	0.34	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	64		50 - 150	03/16/18 11:19	04/07/18 11:14	1
13C4-PFHpA	71		50 - 150	03/16/18 11:19	04/07/18 11:14	1
13C4 PFOA	71		50 - 150	03/16/18 11:19	04/07/18 11:14	1
13C5 PFNA	75		50 - 150	03/16/18 11:19	04/07/18 11:14	1
18O2 PFHxS	64		50 - 150	03/16/18 11:19	04/07/18 11:14	1
13C4 PFOS	65		50 - 150	03/16/18 11:19	04/07/18 11:14	1

Client Sample ID: BNA05-SB1-01 — Lab Sample ID: 320-36960-14

Date Collected: 03/07/18 08:25 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 79.0**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	U	0.38	0.098	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorooctanoic acid (PFOA)	0.25	U M		0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorononanoic acid (PFNA)	0.25	U M Q		0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U		0.50	0.074	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorohexanesulfonic acid (PFHxS)	**0.26**	**J**	J	0.38	0.078	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorooctanesulfonic acid (PFOS)	**4.8**	**M**	=	1.3	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	66		50 - 150	03/16/18 11:19	04/07/18 11:22	1
13C4-PFHpA	75		50 - 150	03/16/18 11:19	04/07/18 11:22	1
13C4 PFOA	82		50 - 150	03/16/18 11:19	04/07/18 11:22	1
13C5 PFNA	81		50 - 150	03/16/18 11:19	04/07/18 11:22	1
18O2 PFHxS	72		50 - 150	03/16/18 11:19	04/07/18 11:22	1
13C4 PFOS	63		50 - 150	03/16/18 11:19	04/07/18 11:22	1

Client Sample ID: BNA05-SB1-02 — Lab Sample ID: 320-36960-15

Date Collected: 03/07/18 08:35 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 81.4**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.37	0.097	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.37	0.12	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorononanoic acid (PFNA)	0.25	U Q	0.37	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorobutanesulfonic acid (PFBS)	0.22	U	0.50	0.073	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorohexanesulfonic acid (PFHxS)	**0.66**	=	0.37	0.077	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorooctanesulfonic acid (PFOS)	**1.8**	=	1.2	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*66*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
13C4-PFHpA	*82*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
13C4 PFOA	*81*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
13C5 PFNA	*82*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
18O2 PFHxS	*73*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
13C4 PFOS	*64*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*

Client Sample ID: BNA05-SW1-01 — Lab Sample ID: 320-36960-16

Date Collected: 03/08/18 11:45 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**8.4**	=	1.7	0.52	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorooctanoic acid (PFOA)	**21**	**M** =	1.7	0.46	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorononanoic acid (PFNA)	**1.3**	**J M** J	1.7	0.45	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorobutanesulfonic acid (PFBS)	**22**	=	1.7	0.39	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorohexanesulfonic acid (PFHxS)	**190**	=	1.7	0.33	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorooctanesulfonic acid (PFOS)	**250**	=	3.4	0.94	ng/L		03/22/18 18:07	03/24/18 19:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*79*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
13C4-PFHpA	*79*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
13C4 PFOA	*77*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
13C5 PFNA	*78*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
18O2 PFHxS	*79*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
13C4 PFOS	*76*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*

Client Sample ID: BNA05-ER-SD-01 — Lab Sample ID: 320-36960-17

Date Collected: 03/08/18 12:05 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.62	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.55	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.53	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	0.47	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	U M	2.0	0.39	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorooctanesulfonic acid (PFOS)	3.1	U	4.1	1.1	ng/L		03/16/18 10:38	03/19/18 19:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	93		50 - 150	03/16/18 10:38	03/19/18 19:57	1
13C4-PFHpA	91		50 - 150	03/16/18 10:38	03/19/18 19:57	1
13C4 PFOA	94		50 - 150	03/16/18 10:38	03/19/18 19:57	1
13C5 PFNA	92		50 - 150	03/16/18 10:38	03/19/18 19:57	1
18O2 PFHxS	94		50 - 150	03/16/18 10:38	03/19/18 19:57	1
13C4 PFOS	92		50 - 150	03/16/18 10:38	03/19/18 19:57	1

Client Sample ID: BNA05-SD1-01
Date Collected: 03/08/18 12:10
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-18
Matrix: Solid
Percent Solids: 75.4

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U M	U	0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorooctanoic acid (PFOA)	**0.15**	**J**	J	0.39	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorononanoic acid (PFNA)	0.26	U M Q	U	0.39	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorobutanesulfonic acid (PFBS)	0.24	U	U	0.52	0.077	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorohexanesulfonic acid (PFHxS)	**0.50**	**M**	=	0.39	0.081	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorooctanesulfonic acid (PFOS)	**4.2**	**M**	=	1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	68		50 - 150	03/16/18 11:19	04/07/18 11:37	1
13C4-PFHpA	79		50 - 150	03/16/18 11:19	04/07/18 11:37	1
13C4 PFOA	85		50 - 150	03/16/18 11:19	04/07/18 11:37	1
13C5 PFNA	94		50 - 150	03/16/18 11:19	04/07/18 11:37	1
18O2 PFHxS	78		50 - 150	03/16/18 11:19	04/07/18 11:37	1
13C4 PFOS	84		50 - 150	03/16/18 11:19	04/07/18 11:37	1

Client Sample ID: BNA-ER-GW-01
Date Collected: 03/08/18 16:35
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-19
Matrix: Water

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	U	2.0	0.61	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q		2.0	0.54	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorononanoic acid (PFNA)	1.5	U		2.0	0.52	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorobutanesulfonic acid (PFBS)	1.0	U		2.0	0.46	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	U		2.0	0.38	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U		4.0	1.1	ng/L		03/16/18 10:38	03/19/18 20:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	90		50 - 150	03/16/18 10:38	03/19/18 20:05	1
13C4-PFHpA	90		50 - 150	03/16/18 10:38	03/19/18 20:05	1
13C4 PFOA	91		50 - 150	03/16/18 10:38	03/19/18 20:05	1
13C5 PFNA	93		50 - 150	03/16/18 10:38	03/19/18 20:05	1
18O2 PFHxS	95		50 - 150	03/16/18 10:38	03/19/18 20:05	1
13C4 PFOS	88		50 - 150	03/16/18 10:38	03/19/18 20:05	1

Client Sample ID: BNA-FB-02 — Lab Sample ID: 320-36960-20

Date Collected: 03/08/18 16:45 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.6	U	U	2.1	0.63	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorooctanoic acid (PFOA)	1.6	U Q	U	2.1	0.56	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorononanoic acid (PFNA)	1.6	U	U	2.1	0.54	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorobutanesulfonic acid (PFBS)	**0.65**	**J**	J	2.1	0.48	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorohexanesulfonic acid (PFHxS)	1.5 ~~0.53~~	**J**	J	U F13 2.1	0.39	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorooctanesulfonic acid (PFOS)	**1.2**	**J M**	J	4.1	1.1	ng/L		03/16/18 10:38	03/19/18 20:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*89*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
13C4-PFHpA	*92*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
13C4 PFOA	*95*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
13C5 PFNA	*97*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
18O2 PFHxS	*95*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
13C4 PFOS	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*

Client Sample ID: BNA-IDW-5-01 — Lab Sample ID: 320-36960-21

Date Collected: 03/08/18 16:55 — **Matrix: Solid**
Date Received: 03/10/18 09:30

NOT VALIDATED

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	200	U M	300	53	ug/L			03/25/18 05:14	100
2-Butanone (MEK)	1000	U	2000	470	ug/L			03/25/18 05:14	100
Carbon tetrachloride	100	U	300	30	ug/L			03/25/18 05:14	100
Chlorobenzene	100	U	200	44	ug/L			03/25/18 05:14	100
Chloroform	100	U	500	50	ug/L			03/25/18 05:14	100
1,2-Dichloroethane	200	U M	200	53	ug/L			03/25/18 05:14	100
1,1-Dichloroethene	200	U	400	78	ug/L			03/25/18 05:14	100
Tetrachloroethene	100	U	300	41	ug/L			03/25/18 05:14	100
Trichloroethene	200	U	300	85	ug/L			03/25/18 05:14	100
Vinyl chloride	50	U Q	100	22	ug/L			03/25/18 05:14	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 122*		*03/25/18 05:14*	*100*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 126*		*03/25/18 05:14*	*100*
4-Bromofluorobenzene (Surr)	*94*		*75 - 125*		*03/25/18 05:14*	*100*
Dibromofluoromethane (Surr)	*99*		*77 - 120*		*03/25/18 05:14*	*100*

Client Sample ID: MW-BNA05-01-01 — Lab Sample ID: 320-36960-22

Date Collected: 03/09/18 09:02 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**3.2**		=	2.0	0.60	ng/L		03/16/18 10:38	03/19/18 20:20	1
Perfluorooctanoic acid (PFOA)	**12**	**M Q J1**	J H01 P01	2.0	0.54	ng/L		03/16/18 10:38	03/19/18 20:20	1
Perfluorononanoic acid (PFNA)	**1.3**	**J**	J	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 20:20	1
Perfluorobutanesulfonic acid (PFBS)	**5.1**		=	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 20:20	1

Client Sample ID: MW-BNA05-01-01 — Lab Sample ID: 320-36960-22

Date Collected: 03/09/18 09:02 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	75	J1	J H01	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 20:20	1
Perfluorooctanesulfonic acid (PFOS)	66	J1	J H01	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 20:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*84*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
13C4-PFHpA	*91*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
13C4 PFOA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
13C5 PFNA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
18O2 PFHxS	*91*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
13C4 PFOS	*90*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - RE DO NOT USE

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	3.6		1.9	0.57	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorooctanoic acid (PFOA)	12		1.9	0.51	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorononanoic acid (PFNA)	1.4	U	1.9	0.49	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorobutanesulfonic acid (PFBS)	5.0		1.9	0.43	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorohexanesulfonic acid (PFHxS)	78	J1	1.9	0.36	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorooctanesulfonic acid (PFOS)	68	J1	3.7	1.0	ng/L		03/22/18 18:07	03/24/18 19:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*14*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
13C4-PFHpA	*9*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
13C4 PFOA	*9*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
13C5 PFNA	*9*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
18O2 PFHxS	*13*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
13C4 PFOS	*11*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*

Client Sample ID: MW-BNA05-01-01D — Lab Sample ID: 320-36960-23

Date Collected: 03/09/18 09:02 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	3.6	M	=	1.9	0.59	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorooctanoic acid (PFOA)	11	M	=	1.9	0.52	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorononanoic acid (PFNA)	1.4	J	J	1.9	0.50	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorobutanesulfonic acid (PFBS)	4.4		=	1.9	0.44	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorohexanesulfonic acid (PFHxS)	68		=	1.9	0.37	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorooctanesulfonic acid (PFOS)	61		=	3.9	1.1	ng/L		03/22/18 18:07	03/24/18 20:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*65*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*
13C4-PFHpA	*68*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*
13C4 PFOA	*55*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*
13C5 PFNA	*72*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*

Client Sample ID: MW-BNA05-01-01D — Lab Sample ID: 320-36960-23

Date Collected: 03/09/18 09:02 **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	72		50 - 150	03/22/18 18:07	03/24/18 20:13	1
13C4 PFOS	69		50 - 150	03/22/18 18:07	03/24/18 20:13	1

Client Sample ID: MW-BNA01-01-01 — Lab Sample ID: 320-36960-24

Date Collected: 03/09/18 11:34 **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	5.1	=	1.9	0.58	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorooctanoic acid (PFOA)	13 M	=	1.9	0.52	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorononanoic acid (PFNA)	1.4 U	U	1.9	0.50	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorobutanesulfonic acid (PFBS)	27 M	=	1.9	0.44	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorohexanesulfonic acid (PFHxS)	130	=	1.9	0.36	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorooctanesulfonic acid (PFOS)	96	=	3.8	1.1	ng/L		03/22/18 18:07	03/24/18 20:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	69		50 - 150	03/22/18 18:07	03/24/18 20:21	1
13C4-PFHpA	70		50 - 150	03/22/18 18:07	03/24/18 20:21	1
13C4 PFOA	74		50 - 150	03/22/18 18:07	03/24/18 20:21	1
13C5 PFNA	70		50 - 150	03/22/18 18:07	03/24/18 20:21	1
18O2 PFHxS	75		50 - 150	03/22/18 18:07	03/24/18 20:21	1
13C4 PFOS	73		50 - 150	03/22/18 18:07	03/24/18 20:21	1

Client Sample ID: BNA04-SW1-01 — Lab Sample ID: 320-36960-25

Date Collected: 03/09/18 13:40 **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	3.5	=	1.9	0.58	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorooctanoic acid (PFOA)	7.3 M	=	1.9	0.51	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorononanoic acid (PFNA)	0.80 J		1.9	0.49	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorobutanesulfonic acid (PFBS)	11	=	1.9	0.44	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorohexanesulfonic acid (PFHxS)	59	=	1.9	0.36	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorooctanesulfonic acid (PFOS)	50	=	3.8	1.0	ng/L		03/22/18 18:07	03/24/18 20:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	67		50 - 150	03/22/18 18:07	03/24/18 20:29	1
13C4-PFHpA	68		50 - 150	03/22/18 18:07	03/24/18 20:29	1
13C4 PFOA	68		50 - 150	03/22/18 18:07	03/24/18 20:29	1
13C5 PFNA	64		50 - 150	03/22/18 18:07	03/24/18 20:29	1
18O2 PFHxS	73		50 - 150	03/22/18 18:07	03/24/18 20:29	1
13C4 PFOS	67		50 - 150	03/22/18 18:07	03/24/18 20:29	1

Client Sample Results

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Client Sample ID: BNA-IDW-W-01 NOT VALIDATED
Date Collected: 03/09/18 15:20
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-26
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0040	U	0.010	0.0016	mg/L			03/27/18 13:56	1
2-Butanone (MEK)	0.040	U	0.10	0.018	mg/L			03/27/18 13:56	1
Carbon tetrachloride	0.0040	U	0.010	0.0019	mg/L			03/27/18 13:56	1
Chlorobenzene	0.0040	U	0.010	0.0017	mg/L			03/27/18 13:56	1
Chloroform	**0.0024**	**J**	0.010	0.0016	mg/L			03/27/18 13:56	1
1,2-Dichloroethane	0.0040	U	0.010	0.0013	mg/L			03/27/18 13:56	1
1,1-Dichloroethene	0.0080	U	0.010	0.0023	mg/L			03/27/18 13:56	1
Tetrachloroethene	0.0040	U	0.010	0.0020	mg/L			03/27/18 13:56	1
Trichloroethene	0.0040	U	0.010	0.0016	mg/L			03/27/18 13:56	1
Vinyl chloride	0.0020	U	0.010	0.0010	mg/L			03/27/18 13:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*78 - 120*		*03/27/18 13:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*64 - 129*		*03/27/18 13:56*	*1*
4-Bromofluorobenzene (Surr)	*97*		*78 - 121*		*03/27/18 13:56*	*1*
Dibromofluoromethane (Surr)	*97*		*79 - 119*		*03/27/18 13:56*	*1*

APPENDIX F
LABORATORY ANALYTICAL DATA REPORTS

(FOR HARD COPY VERSIONS OF THIS REPORT, ALL OF APPENDIX F IS INCLUDED ON THE COMPLETE DOCUMENT COMPACT DISC)

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 320-36960-1

Job Description: PFC 4 SI's - Nashville ANGB

For:
Leidos, Inc.
301 Laboratory Road
Leidos SSC-AP
LOC #47, MS 2113-03
Oak Ridge, TN 37830

Attention: Mr. Michael Poligone

Approved for release.
David R Alltucker
Project Manager I
4/11/2018 10:37 AM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
04/11/2018

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Qualifiers

GC/MS VOA

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

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
E	Result exceeded calibration range.
D	The reported value is from a dilution.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job Narrative
320-36960-1

Receipt
The samples were received on 3/10/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.3º C.

Receipt Exceptions
The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): BNA03-SB1-01D (320-36960-7). The container date lists 3/16/18, while the COC lists 3/6/18.

GC/MS VOA
Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 580-269828 recovered above the upper control limit for Vinyl chloride(%D 27.5%). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: BNA-IDW-5-01 (320-36960-21) and (CCVIS 580-269828/3).

Method(s) 8260B: The laboratory control sample duplicate (LCSD) for preparation batch 580-269508 and analytical batch 580-269828 recovered outside control limits for the following analytes: Vinyl chloride(%R 152%). These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

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

LCMS
Method(s) EPA 537 (Mod): The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) EPA 537 (Mod): The laboratory control sample (LCS) for preparation batch 320-213387 and analytical batch 320-213706 recovered outside control limits for the following analyte: Perfluorooctanoic acid (PFOA). This analytes was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method(s) EPA 537 (Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-214457 and analytical batch 320-214716 were outside control limits for Perfluorohexanesulfonic acid (PFHxS) and Perfluorooctanesulfonic acid (PFOS). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) EPA 537 (Mod): The laboratory control sample (LCS) for preparation batch 320-213387 and analytical batch 320-213706 recovered outside control limits for the following analyte: Perfluorooctanoic acid (PFOA). This analyte was detected in the following sample and as a result the sample was re-extracted: 320-36960-A-22-A. The LCS was within control limits for all analytes in the re-extraction; however, this sample exhibited very low surrogate recoveries in the re-extraction. The re-extraction resulted in an identical detection for PFOA, which demonstrated the high PFOA recovery in the LCS in the original extraction had no impact on this sample. Both sets of data were reported.

Method(s) EPA 537 (Mod): The matrix spike (MS) recoveries for preparation batch 320-213387 and analytical batch 320-213789 were outside control limits for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA). Sample matrix interference is suspected.

Method(s) EPA 537 (Mod): The matrix spike duplicate (MSD) recoveries for preparation batch 320-213387 and analytical batch 320-213789 were outside control limits for Perfluorohexanesulfonic acid (PFHxS) and Perfluorooctanoic acid (PFOA). Sample matrix interference is suspected.

Method(s) EPA 537 (Mod): Internal standard (ISTD) response for the following samples was outside control limits: MW-BNA05-01-01 (320-36960-22) and MW-BNA05-01-01 (320-36960-22[MS]). The samples were re-analyzed with concurring results; therefore, the results were reported.

Method(s) EPA 537 (Mod): The Isotope Dilution Analyte (IDA) recoveries associated with the following re-extraction sample were outside control limits for several analytes: MW-BNA05-01-01 (320-36960-22). All IDA recoveries were within control limits in the original extraction for this sample. Insufficient sample remains to re-extract the sample again. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. Both sets of data were reported.

Method(s) EPA 537 (Mod): The concentration of Perfluorooctanesulfonic acid (PFOS) associated with the following samples exceeded the instrument calibration range: BNA01-SB1-01 (320-36960-4), BNA01-SB1-01 (320-36960-4[MS]) and BNA01-SB1-01 (320-36960-4[MSD]). These samples were re-analyzed at dilution to bring the results within the calibration range. Both sets of data were reported.

Method(s) EPA 537 (Mod): Due to the high concentration of Perfluorooctanesulfonic acid (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-213404 and analytical batch 320-216821 could not be evaluated for accuracy and precision for this

analyte. The associated laboratory control sample (LCS) met acceptance criteria.

Method(s) EPA 537 (Mod): The matrix spike duplicate (MSD) recovery for Perfluorohexanesulfonic acid (PFHxS) in preparation batch 320-213404 and analytical batch 320-216821 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) EPA 537 (Mod): The laboratory control sample (LCS) for preparation batch 320-213404 and analytical batch 320-216849 recovered outside control limits for the following analyte: Perfluorononanoic acid (PFNA). This analyte were biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method(s) EPA 537 (Mod): The following samples were diluted to bring the concentration of Perfluorooctanesulfonic acid (PFOS) within the calibration range: BNA01-SB1-01 (320-36960-4), BNA01-SB1-01 (320-36960-4[MS]) and BNA01-SB1-01 (320-36960-4[MSD]). Elevated reporting limits (RLs) are provided.

Method(s) EPA 537 (Mod): Due to the high concentration of Perfluorooctanesulfonic acid (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-213404 and analytical batch 320-216849 could not be evaluated for accuracy and precision for this analyte. The associated laboratory control sample (LCS) met acceptance criteria.

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

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

Organic Prep
Method(s) 3535: The following samples: MW-BNA05-01-01 (320-36960-22), MW-BNA05-01-01 (320-36960-22[MS]), MW-BNA05-01-01 (320-36960-22[MSD]), MW-BNA05-01-01D (320-36960-23), MW-BNA01-01-01 (320-36960-24) and BNA04-SW1-01 (320-36960-25) were decanted prior to extraction, due to containing excess sediment that had the potential to clog the solid-phase column.

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

Detection Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Client Sample ID: BNA-ER-SB-01 — Lab Sample ID: 320-36960-1

No Detections.

Client Sample ID: BNA-FB-01 — Lab Sample ID: 320-36960-2

No Detections.

Client Sample ID: BNA-RB-01 — Lab Sample ID: 320-36960-3

No Detections.

Client Sample ID: BNA01-SB1-01 — Lab Sample ID: 320-36960-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.19	J	0.37	0.097	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.40		0.37	0.12	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.99		0.50	0.074	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.0	J1	0.37	0.077	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	27	E J1	1.2	0.30	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	1.1	J D	2.5	0.37	ug/Kg	5	☼	EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	6.4	D J1	1.9	0.39	ug/Kg	5	☼	EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	27	D J1	6.2	1.5	ug/Kg	5	☼	EPA 537 (Mod)	Total/NA

Client Sample ID: BNA01-SB1-02 — Lab Sample ID: 320-36960-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.22	J	0.38	0.079	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA

Client Sample ID: BNA03-SB1-01 — Lab Sample ID: 320-36960-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.19	J	0.38	0.079	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA

Client Sample ID: BNA03-SB1-01D — Lab Sample ID: 320-36960-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.17	J	0.38	0.079	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA

Client Sample ID: BNA03-SB1-02 — Lab Sample ID: 320-36960-8

No Detections.

Client Sample ID: BNA03-SB2-01 — Lab Sample ID: 320-36960-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.10	J M	0.40	0.082	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA

Client Sample ID: BNA03-SB2-01D — Lab Sample ID: 320-36960-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.095	J	0.40	0.084	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Client Sample ID: BNA03-SB2-02 — Lab Sample ID: 320-36960-11

No Detections.

Client Sample ID: BNA04-SB1-01 — Lab Sample ID: 320-36960-12

No Detections.

Client Sample ID: BNA04-SB1-02 — Lab Sample ID: 320-36960-13

No Detections.

Client Sample ID: BNA05-SB1-01 — Lab Sample ID: 320-36960-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.26	J	0.38	0.078	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.8	M	1.3	0.30	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA

Client Sample ID: BNA05-SB1-02 — Lab Sample ID: 320-36960-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.66		0.37	0.077	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.8		1.2	0.30	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA

Client Sample ID: BNA05-SW1-01 — Lab Sample ID: 320-36960-16

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	8.4		1.7	0.52	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	21	M	1.7	0.46	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.3	J M	1.7	0.45	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	22		1.7	0.39	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	190		1.7	0.33	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	250		3.4	0.94	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: BNA05-ER-SD-01 — Lab Sample ID: 320-36960-17

No Detections.

Client Sample ID: BNA05-SD1-01 — Lab Sample ID: 320-36960-18

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.15	J	0.39	0.13	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.50	M	0.39	0.081	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.2	M	1.3	0.31	ug/Kg	1	☼	EPA 537 (Mod)	Total/NA

Client Sample ID: BNA-ER-GW-01 — Lab Sample ID: 320-36960-19

No Detections.

Client Sample ID: BNA-FB-02 — Lab Sample ID: 320-36960-20

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.65	J	2.1	0.48	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.53	J	2.1	0.39	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J M	4.1	1.1	ng/L	1		EPA 537 (Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Client Sample ID: BNA-IDW-5-01 — Lab Sample ID: 320-36960-21

No Detections.

Client Sample ID: MW-BNA05-01-01 — Lab Sample ID: 320-36960-22

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	3.2		2.0	0.60	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	12	M Q J1	2.0	0.54	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.3	J	2.0	0.52	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.1		2.0	0.46	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	75	J1	2.0	0.38	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	66	J1	4.0	1.1	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA) - RE	3.6		1.9	0.57	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA) - RE	12		1.9	0.51	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - RE	5.0		1.9	0.43	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - RE	78	J1	1.9	0.36	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RE	68	J1	3.7	1.0	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: MW-BNA05-01-01D — Lab Sample ID: 320-36960-23

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	3.6	M	1.9	0.59	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	11	M	1.9	0.52	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.4	J	1.9	0.50	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.4		1.9	0.44	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	68		1.9	0.37	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	61		3.9	1.1	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: MW-BNA01-01-01 — Lab Sample ID: 320-36960-24

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	5.1		1.9	0.58	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	13	M	1.9	0.52	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	27	M	1.9	0.44	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	130		1.9	0.36	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	96		3.8	1.1	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: BNA04-SW1-01 — Lab Sample ID: 320-36960-25

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	3.5		1.9	0.58	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	7.3	M	1.9	0.51	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.80	J	1.9	0.49	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	11		1.9	0.44	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	59		1.9	0.36	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	50		3.8	1.0	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: BNA-IDW-W-01 — Lab Sample ID: 320-36960-26

This Detection Summary does not include radiochemical test results.

Client Sample ID: BNA-IDW-W-01 (Continued)

Lab Sample ID: 320-36960-26

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.0024	J	0.010	0.0016	mg/L	1		8260B	TCLP

This Detection Summary does not include radiochemical test results.

Client Sample ID: BNA-ER-SB-01

Lab Sample ID: 320-36960-1
Date Collected: 03/05/18 10:45
Matrix: Water
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.60	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.53	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 19:26	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 19:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*87*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
13C4-PFHpA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
13C4 PFOA	*96*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
13C5 PFNA	*89*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
18O2 PFHxS	*90*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*
13C4 PFOS	*89*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:26*	*1*

Client Sample ID: BNA-FB-01

Lab Sample ID: 320-36960-2
Date Collected: 03/05/18 10:55
Matrix: Water
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.60	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.54	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 19:33	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 19:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*94*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
13C4-PFHpA	*95*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
13C4 PFOA	*94*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
13C5 PFNA	*97*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
18O2 PFHxS	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*
13C4 PFOS	*94*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:33*	*1*

Client Sample ID: BNA-RB-01

Lab Sample ID: 320-36960-3
Date Collected: 03/05/18 11:05
Matrix: Water
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.61	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.54	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 19:41	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 19:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*96*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:41*	*1*
13C4-PFHpA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 19:41*	*1*

Client Sample ID: BNA-RB-01

Date Collected: 03/05/18 11:05
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-3
Matrix: Water

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	96		50 - 150	03/16/18 10:38	03/19/18 19:41	1
13C5 PFNA	98		50 - 150	03/16/18 10:38	03/19/18 19:41	1
18O2 PFHxS	93		50 - 150	03/16/18 10:38	03/19/18 19:41	1
13C4 PFOS	98		50 - 150	03/16/18 10:38	03/19/18 19:41	1

Client Sample ID: BNA01-SB1-01

Date Collected: 03/05/18 14:15
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-4
Matrix: Solid
Percent Solids: 80.2

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**0.19**	**J**	0.37	0.097	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorooctanoic acid (PFOA)	**0.40**		0.37	0.12	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorononanoic acid (PFNA)	0.25	U M Q	0.37	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorobutanesulfonic acid (PFBS)	**0.99**		0.50	0.074	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorohexanesulfonic acid (PFHxS)	**6.0**	**J1**	0.37	0.077	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1
Perfluorooctanesulfonic acid (PFOS)	**27**	**E J1**	1.2	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 09:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	55		50 - 150	03/16/18 11:19	04/07/18 09:40	1
13C4-PFHpA	73		50 - 150	03/16/18 11:19	04/07/18 09:40	1
13C4 PFOA	72		50 - 150	03/16/18 11:19	04/07/18 09:40	1
13C5 PFNA	73		50 - 150	03/16/18 11:19	04/07/18 09:40	1
18O2 PFHxS	60		50 - 150	03/16/18 11:19	04/07/18 09:40	1
13C4 PFOS	58		50 - 150	03/16/18 11:19	04/07/18 09:40	1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.2	U M J1	1.9	0.49	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorooctanoic acid (PFOA)	1.2	U M J1	1.9	0.62	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorononanoic acid (PFNA)	1.2	U Q	1.9	0.50	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J D**	2.5	0.37	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorohexanesulfonic acid (PFHxS)	**6.4**	**D J1**	1.9	0.39	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5
Perfluorooctanesulfonic acid (PFOS)	**27**	**D J1**	6.2	1.5	ug/Kg	☼	03/16/18 11:19	04/07/18 12:01	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	53		50 - 150	03/16/18 11:19	04/07/18 12:01	5
13C4-PFHpA	73		50 - 150	03/16/18 11:19	04/07/18 12:01	5
13C4 PFOA	71		50 - 150	03/16/18 11:19	04/07/18 12:01	5
13C5 PFNA	75		50 - 150	03/16/18 11:19	04/07/18 12:01	5
18O2 PFHxS	61		50 - 150	03/16/18 11:19	04/07/18 12:01	5
13C4 PFOS	61		50 - 150	03/16/18 11:19	04/07/18 12:01	5

Client Sample ID: BNA01-SB1-02 — Lab Sample ID: 320-36960-5

Date Collected: 03/05/18 15:50 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.5**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.099	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorononanoic acid (PFNA)	0.25	U M Q	0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.075	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorohexanesulfonic acid (PFHxS)	**0.22**	**J**	0.38	0.079	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U	1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 10:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*65*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
13C4-PFHpA	*75*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
13C4 PFOA	*79*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
13C5 PFNA	*81*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
18O2 PFHxS	*73*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*
13C4 PFOS	*67*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:03*	*1*

Client Sample ID: BNA03-SB1-01 — Lab Sample ID: 320-36960-6

Date Collected: 03/06/18 07:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.3**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.099	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorooctanoic acid (PFOA)	0.25	U M	0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorononanoic acid (PFNA)	0.25	U M Q	0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.075	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorohexanesulfonic acid (PFHxS)	**0.19**	**J**	0.38	0.079	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1
Perfluorooctanesulfonic acid (PFOS)	0.63	U	1.3	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 10:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*60*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
13C4-PFHpA	*71*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
13C4 PFOA	*70*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
13C5 PFNA	*70*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
18O2 PFHxS	*64*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*
13C4 PFOS	*60*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:11*	*1*

Client Sample ID: BNA03-SB1-01D — Lab Sample ID: 320-36960-7

Date Collected: 03/06/18 07:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.1**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorooctanoic acid (PFOA)	0.26	U	0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorononanoic acid (PFNA)	0.26	U M Q	0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.075	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorohexanesulfonic acid (PFHxS)	**0.17**	**J**	0.38	0.079	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U	1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 10:19	1

Client Sample ID: BNA03-SB1-01D — Lab Sample ID: 320-36960-7

Date Collected: 03/06/18 07:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.1**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	58		50 - 150	03/16/18 11:19	04/07/18 10:19	1
13C4-PFHpA	74		50 - 150	03/16/18 11:19	04/07/18 10:19	1
13C4 PFOA	71		50 - 150	03/16/18 11:19	04/07/18 10:19	1
13C5 PFNA	72		50 - 150	03/16/18 11:19	04/07/18 10:19	1
18O2 PFHxS	63		50 - 150	03/16/18 11:19	04/07/18 10:19	1
13C4 PFOS	63		50 - 150	03/16/18 11:19	04/07/18 10:19	1

Client Sample ID: BNA03-SB1-02 — Lab Sample ID: 320-36960-8

Date Collected: 03/06/18 07:35 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 77.2**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorooctanoic acid (PFOA)	0.26	U	0.39	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorononanoic acid (PFNA)	0.26	U M Q	0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.52	0.076	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	U	0.39	0.080	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U	1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 10:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	65		50 - 150	03/16/18 11:19	04/07/18 10:27	1
13C4-PFHpA	71		50 - 150	03/16/18 11:19	04/07/18 10:27	1
13C4 PFOA	75		50 - 150	03/16/18 11:19	04/07/18 10:27	1
13C5 PFNA	78		50 - 150	03/16/18 11:19	04/07/18 10:27	1
18O2 PFHxS	65		50 - 150	03/16/18 11:19	04/07/18 10:27	1
13C4 PFOS	65		50 - 150	03/16/18 11:19	04/07/18 10:27	1

Client Sample ID: BNA03-SB2-01 — Lab Sample ID: 320-36960-9

Date Collected: 03/06/18 09:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 75.8**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.40	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorooctanoic acid (PFOA)	0.26	U M	0.40	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorononanoic acid (PFNA)	0.26	U Q	0.40	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorobutanesulfonic acid (PFBS)	0.24	U	0.53	0.078	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorohexanesulfonic acid (PFHxS)	**0.10**	**J M**	0.40	0.082	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1
Perfluorooctanesulfonic acid (PFOS)	0.66	U M	1.3	0.32	ug/Kg	☼	03/16/18 11:19	04/07/18 10:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	60		50 - 150	03/16/18 11:19	04/07/18 10:35	1
13C4-PFHpA	70		50 - 150	03/16/18 11:19	04/07/18 10:35	1
13C4 PFOA	68		50 - 150	03/16/18 11:19	04/07/18 10:35	1
13C5 PFNA	73		50 - 150	03/16/18 11:19	04/07/18 10:35	1
18O2 PFHxS	63		50 - 150	03/16/18 11:19	04/07/18 10:35	1
13C4 PFOS	63		50 - 150	03/16/18 11:19	04/07/18 10:35	1

Client Sample ID: BNA03-SB2-01D — Lab Sample ID: 320-36960-10

Date Collected: 03/06/18 09:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 74.6**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.27	U	0.40	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorooctanoic acid (PFOA)	0.27	U M	0.40	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorononanoic acid (PFNA)	0.27	U M Q	0.40	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorobutanesulfonic acid (PFBS)	0.24	U	0.54	0.080	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorohexanesulfonic acid (PFHxS)	**0.095**	**J**	0.40	0.084	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1
Perfluorooctanesulfonic acid (PFOS)	0.67	U M	1.3	0.32	ug/Kg	☼	03/16/18 11:19	04/07/18 10:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*64*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
13C4-PFHpA	*71*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
13C4 PFOA	*70*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
13C5 PFNA	*73*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
18O2 PFHxS	*65*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*
13C4 PFOS	*66*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:50*	*1*

Client Sample ID: BNA03-SB2-02 — Lab Sample ID: 320-36960-11

Date Collected: 03/06/18 09:40 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 79.5**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.098	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorononanoic acid (PFNA)	0.25	U Q	0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.50	0.074	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	U	0.38	0.078	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1
Perfluorooctanesulfonic acid (PFOS)	0.63	U M	1.3	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 10:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*66*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
13C4-PFHpA	*77*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
13C4 PFOA	*75*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
13C5 PFNA	*77*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
18O2 PFHxS	*74*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*
13C4 PFOS	*68*		*50 - 150*	*03/16/18 11:19*	*04/07/18 10:58*	*1*

Client Sample ID: BNA04-SB1-01 — Lab Sample ID: 320-36960-12

Date Collected: 03/06/18 13:30 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 78.8**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorooctanoic acid (PFOA)	0.26	U M	0.39	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorononanoic acid (PFNA)	0.26	U M Q	0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.076	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	U M	0.39	0.080	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U	1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 11:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*60*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:06*	*1*

Client Sample ID: BNA04-SB1-01 — Lab Sample ID: 320-36960-12

Date Collected: 03/06/18 13:30 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 78.8**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*71*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:06*	*1*
13C4 PFOA	*69*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:06*	*1*
13C5 PFNA	*71*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:06*	*1*
18O2 PFHxS	*65*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:06*	*1*
13C4 PFOS	*65*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:06*	*1*

Client Sample ID: BNA04-SB1-02 — Lab Sample ID: 320-36960-13

Date Collected: 03/06/18 14:20 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 70.7**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.29	U	0.43	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorooctanoic acid (PFOA)	0.29	U M	0.43	0.14	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorononanoic acid (PFNA)	0.29	U Q	0.43	0.12	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorobutanesulfonic acid (PFBS)	0.26	U	0.57	0.084	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorohexanesulfonic acid (PFHxS)	0.29	U M	0.43	0.088	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1
Perfluorooctanesulfonic acid (PFOS)	0.71	U	1.4	0.34	ug/Kg	☼	03/16/18 11:19	04/07/18 11:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*64*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:14*	*1*
13C4-PFHpA	*71*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:14*	*1*
13C4 PFOA	*71*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:14*	*1*
13C5 PFNA	*75*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:14*	*1*
18O2 PFHxS	*64*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:14*	*1*
13C4 PFOS	*65*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:14*	*1*

Client Sample ID: BNA05-SB1-01 — Lab Sample ID: 320-36960-14

Date Collected: 03/07/18 08:25 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 79.0**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.098	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorooctanoic acid (PFOA)	0.25	U M	0.38	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorononanoic acid (PFNA)	0.25	U M Q	0.38	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.50	0.074	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorohexanesulfonic acid (PFHxS)	**0.26**	**J**	0.38	0.078	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1
Perfluorooctanesulfonic acid (PFOS)	**4.8**	**M**	1.3	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 11:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*66*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:22*	*1*
13C4-PFHpA	*75*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:22*	*1*
13C4 PFOA	*82*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:22*	*1*
13C5 PFNA	*81*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:22*	*1*
18O2 PFHxS	*72*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:22*	*1*
13C4 PFOS	*63*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:22*	*1*

Client Sample ID: BNA05-SB1-02 — Lab Sample ID: 320-36960-15

Date Collected: 03/07/18 08:35 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 81.4**

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.25	U	0.37	0.097	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.37	0.12	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorononanoic acid (PFNA)	0.25	U Q	0.37	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorobutanesulfonic acid (PFBS)	0.22	U	0.50	0.073	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorohexanesulfonic acid (PFHxS)	**0.66**		0.37	0.077	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1
Perfluorooctanesulfonic acid (PFOS)	**1.8**		1.2	0.30	ug/Kg	☼	03/16/18 11:19	04/07/18 11:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*66*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
13C4-PFHpA	*82*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
13C4 PFOA	*81*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
13C5 PFNA	*82*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
18O2 PFHxS	*73*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*
13C4 PFOS	*64*		*50 - 150*	*03/16/18 11:19*	*04/07/18 11:29*	*1*

Client Sample ID: BNA05-SW1-01 — Lab Sample ID: 320-36960-16

Date Collected: 03/08/18 11:45 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**8.4**		1.7	0.52	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorooctanoic acid (PFOA)	**21**	**M**	1.7	0.46	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorononanoic acid (PFNA)	**1.3**	**J M**	1.7	0.45	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorobutanesulfonic acid (PFBS)	**22**		1.7	0.39	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorohexanesulfonic acid (PFHxS)	**190**		1.7	0.33	ng/L		03/22/18 18:07	03/24/18 19:42	1
Perfluorooctanesulfonic acid (PFOS)	**250**		3.4	0.94	ng/L		03/22/18 18:07	03/24/18 19:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*79*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
13C4-PFHpA	*79*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
13C4 PFOA	*77*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
13C5 PFNA	*78*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
18O2 PFHxS	*79*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*
13C4 PFOS	*76*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:42*	*1*

Client Sample ID: BNA05-ER-SD-01 — Lab Sample ID: 320-36960-17

Date Collected: 03/08/18 12:05 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.62	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.55	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.53	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	0.47	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	U M	2.0	0.39	ng/L		03/16/18 10:38	03/19/18 19:57	1
Perfluorooctanesulfonic acid (PFOS)	3.1	U	4.1	1.1	ng/L		03/16/18 10:38	03/19/18 19:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	93		50 - 150	03/16/18 10:38	03/19/18 19:57	1
13C4-PFHpA	91		50 - 150	03/16/18 10:38	03/19/18 19:57	1
13C4 PFOA	94		50 - 150	03/16/18 10:38	03/19/18 19:57	1
13C5 PFNA	92		50 - 150	03/16/18 10:38	03/19/18 19:57	1
18O2 PFHxS	94		50 - 150	03/16/18 10:38	03/19/18 19:57	1
13C4 PFOS	92		50 - 150	03/16/18 10:38	03/19/18 19:57	1

Client Sample ID: BNA05-SD1-01
Lab Sample ID: 320-36960-18

Date Collected: 03/08/18 12:10
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 75.4

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.26	U M	0.39	0.10	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorooctanoic acid (PFOA)	**0.15**	**J**	0.39	0.13	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorononanoic acid (PFNA)	0.26	U M Q	0.39	0.11	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorobutanesulfonic acid (PFBS)	0.24	U	0.52	0.077	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorohexanesulfonic acid (PFHxS)	**0.50**	**M**	0.39	0.081	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1
Perfluorooctanesulfonic acid (PFOS)	**4.2**	**M**	1.3	0.31	ug/Kg	☼	03/16/18 11:19	04/07/18 11:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	68		50 - 150	03/16/18 11:19	04/07/18 11:37	1
13C4-PFHpA	79		50 - 150	03/16/18 11:19	04/07/18 11:37	1
13C4 PFOA	85		50 - 150	03/16/18 11:19	04/07/18 11:37	1
13C5 PFNA	94		50 - 150	03/16/18 11:19	04/07/18 11:37	1
18O2 PFHxS	78		50 - 150	03/16/18 11:19	04/07/18 11:37	1
13C4 PFOS	84		50 - 150	03/16/18 11:19	04/07/18 11:37	1

Client Sample ID: BNA-ER-GW-01
Lab Sample ID: 320-36960-19

Date Collected: 03/08/18 16:35
Matrix: Water
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.61	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	0.54	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 20:05	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 20:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	90		50 - 150	03/16/18 10:38	03/19/18 20:05	1
13C4-PFHpA	90		50 - 150	03/16/18 10:38	03/19/18 20:05	1
13C4 PFOA	91		50 - 150	03/16/18 10:38	03/19/18 20:05	1
13C5 PFNA	93		50 - 150	03/16/18 10:38	03/19/18 20:05	1
18O2 PFHxS	95		50 - 150	03/16/18 10:38	03/19/18 20:05	1
13C4 PFOS	88		50 - 150	03/16/18 10:38	03/19/18 20:05	1

Client Sample ID: BNA-FB-02 — Lab Sample ID: 320-36960-20

Date Collected: 03/08/18 16:45 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.6	U	2.1	0.63	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorooctanoic acid (PFOA)	1.6	U Q	2.1	0.56	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorononanoic acid (PFNA)	1.6	U	2.1	0.54	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorobutanesulfonic acid (PFBS)	**0.65**	**J**	2.1	0.48	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorohexanesulfonic acid (PFHxS)	**0.53**	**J**	2.1	0.39	ng/L		03/16/18 10:38	03/19/18 20:13	1
Perfluorooctanesulfonic acid (PFOS)	**1.2**	**J M**	4.1	1.1	ng/L		03/16/18 10:38	03/19/18 20:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*89*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
13C4-PFHpA	*92*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
13C4 PFOA	*95*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
13C5 PFNA	*97*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
18O2 PFHxS	*95*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*
13C4 PFOS	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:13*	*1*

Client Sample ID: BNA-IDW-5-01 — Lab Sample ID: 320-36960-21

Date Collected: 03/08/18 16:55 — **Matrix: Solid**
Date Received: 03/10/18 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	200	U M	300	53	ug/L			03/25/18 05:14	100
2-Butanone (MEK)	1000	U	2000	470	ug/L			03/25/18 05:14	100
Carbon tetrachloride	100	U	300	30	ug/L			03/25/18 05:14	100
Chlorobenzene	100	U	200	44	ug/L			03/25/18 05:14	100
Chloroform	100	U	500	50	ug/L			03/25/18 05:14	100
1,2-Dichloroethane	200	U M	200	53	ug/L			03/25/18 05:14	100
1,1-Dichloroethene	200	U	400	78	ug/L			03/25/18 05:14	100
Tetrachloroethene	100	U	300	41	ug/L			03/25/18 05:14	100
Trichloroethene	200	U	300	85	ug/L			03/25/18 05:14	100
Vinyl chloride	50	U Q	100	22	ug/L			03/25/18 05:14	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 122*		*03/25/18 05:14*	*100*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 126*		*03/25/18 05:14*	*100*
4-Bromofluorobenzene (Surr)	*94*		*75 - 125*		*03/25/18 05:14*	*100*
Dibromofluoromethane (Surr)	*99*		*77 - 120*		*03/25/18 05:14*	*100*

Client Sample ID: MW-BNA05-01-01 — Lab Sample ID: 320-36960-22

Date Collected: 03/09/18 09:02 — **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**3.2**		2.0	0.60	ng/L		03/16/18 10:38	03/19/18 20:20	1
Perfluorooctanoic acid (PFOA)	**12**	**M Q J1**	2.0	0.54	ng/L		03/16/18 10:38	03/19/18 20:20	1
Perfluorononanoic acid (PFNA)	**1.3**	**J**	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 20:20	1
Perfluorobutanesulfonic acid (PFBS)	**5.1**		2.0	0.46	ng/L		03/16/18 10:38	03/19/18 20:20	1

Client Sample ID: MW-BNA05-01-01

Lab Sample ID: 320-36960-22

Date Collected: 03/09/18 09:02

Matrix: Water

Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	75	J1	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 20:20	1
Perfluorooctanesulfonic acid (PFOS)	66	J1	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 20:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*84*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
13C4-PFHpA	*91*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
13C4 PFOA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
13C5 PFNA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
18O2 PFHxS	*91*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*
13C4 PFOS	*90*		*50 - 150*	*03/16/18 10:38*	*03/19/18 20:20*	*1*

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - RE

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	3.6		1.9	0.57	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorooctanoic acid (PFOA)	12		1.9	0.51	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorononanoic acid (PFNA)	1.4	U	1.9	0.49	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorobutanesulfonic acid (PFBS)	5.0		1.9	0.43	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorohexanesulfonic acid (PFHxS)	78	J1	1.9	0.36	ng/L		03/22/18 18:07	03/24/18 19:50	1
Perfluorooctanesulfonic acid (PFOS)	68	J1	3.7	1.0	ng/L		03/22/18 18:07	03/24/18 19:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*14*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
13C4-PFHpA	*9*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
13C4 PFOA	*9*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
13C5 PFNA	*9*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
18O2 PFHxS	*13*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*
13C4 PFOS	*11*	*Q*	*50 - 150*	*03/22/18 18:07*	*03/24/18 19:50*	*1*

Client Sample ID: MW-BNA05-01-01D

Lab Sample ID: 320-36960-23

Date Collected: 03/09/18 09:02

Matrix: Water

Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	3.6	M	1.9	0.59	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorooctanoic acid (PFOA)	11	M	1.9	0.52	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorononanoic acid (PFNA)	1.4	J	1.9	0.50	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorobutanesulfonic acid (PFBS)	4.4		1.9	0.44	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorohexanesulfonic acid (PFHxS)	68		1.9	0.37	ng/L		03/22/18 18:07	03/24/18 20:13	1
Perfluorooctanesulfonic acid (PFOS)	61		3.9	1.1	ng/L		03/22/18 18:07	03/24/18 20:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*65*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*
13C4-PFHpA	*68*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*
13C4 PFOA	*55*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*
13C5 PFNA	*72*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*

Client Sample ID: MW-BNA05-01-01D — Lab Sample ID: 320-36960-23

Date Collected: 03/09/18 09:02 **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*72*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*
13C4 PFOS	*69*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:13*	*1*

Client Sample ID: MW-BNA01-01-01 — Lab Sample ID: 320-36960-24

Date Collected: 03/09/18 11:34 **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**5.1**		1.9	0.58	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorooctanoic acid (PFOA)	**13**	**M**	1.9	0.52	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorononanoic acid (PFNA)	1.4	U	1.9	0.50	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorobutanesulfonic acid (PFBS)	**27**	**M**	1.9	0.44	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorohexanesulfonic acid (PFHxS)	**130**		1.9	0.36	ng/L		03/22/18 18:07	03/24/18 20:21	1
Perfluorooctanesulfonic acid (PFOS)	**96**		3.8	1.1	ng/L		03/22/18 18:07	03/24/18 20:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*69*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:21*	*1*
13C4-PFHpA	*70*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:21*	*1*
13C4 PFOA	*74*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:21*	*1*
13C5 PFNA	*70*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:21*	*1*
18O2 PFHxS	*75*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:21*	*1*
13C4 PFOS	*73*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:21*	*1*

Client Sample ID: BNA04-SW1-01 — Lab Sample ID: 320-36960-25

Date Collected: 03/09/18 13:40 **Matrix: Water**
Date Received: 03/10/18 09:30

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**3.5**		1.9	0.58	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorooctanoic acid (PFOA)	**7.3**	**M**	1.9	0.51	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorononanoic acid (PFNA)	**0.80**	**J**	1.9	0.49	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorobutanesulfonic acid (PFBS)	**11**		1.9	0.44	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorohexanesulfonic acid (PFHxS)	**59**		1.9	0.36	ng/L		03/22/18 18:07	03/24/18 20:29	1
Perfluorooctanesulfonic acid (PFOS)	**50**		3.8	1.0	ng/L		03/22/18 18:07	03/24/18 20:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*67*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:29*	*1*
13C4-PFHpA	*68*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:29*	*1*
13C4 PFOA	*68*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:29*	*1*
13C5 PFNA	*64*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:29*	*1*
18O2 PFHxS	*73*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:29*	*1*
13C4 PFOS	*67*		*50 - 150*	*03/22/18 18:07*	*03/24/18 20:29*	*1*

Client Sample ID: BNA-IDW-W-01 **Lab Sample ID: 320-36960-26**
Date Collected: 03/09/18 15:20 **Matrix: Water**
Date Received: 03/10/18 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0040	U	0.010	0.0016	mg/L			03/27/18 13:56	1
2-Butanone (MEK)	0.040	U	0.10	0.018	mg/L			03/27/18 13:56	1
Carbon tetrachloride	0.0040	U	0.010	0.0019	mg/L			03/27/18 13:56	1
Chlorobenzene	0.0040	U	0.010	0.0017	mg/L			03/27/18 13:56	1
Chloroform	**0.0024**	**J**	0.010	0.0016	mg/L			03/27/18 13:56	1
1,2-Dichloroethane	0.0040	U	0.010	0.0013	mg/L			03/27/18 13:56	1
1,1-Dichloroethene	0.0080	U	0.010	0.0023	mg/L			03/27/18 13:56	1
Tetrachloroethene	0.0040	U	0.010	0.0020	mg/L			03/27/18 13:56	1
Trichloroethene	0.0040	U	0.010	0.0016	mg/L			03/27/18 13:56	1
Vinyl chloride	0.0020	U	0.010	0.0010	mg/L			03/27/18 13:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*78 - 120*		*03/27/18 13:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*64 - 129*		*03/27/18 13:56*	*1*
4-Bromofluorobenzene (Surr)	*97*		*78 - 121*		*03/27/18 13:56*	*1*
Dibromofluoromethane (Surr)	*97*		*79 - 119*		*03/27/18 13:56*	*1*

Default Detection Limits

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Leach: 1311

Analyte	LOQ	DL	Units	Method
1,1-Dichloroethene	4.0	0.78	ug/L	8260B
1,1-Dichloroethene	0.010	0.0023	mg/L	8260B
1,2-Dichloroethane	2.0	0.53	ug/L	8260B
1,2-Dichloroethane	0.010	0.0013	mg/L	8260B
2-Butanone (MEK)	20	4.7	ug/L	8260B
2-Butanone (MEK)	0.10	0.018	mg/L	8260B
Benzene	3.0	0.53	ug/L	8260B
Benzene	0.010	0.0016	mg/L	8260B
Carbon tetrachloride	3.0	0.30	ug/L	8260B
Carbon tetrachloride	0.010	0.0019	mg/L	8260B
Chlorobenzene	2.0	0.44	ug/L	8260B
Chlorobenzene	0.010	0.0017	mg/L	8260B
Chloroform	5.0	0.50	ug/L	8260B
Chloroform	0.010	0.0016	mg/L	8260B
Tetrachloroethene	3.0	0.41	ug/L	8260B
Tetrachloroethene	0.010	0.0020	mg/L	8260B
Trichloroethene	3.0	0.85	ug/L	8260B
Trichloroethene	0.010	0.0016	mg/L	8260B
Vinyl chloride	1.0	0.22	ug/L	8260B
Vinyl chloride	0.010	0.0010	mg/L	8260B

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	2.0	0.46	ng/L	EPA 537 (Mod)
Perfluoroheptanoic acid (PFHpA)	2.0	0.61	ng/L	EPA 537 (Mod)
Perfluorohexanesulfonic acid (PFHxS)	2.0	0.38	ng/L	EPA 537 (Mod)
Perfluorononanoic acid (PFNA)	2.0	0.52	ng/L	EPA 537 (Mod)
Perfluorooctanesulfonic acid (PFOS)	4.0	1.1	ng/L	EPA 537 (Mod)
Perfluorooctanoic acid (PFOA)	2.0	0.54	ng/L	EPA 537 (Mod)

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Prep: SHAKE

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.40	0.059	ug/Kg	EPA 537 (Mod)
Perfluoroheptanoic acid (PFHpA)	0.30	0.078	ug/Kg	EPA 537 (Mod)
Perfluorohexanesulfonic acid (PFHxS)	0.30	0.062	ug/Kg	EPA 537 (Mod)
Perfluorononanoic acid (PFNA)	0.30	0.081	ug/Kg	EPA 537 (Mod)
Perfluorooctanesulfonic acid (PFOS)	1.0	0.24	ug/Kg	EPA 537 (Mod)
Perfluorooctanoic acid (PFOA)	0.30	0.10	ug/Kg	EPA 537 (Mod)

Surrogate Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(80-122)	(80-126)	(75-125)	(77-120)
320-36960-21	BNA-IDW-5-01	101	104	94	99
LCS 580-269508/2-A	Lab Control Sample	103	102	97	98
LCSD 580-269508/3-A	Lab Control Sample Dup	102	101	96	98
MB 580-269508/1-A	Method Blank	101	103	95	98

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(78-120)	(64-129)	(78-121)	(79-119)
320-36960-26	BNA-IDW-W-01	100	88	97	97
LB3 280-408888/1-A	Method Blank	100	86	102	95
LCS 280-408888/2-A	Lab Control Sample	100	84	97	95

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Isotope Dilution Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

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

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	3C3-PFBS (50-150)	PFHpA (50-150)	PFOA (50-150)	PFNA (50-150)	PFHxS (50-150)	PFOS (50-150)
320-36960-4	BNA01-SB1-01	55	73	72	73	60	58
320-36960-4 - DL	BNA01-SB1-01	53	73	71	75	61	61
320-36960-4 MS	BNA01-SB1-01	52	72	73	77	53	51
320-36960-4 MS - DL	BNA01-SB1-01	51	71	76	79	57	55
320-36960-4 MSD	BNA01-SB1-01	56	77	76	79	60	58
320-36960-4 MSD - DL	BNA01-SB1-01	50	70	75	78	61	58
320-36960-5	BNA01-SB1-02	65	75	79	81	73	67
320-36960-6	BNA03-SB1-01	60	71	70	70	64	60
320-36960-7	BNA03-SB1-01D	58	74	71	72	63	63
320-36960-8	BNA03-SB1-02	65	71	75	78	65	65
320-36960-9	BNA03-SB2-01	60	70	68	73	63	63
320-36960-10	BNA03-SB2-01D	64	71	70	73	65	66
320-36960-11	BNA03-SB2-02	66	77	75	77	74	68
320-36960-12	BNA04-SB1-01	60	71	69	71	65	65
320-36960-13	BNA04-SB1-02	64	71	71	75	64	65
320-36960-14	BNA05-SB1-01	66	75	82	81	72	63
320-36960-15	BNA05-SB1-02	66	82	81	82	73	64
320-36960-18	BNA05-SD1-01	68	79	85	94	78	84
LCS 320-213404/2-A	Lab Control Sample	74	84	84	90	82	80
MB 320-213404/1-A	Method Blank	81	87	87	94	86	84

Surrogate Legend

13C3-PFBS = 13C3-PFBS
PFHpA = 13C4-PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

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

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	3C3-PFBS (50-150)	PFHpA (50-150)	PFOA (50-150)	PFNA (50-150)	PFHxS (50-150)	PFOS (50-150)
320-36960-1	BNA-ER-SB-01	87	93	96	89	90	89
320-36960-2	BNA-FB-01	94	95	94	97	93	94
320-36960-3	BNA-RB-01	96	93	96	98	93	98
320-36960-16	BNA05-SW1-01	79	79	77	78	79	76
320-36960-17	BNA05-ER-SD-01	93	91	94	92	94	92
320-36960-19	BNA-ER-GW-01	90	90	91	93	95	88
320-36960-20	BNA-FB-02	89	92	95	97	95	93
320-36960-22	MW-BNA05-01-01	84	91	93	93	91	90
320-36960-22 - RE	MW-BNA05-01-01	14 Q	9 Q	9 Q	9 Q	13 Q	11 Q
320-36960-22 MS	MW-BNA05-01-01	87	90	96	94	95	92
320-36960-22 MS - RE	MW-BNA05-01-01	60 Q	62 Q	63 Q	61 Q	63 Q	61 Q
320-36960-22 MSD	MW-BNA05-01-01	88	87	94	95	91	93
320-36960-22 MSD - RE	MW-BNA05-01-01	72	76	74	74	77	75
320-36960-23	MW-BNA05-01-01D	65	68	55	72	72	69

Isotope Dilution Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C3-PFBS (50-150)	PFHpA (50-150)	PFOA (50-150)	PFNA (50-150)	PFHxS (50-150)	PFOS (50-150)		
320-36960-24	MW-BNA01-01-01	69	70	74	70	75	73		
320-36960-25	BNA04-SW1-01	67	68	68	64	73	67		
LCS 320-213387/2-A	Lab Control Sample	91	96	95	97	93	90		
LCS 320-214457/2-A	Lab Control Sample	72	74	72	75	73	73		
MB 320-213387/1-A	Method Blank	90	93	97	101	92	91		
MB 320-214457/1-A	Method Blank	70	69	67	68	71	67		

Surrogate Legend

13C3-PFBS = 13C3-PFBS
PFHpA = 13C4-PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-269508/1-A
Matrix: Solid
Analysis Batch: 269828

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	200	U M	300	53	ug/L			03/25/18 03:49	100
2-Butanone (MEK)	1000	U	2000	470	ug/L			03/25/18 03:49	100
Carbon tetrachloride	100	U	300	30	ug/L			03/25/18 03:49	100
Chlorobenzene	100	U	200	44	ug/L			03/25/18 03:49	100
Chloroform	100	U	500	50	ug/L			03/25/18 03:49	100
1,2-Dichloroethane	200	U	200	53	ug/L			03/25/18 03:49	100
1,1-Dichloroethene	200	U	400	78	ug/L			03/25/18 03:49	100
Tetrachloroethene	100	U	300	41	ug/L			03/25/18 03:49	100
Trichloroethene	200	U	300	85	ug/L			03/25/18 03:49	100
Vinyl chloride	50	U	100	22	ug/L			03/25/18 03:49	100

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 122*		*03/25/18 03:49*	*100*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 126*		*03/25/18 03:49*	*100*
4-Bromofluorobenzene (Surr)	*95*		*75 - 125*		*03/25/18 03:49*	*100*
Dibromofluoromethane (Surr)	*98*		*77 - 120*		*03/25/18 03:49*	*100*

Lab Sample ID: LCS 580-269508/2-A
Matrix: Solid
Analysis Batch: 269828

Client Sample ID: Lab Control Sample
Prep Type: TCLP

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1000	1090	D	ug/L		109	75 - 120
2-Butanone (MEK)	5000	6150	D	ug/L		123	58 - 135
Carbon tetrachloride	1000	1190	D	ug/L		119	72 - 124
Chlorobenzene	1000	1040	D	ug/L		104	80 - 120
Chloroform	1000	1040	D	ug/L		104	80 - 119
1,2-Dichloroethane	1000	1070	D	ug/L		107	76 - 131
1,1-Dichloroethene	1000	1150	D	ug/L		115	70 - 129
Tetrachloroethene	1000	1000	D	ug/L		100	76 - 124
Trichloroethene	1000	1040	D	ug/L		104	70 - 125
Vinyl chloride	1000	1370	D	ug/L		137	20 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 126*
4-Bromofluorobenzene (Surr)	*97*		*75 - 125*
Dibromofluoromethane (Surr)	*98*		*77 - 120*

Lab Sample ID: LCSD 580-269508/3-A
Matrix: Solid
Analysis Batch: 269828

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1000	1200	D	ug/L		120	75 - 120	9	14
2-Butanone (MEK)	5000	5840	D	ug/L		117	58 - 135	5	35
Carbon tetrachloride	1000	1220	D	ug/L		122	72 - 124	3	19

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-269508/3-A
Matrix: Solid
Analysis Batch: 269828

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chlorobenzene	1000	1100	D	ug/L		110	80 - 120	5	15
Chloroform	1000	1120	D	ug/L		112	80 - 119	7	15
1,2-Dichloroethane	1000	1110	D	ug/L		111	76 - 131	3	11
1,1-Dichloroethene	1000	1230	D	ug/L		123	70 - 129	7	27
Tetrachloroethene	1000	1070	D	ug/L		107	76 - 124	7	20
Trichloroethene	1000	1100	D	ug/L		110	70 - 125	6	15
Vinyl chloride	1000	1520	Q D	ug/L		152	20 - 150	10	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 126*
4-Bromofluorobenzene (Surr)	*96*		*75 - 125*
Dibromofluoromethane (Surr)	*98*		*77 - 120*

Lab Sample ID: LB3 280-408888/1-A
Matrix: Water
Analysis Batch: 409141

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB3 Result	LB3 Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0040	U	0.010	0.0016	mg/L			03/27/18 12:40	1
2-Butanone (MEK)	0.040	U	0.10	0.018	mg/L			03/27/18 12:40	1
Carbon tetrachloride	0.0040	U	0.010	0.0019	mg/L			03/27/18 12:40	1
Chlorobenzene	0.0040	U	0.010	0.0017	mg/L			03/27/18 12:40	1
Chloroform	0.0040	U	0.010	0.0016	mg/L			03/27/18 12:40	1
1,2-Dichloroethane	0.0040	U	0.010	0.0013	mg/L			03/27/18 12:40	1
1,1-Dichloroethene	0.0080	U	0.010	0.0023	mg/L			03/27/18 12:40	1
Tetrachloroethene	0.0040	U	0.010	0.0020	mg/L			03/27/18 12:40	1
Trichloroethene	0.0040	U	0.010	0.0016	mg/L			03/27/18 12:40	1
Vinyl chloride	0.0020	U	0.010	0.0010	mg/L			03/27/18 12:40	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*78 - 120*		*03/27/18 12:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*86*		*64 - 129*		*03/27/18 12:40*	*1*
4-Bromofluorobenzene (Surr)	*102*		*78 - 121*		*03/27/18 12:40*	*1*
Dibromofluoromethane (Surr)	*95*		*79 - 119*		*03/27/18 12:40*	*1*

Lab Sample ID: LCS 280-408888/2-A
Matrix: Water
Analysis Batch: 409141

Client Sample ID: Lab Control Sample
Prep Type: TCLP

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0500	0.0458		mg/L		92	74 - 135
2-Butanone (MEK)	0.200	0.163		mg/L		81	44 - 150
Carbon tetrachloride	0.0500	0.0480		mg/L		96	67 - 135
Chlorobenzene	0.0500	0.0458		mg/L		92	76 - 135
Chloroform	0.0500	0.0452		mg/L		90	76 - 120
1,2-Dichloroethane	0.0500	0.0418		mg/L		84	70 - 135
1,1-Dichloroethene	0.0500	0.0447		mg/L		89	71 - 136

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 280-408888/2-A
Matrix: Water
Analysis Batch: 409141

Client Sample ID: Lab Control Sample
Prep Type: TCLP

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Tetrachloroethene	0.0500	0.0469		mg/L		94	70 - 135
Trichloroethene	0.0500	0.0440		mg/L		88	73 - 135
Vinyl chloride	0.0500	0.0551		mg/L		110	40 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*78 - 120*
1,2-Dichloroethane-d4 (Surr)	*84*		*64 - 129*
4-Bromofluorobenzene (Surr)	*97*		*78 - 121*
Dibromofluoromethane (Surr)	*95*		*79 - 119*

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Lab Sample ID: MB 320-213387/1-A
Matrix: Water
Analysis Batch: 213672

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 213387

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.61	ng/L		03/16/18 10:38	03/19/18 11:20	1
Perfluorooctanoic acid (PFOA)	1.5	U	2.0	0.54	ng/L		03/16/18 10:38	03/19/18 11:20	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/16/18 10:38	03/19/18 11:20	1
Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	0.46	ng/L		03/16/18 10:38	03/19/18 11:20	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	0.38	ng/L		03/16/18 10:38	03/19/18 11:20	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/16/18 10:38	03/19/18 11:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*90*		*50 - 150*	*03/16/18 10:38*	*03/19/18 11:20*	*1*
13C4-PFHpA	*93*		*50 - 150*	*03/16/18 10:38*	*03/19/18 11:20*	*1*
13C4 PFOA	*97*		*50 - 150*	*03/16/18 10:38*	*03/19/18 11:20*	*1*
13C5 PFNA	*101*		*50 - 150*	*03/16/18 10:38*	*03/19/18 11:20*	*1*
18O2 PFHxS	*92*		*50 - 150*	*03/16/18 10:38*	*03/19/18 11:20*	*1*
13C4 PFOS	*91*		*50 - 150*	*03/16/18 10:38*	*03/19/18 11:20*	*1*

Lab Sample ID: LCS 320-213387/2-A
Matrix: Water
Analysis Batch: 213706

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 213387

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	40.0	42.5		ng/L		106	80 - 113
Perfluorooctanoic acid (PFOA)	40.0	46.6	Q	ng/L		116	80 - 107
Perfluorononanoic acid (PFNA)	40.0	43.0		ng/L		108	83 - 113
Perfluorobutanesulfonic acid (PFBS)	35.4	40.3		ng/L		114	87 - 120
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.6		ng/L		101	81 - 106
Perfluorooctanesulfonic acid (PFOS)	37.1	40.7		ng/L		110	82 - 112

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3-PFBS	*91*		*50 - 150*

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Lab Sample ID: LCS 320-213387/2-A
Matrix: Water
Analysis Batch: 213706

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 213387

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4-PFHpA	*96*		*50 - 150*
13C4 PFOA	*95*		*50 - 150*
13C5 PFNA	*97*		*50 - 150*
18O2 PFHxS	*93*		*50 - 150*
13C4 PFOS	*90*		*50 - 150*

Lab Sample ID: 320-36960-22 MS
Matrix: Water
Analysis Batch: 213789

Client Sample ID: MW-BNA05-01-01
Prep Type: Total/NA
Prep Batch: 213387

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	3.2		39.7	47.1		ng/L		110	80 - 113
Perfluorooctanoic acid (PFOA)	12	M Q J1	39.7	56.4	J1	ng/L		111	80 - 107
Perfluorononanoic acid (PFNA)	1.3	J	39.7	44.3		ng/L		108	83 - 113
Perfluorobutanesulfonic acid (PFBS)	5.1		35.1	45.9		ng/L		116	87 - 120
Perfluorohexanesulfonic acid (PFHxS)	75	J1	36.1	114		ng/L		106	81 - 106
Perfluorooctanesulfonic acid (PFOS)	66	J1	36.9	109	J1	ng/L		116	82 - 112

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3-PFBS	*87*		*50 - 150*
13C4-PFHpA	*90*		*50 - 150*
13C4 PFOA	*96*		*50 - 150*
13C5 PFNA	*94*		*50 - 150*
18O2 PFHxS	*95*		*50 - 150*
13C4 PFOS	*92*		*50 - 150*

Lab Sample ID: 320-36960-22 MSD
Matrix: Water
Analysis Batch: 213789

Client Sample ID: MW-BNA05-01-01
Prep Type: Total/NA
Prep Batch: 213387

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	3.2		39.7	47.2		ng/L		111	80 - 113	0	30
Perfluorooctanoic acid (PFOA)	12	M Q J1	39.7	57.0	J1	ng/L		113	80 - 107	1	30
Perfluorononanoic acid (PFNA)	1.3	J	39.7	42.7		ng/L		104	83 - 113	4	30
Perfluorobutanesulfonic acid (PFBS)	5.1		35.1	42.8		ng/L		107	87 - 120	7	30
Perfluorohexanesulfonic acid (PFHxS)	75	J1	36.1	114	J1	ng/L		108	81 - 106	0	30
Perfluorooctanesulfonic acid (PFOS)	66	J1	36.8	105		ng/L		107	82 - 112	3	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C3-PFBS	*88*		*50 - 150*
13C4-PFHpA	*87*		*50 - 150*
13C4 PFOA	*94*		*50 - 150*
13C5 PFNA	*95*		*50 - 150*
18O2 PFHxS	*91*		*50 - 150*

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Lab Sample ID: 320-36960-22 MSD
Matrix: Water
Analysis Batch: 213789

Client Sample ID: MW-BNA05-01-01
Prep Type: Total/NA
Prep Batch: 213387

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOS	93		50 - 150

Lab Sample ID: MB 320-213404/1-A
Matrix: Solid
Analysis Batch: 216821

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 213404

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.20	U	0.30	0.078	ug/Kg		03/16/18 11:19	04/07/18 09:24	1
Perfluorooctanoic acid (PFOA)	0.20	U M	0.30	0.10	ug/Kg		03/16/18 11:19	04/07/18 09:24	1
Perfluorononanoic acid (PFNA)	0.20	U	0.30	0.081	ug/Kg		03/16/18 11:19	04/07/18 09:24	1
Perfluorobutanesulfonic acid (PFBS)	0.18	U	0.40	0.059	ug/Kg		03/16/18 11:19	04/07/18 09:24	1
Perfluorohexanesulfonic acid (PFHxS)	0.20	U	0.30	0.062	ug/Kg		03/16/18 11:19	04/07/18 09:24	1
Perfluorooctanesulfonic acid (PFOS)	0.50	U	1.0	0.24	ug/Kg		03/16/18 11:19	04/07/18 09:24	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	81		50 - 150	03/16/18 11:19	04/07/18 09:24	1
13C4-PFHpA	87		50 - 150	03/16/18 11:19	04/07/18 09:24	1
13C4 PFOA	87		50 - 150	03/16/18 11:19	04/07/18 09:24	1
13C5 PFNA	94		50 - 150	03/16/18 11:19	04/07/18 09:24	1
18O2 PFHxS	86		50 - 150	03/16/18 11:19	04/07/18 09:24	1
13C4 PFOS	84		50 - 150	03/16/18 11:19	04/07/18 09:24	1

Lab Sample ID: LCS 320-213404/2-A
Matrix: Solid
Analysis Batch: 216849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 213404

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	2.00	2.47		ug/Kg		124	76 - 124
Perfluorooctanoic acid (PFOA)	2.00	2.39		ug/Kg		120	76 - 121
Perfluorononanoic acid (PFNA)	2.00	2.62	Q	ug/Kg		131	74 - 126
Perfluorobutanesulfonic acid (PFBS)	1.77	2.27		ug/Kg		128	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	1.82	2.15		ug/Kg		118	75 - 121
Perfluorooctanesulfonic acid (PFOS)	1.86	2.33	M	ug/Kg		125	69 - 131

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C3-PFBS	74		50 - 150
13C4-PFHpA	84		50 - 150
13C4 PFOA	84		50 - 150
13C5 PFNA	90		50 - 150
18O2 PFHxS	82		50 - 150
13C4 PFOS	80		50 - 150

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Lab Sample ID: 320-36960-4 MS
Matrix: Solid
Analysis Batch: 216821

Client Sample ID: BNA01-SB1-01
Prep Type: Total/NA
Prep Batch: 213404

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	0.19	J	2.50	2.83		ug/Kg	☼	106	76 - 124
Perfluorooctanoic acid (PFOA)	0.40		2.50	2.84		ug/Kg	☼	98	76 - 121
Perfluorononanoic acid (PFNA)	0.25	U M Q	2.50	2.63		ug/Kg	☼	105	74 - 126
Perfluorobutanesulfonic acid (PFBS)	0.99		2.21	3.42		ug/Kg	☼	110	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	6.0	J1	2.27	8.22		ug/Kg	☼	99	75 - 121
Perfluorooctanesulfonic acid (PFOS)	27	E J1	2.32	29.7	E 4	ug/Kg	☼	116	69 - 131

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3-PFBS	*52*		*50 - 150*
13C4-PFHpA	*72*		*50 - 150*
13C4 PFOA	*73*		*50 - 150*
13C5 PFNA	*77*		*50 - 150*
18O2 PFHxS	*53*		*50 - 150*
13C4 PFOS	*51*		*50 - 150*

Lab Sample ID: 320-36960-4 MSD
Matrix: Solid
Analysis Batch: 216821

Client Sample ID: BNA01-SB1-01
Prep Type: Total/NA
Prep Batch: 213404

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	0.19	J	2.51	2.74		ug/Kg	☼	101	76 - 124	3	30
Perfluorooctanoic acid (PFOA)	0.40		2.51	2.85		ug/Kg	☼	98	76 - 121	0	30
Perfluorononanoic acid (PFNA)	0.25	U M Q	2.51	2.71		ug/Kg	☼	108	74 - 126	3	30
Perfluorobutanesulfonic acid (PFBS)	0.99		2.22	3.24		ug/Kg	☼	101	73 - 142	6	30
Perfluorohexanesulfonic acid (PFHxS)	6.0	J1	2.29	6.61	J1	ug/Kg	☼	28	75 - 121	22	30
Perfluorooctanesulfonic acid (PFOS)	27	E J1	2.33	25.8	E 4	ug/Kg	☼	-54	69 - 131	14	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C3-PFBS	*56*		*50 - 150*
13C4-PFHpA	*77*		*50 - 150*
13C4 PFOA	*76*		*50 - 150*
13C5 PFNA	*79*		*50 - 150*
18O2 PFHxS	*60*		*50 - 150*
13C4 PFOS	*58*		*50 - 150*

Lab Sample ID: MB 320-214457/1-A
Matrix: Water
Analysis Batch: 214716

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 214457

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.61	ng/L		03/22/18 18:07	03/24/18 19:26	1
Perfluorooctanoic acid (PFOA)	1.5	U M	2.0	0.54	ng/L		03/22/18 18:07	03/24/18 19:26	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/22/18 18:07	03/24/18 19:26	1
Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	0.46	ng/L		03/22/18 18:07	03/24/18 19:26	1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Lab Sample ID: MB 320-214457/1-A
Matrix: Water
Analysis Batch: 214716

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 214457

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	0.38	ng/L		03/22/18 18:07	03/24/18 19:26	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/22/18 18:07	03/24/18 19:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3-PFBS	*70*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:26*	*1*
13C4-PFHpA	*69*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:26*	*1*
13C4 PFOA	*67*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:26*	*1*
13C5 PFNA	*68*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:26*	*1*
18O2 PFHxS	*71*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:26*	*1*
13C4 PFOS	*67*		*50 - 150*	*03/22/18 18:07*	*03/24/18 19:26*	*1*

Lab Sample ID: LCS 320-214457/2-A
Matrix: Water
Analysis Batch: 214716

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 214457

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	40.0	38.1		ng/L		95	80 - 113
Perfluorooctanoic acid (PFOA)	40.0	36.1		ng/L		90	80 - 107
Perfluorononanoic acid (PFNA)	40.0	36.5		ng/L		91	83 - 113
Perfluorobutanesulfonic acid (PFBS)	35.4	33.7		ng/L		95	87 - 120
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.6		ng/L		90	81 - 106
Perfluorooctanesulfonic acid (PFOS)	37.1	34.1		ng/L		92	82 - 112

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3-PFBS	*72*		*50 - 150*
13C4-PFHpA	*74*		*50 - 150*
13C4 PFOA	*72*		*50 - 150*
13C5 PFNA	*75*		*50 - 150*
18O2 PFHxS	*73*		*50 - 150*
13C4 PFOS	*73*		*50 - 150*

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL

Lab Sample ID: 320-36960-4 MS
Matrix: Solid
Analysis Batch: 216849

Client Sample ID: BNA01-SB1-01
Prep Type: Total/NA
Prep Batch: 213404

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA) - DL	1.2	U M J1	2.50	2.98	D	ug/Kg	☼	119	76 - 124
Perfluorooctanoic acid (PFOA) - DL	1.2	U M J1	2.50	3.12	D J1	ug/Kg	☼	125	76 - 121
Perfluorononanoic acid (PFNA) - DL	1.2	U Q	2.50	2.71	D	ug/Kg	☼	109	74 - 126
Perfluorobutanesulfonic acid (PFBS) - DL	1.1	J D	2.21	3.75	D	ug/Kg	☼	120	73 - 142

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)

Lab Sample ID: 320-36960-4 MS
Matrix: Solid
Analysis Batch: 216849

Client Sample ID: BNA01-SB1-01
Prep Type: Total/NA
Prep Batch: 213404

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS) - DL	6.4	D J1	2.27	8.09	D J1	ug/Kg	☼	74	75 - 121
Perfluorooctanesulfonic acid (PFOS) - DL	27	D J1	2.32	29.0	D 4	ug/Kg	☼	108	69 - 131

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3-PFBS - DL	*51*		*50 - 150*
13C4-PFHpA - DL	*71*		*50 - 150*
13C4 PFOA - DL	*76*		*50 - 150*
13C5 PFNA - DL	*79*		*50 - 150*
18O2 PFHxS - DL	*57*		*50 - 150*
13C4 PFOS - DL	*55*		*50 - 150*

Lab Sample ID: 320-36960-4 MSD
Matrix: Solid
Analysis Batch: 216849

Client Sample ID: BNA01-SB1-01
Prep Type: Total/NA
Prep Batch: 213404

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA) - DL	1.2	U M J1	2.51	3.15	D J1	ug/Kg	☼	125	76 - 124	6	30
Perfluorooctanoic acid (PFOA) - DL	1.2	U M J1	2.51	2.87	D M	ug/Kg	☼	114	76 - 121	8	30
Perfluorononanoic acid (PFNA) - DL	1.2	U Q	2.51	2.78	D	ug/Kg	☼	110	74 - 126	2	30
Perfluorobutanesulfonic acid (PFBS) - DL	1.1	J D	2.22	3.67	D	ug/Kg	☼	116	73 - 142	2	30
Perfluorohexanesulfonic acid (PFHxS) - DL	6.4	D J1	2.29	6.58	D J1	ug/Kg	☼	8	75 - 121	21	30
Perfluorooctanesulfonic acid (PFOS) - DL	27	D J1	2.33	26.0	D M 4	ug/Kg	☼	-23	69 - 131	11	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C3-PFBS - DL	*50*		*50 - 150*
13C4-PFHpA - DL	*70*		*50 - 150*
13C4 PFOA - DL	*75*		*50 - 150*
13C5 PFNA - DL	*78*		*50 - 150*
18O2 PFHxS - DL	*61*		*50 - 150*
13C4 PFOS - DL	*58*		*50 - 150*

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - RE

Lab Sample ID: 320-36960-22 MS
Matrix: Water
Analysis Batch: 214716

Client Sample ID: MW-BNA05-01-01
Prep Type: Total/NA
Prep Batch: 214457

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA) - RE	3.6		38.8	36.2		ng/L		84	80 - 113
Perfluorooctanoic acid (PFOA) - RE	12		38.8	44.9		ng/L		84	80 - 107

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - RE (Continued)

Lab Sample ID: 320-36960-22 MS — **Client Sample ID: MW-BNA05-01-01**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 214716 — **Prep Batch: 214457**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA) - RE	1.4	U	38.8	37.2		ng/L		96	83 - 113
Perfluorobutanesulfonic acid (PFBS) - RE	5.0		34.3	35.4		ng/L		89	87 - 120
Perfluorohexanesulfonic acid (PFHxS) - RE	78	J1	35.3	99.6	J1	ng/L		61	81 - 106
Perfluorooctanesulfonic acid (PFOS) - RE	68	J1	36.0	95.0	J1	ng/L		76	82 - 112

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3-PFBS - RE	*60*	*Q*	*50 - 150*
13C4-PFHpA - RE	*62*	*Q*	*50 - 150*
13C4 PFOA - RE	*63*	*Q*	*50 - 150*
13C5 PFNA - RE	*61*	*Q*	*50 - 150*
18O2 PFHxS - RE	*63*	*Q*	*50 - 150*
13C4 PFOS - RE	*61*	*Q*	*50 - 150*

Lab Sample ID: 320-36960-22 MSD — **Client Sample ID: MW-BNA05-01-01**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 214716 — **Prep Batch: 214457**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA) - RE	3.6		38.2	38.9		ng/L		92	80 - 113	7	30
Perfluorooctanoic acid (PFOA) - RE	12		38.2	46.7		ng/L		90	80 - 107	4	30
Perfluorononanoic acid (PFNA) - RE	1.4	U	38.2	37.0		ng/L		97	83 - 113	0	30
Perfluorobutanesulfonic acid (PFBS) - RE	5.0		33.8	35.7		ng/L		91	87 - 120	1	30
Perfluorohexanesulfonic acid (PFHxS) - RE	78	J1	34.7	97.9	J1	ng/L		57	81 - 106	2	30
Perfluorooctanesulfonic acid (PFOS) - RE	68	J1	35.4	95.9	J1	ng/L		80	82 - 112	1	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C3-PFBS - RE	*72*		*50 - 150*
13C4-PFHpA - RE	*76*		*50 - 150*
13C4 PFOA - RE	*74*		*50 - 150*
13C5 PFNA - RE	*74*		*50 - 150*
18O2 PFHxS - RE	*77*		*50 - 150*
13C4 PFOS - RE	*75*		*50 - 150*

GC/MS VOA

Leach Batch: 269508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-21	BNA-IDW-5-01	TCLP	Solid	1311	
MB 580-269508/1-A	Method Blank	TCLP	Solid	1311	
LCS 580-269508/2-A	Lab Control Sample	TCLP	Solid	1311	
LCSD 580-269508/3-A	Lab Control Sample Dup	TCLP	Solid	1311	

Analysis Batch: 269828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-21	BNA-IDW-5-01	TCLP	Solid	8260B	269508
MB 580-269508/1-A	Method Blank	TCLP	Solid	8260B	269508
LCS 580-269508/2-A	Lab Control Sample	TCLP	Solid	8260B	269508
LCSD 580-269508/3-A	Lab Control Sample Dup	TCLP	Solid	8260B	269508

Leach Batch: 408888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-26	BNA-IDW-W-01	TCLP	Water	1311	
LB3 280-408888/1-A	Method Blank	TCLP	Water	1311	
LCS 280-408888/2-A	Lab Control Sample	TCLP	Water	1311	

Analysis Batch: 409141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-26	BNA-IDW-W-01	TCLP	Water	8260B	408888
LB3 280-408888/1-A	Method Blank	TCLP	Water	8260B	408888
LCS 280-408888/2-A	Lab Control Sample	TCLP	Water	8260B	408888

LCMS

Prep Batch: 213387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-1	BNA-ER-SB-01	Total/NA	Water	3535	
320-36960-2	BNA-FB-01	Total/NA	Water	3535	
320-36960-3	BNA-RB-01	Total/NA	Water	3535	
320-36960-17	BNA05-ER-SD-01	Total/NA	Water	3535	
320-36960-19	BNA-ER-GW-01	Total/NA	Water	3535	
320-36960-20	BNA-FB-02	Total/NA	Water	3535	
320-36960-22	MW-BNA05-01-01	Total/NA	Water	3535	
MB 320-213387/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-213387/2-A	Lab Control Sample	Total/NA	Water	3535	
320-36960-22 MS	MW-BNA05-01-01	Total/NA	Water	3535	
320-36960-22 MSD	MW-BNA05-01-01	Total/NA	Water	3535	

Prep Batch: 213404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-4 - DL	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-4	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-5	BNA01-SB1-02	Total/NA	Solid	SHAKE	
320-36960-6	BNA03-SB1-01	Total/NA	Solid	SHAKE	
320-36960-7	BNA03-SB1-01D	Total/NA	Solid	SHAKE	
320-36960-8	BNA03-SB1-02	Total/NA	Solid	SHAKE	
320-36960-9	BNA03-SB2-01	Total/NA	Solid	SHAKE	
320-36960-10	BNA03-SB2-01D	Total/NA	Solid	SHAKE	

LCMS (Continued)

Prep Batch: 213404 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-11	BNA03-SB2-02	Total/NA	Solid	SHAKE	
320-36960-12	BNA04-SB1-01	Total/NA	Solid	SHAKE	
320-36960-13	BNA04-SB1-02	Total/NA	Solid	SHAKE	
320-36960-14	BNA05-SB1-01	Total/NA	Solid	SHAKE	
320-36960-15	BNA05-SB1-02	Total/NA	Solid	SHAKE	
320-36960-18	BNA05-SD1-01	Total/NA	Solid	SHAKE	
MB 320-213404/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-213404/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-36960-4 MS - DL	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-4 MS	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-4 MSD - DL	BNA01-SB1-01	Total/NA	Solid	SHAKE	
320-36960-4 MSD	BNA01-SB1-01	Total/NA	Solid	SHAKE	

Analysis Batch: 213672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-213387/1-A	Method Blank	Total/NA	Water	EPA 537 (Mod)	213387

Analysis Batch: 213706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-213387/2-A	Lab Control Sample	Total/NA	Water	EPA 537 (Mod)	213387

Analysis Batch: 213789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-1	BNA-ER-SB-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-2	BNA-FB-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-3	BNA-RB-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-17	BNA05-ER-SD-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-19	BNA-ER-GW-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-20	BNA-FB-02	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-22	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-22 MS	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	213387
320-36960-22 MSD	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	213387

Prep Batch: 214457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-16	BNA05-SW1-01	Total/NA	Water	3535	
320-36960-22 - RE	MW-BNA05-01-01	Total/NA	Water	3535	
320-36960-23	MW-BNA05-01-01D	Total/NA	Water	3535	
320-36960-24	MW-BNA01-01-01	Total/NA	Water	3535	
320-36960-25	BNA04-SW1-01	Total/NA	Water	3535	
MB 320-214457/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-214457/2-A	Lab Control Sample	Total/NA	Water	3535	
320-36960-22 MS - RE	MW-BNA05-01-01	Total/NA	Water	3535	
320-36960-22 MSD - RE	MW-BNA05-01-01	Total/NA	Water	3535	

Analysis Batch: 214716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-16	BNA05-SW1-01	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-22 - RE	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-23	MW-BNA05-01-01D	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-24	MW-BNA01-01-01	Total/NA	Water	EPA 537 (Mod)	214457

LCMS (Continued)

Analysis Batch: 214716 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-25	BNA04-SW1-01	Total/NA	Water	EPA 537 (Mod)	214457
MB 320-214457/1-A	Method Blank	Total/NA	Water	EPA 537 (Mod)	214457
LCS 320-214457/2-A	Lab Control Sample	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-22 MS - RE	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	214457
320-36960-22 MSD - RE	MW-BNA05-01-01	Total/NA	Water	EPA 537 (Mod)	214457

Analysis Batch: 216821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-4	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-5	BNA01-SB1-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-6	BNA03-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-7	BNA03-SB1-01D	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-8	BNA03-SB1-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-9	BNA03-SB2-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-10	BNA03-SB2-01D	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-11	BNA03-SB2-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-12	BNA04-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-13	BNA04-SB1-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-14	BNA05-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-15	BNA05-SB1-02	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-18	BNA05-SD1-01	Total/NA	Solid	EPA 537 (Mod)	213404
MB 320-213404/1-A	Method Blank	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-4 MS	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-4 MSD	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404

Analysis Batch: 216849

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-4 - DL	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
LCS 320-213404/2-A	Lab Control Sample	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-4 MS - DL	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404
320-36960-4 MSD - DL	BNA01-SB1-01	Total/NA	Solid	EPA 537 (Mod)	213404

General Chemistry

Analysis Batch: 212716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36960-4	BNA01-SB1-01	Total/NA	Solid	D 2216	
320-36960-5	BNA01-SB1-02	Total/NA	Solid	D 2216	
320-36960-6	BNA03-SB1-01	Total/NA	Solid	D 2216	
320-36960-7	BNA03-SB1-01D	Total/NA	Solid	D 2216	
320-36960-8	BNA03-SB1-02	Total/NA	Solid	D 2216	
320-36960-9	BNA03-SB2-01	Total/NA	Solid	D 2216	
320-36960-10	BNA03-SB2-01D	Total/NA	Solid	D 2216	
320-36960-11	BNA03-SB2-02	Total/NA	Solid	D 2216	
320-36960-12	BNA04-SB1-01	Total/NA	Solid	D 2216	
320-36960-13	BNA04-SB1-02	Total/NA	Solid	D 2216	
320-36960-14	BNA05-SB1-01	Total/NA	Solid	D 2216	
320-36960-15	BNA05-SB1-02	Total/NA	Solid	D 2216	
320-36960-18	BNA05-SD1-01	Total/NA	Solid	D 2216	
320-36960-4 DU	BNA01-SB1-01	Total/NA	Solid	D 2216	

Client Sample ID: BNA-ER-SB-01
Lab Sample ID: 320-36960-1
Date Collected: 03/05/18 10:45
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			213387	03/16/18 10:38	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213789	03/19/18 19:26	CBW	TAL SAC

Client Sample ID: BNA-FB-01
Lab Sample ID: 320-36960-2
Date Collected: 03/05/18 10:55
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			213387	03/16/18 10:38	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213789	03/19/18 19:33	CBW	TAL SAC

Client Sample ID: BNA-RB-01
Lab Sample ID: 320-36960-3
Date Collected: 03/05/18 11:05
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			213387	03/16/18 10:38	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213789	03/19/18 19:41	CBW	TAL SAC

Client Sample ID: BNA01-SB1-01
Lab Sample ID: 320-36960-4
Date Collected: 03/05/18 14:15
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA01-SB1-01
Lab Sample ID: 320-36960-4
Date Collected: 03/05/18 14:15
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 80.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 09:40	CBW	TAL SAC
Total/NA	Prep	SHAKE	DL		213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)	DL	5	216849	04/07/18 12:01	CBW	TAL SAC

Client Sample ID: BNA01-SB1-02
Lab Sample ID: 320-36960-5
Date Collected: 03/05/18 15:50
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA01-SB1-02
Date Collected: 03/05/18 15:50
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-5
Matrix: Solid
Percent Solids: 77.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 10:03	CBW	TAL SAC

Client Sample ID: BNA03-SB1-01
Date Collected: 03/06/18 07:20
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA03-SB1-01
Date Collected: 03/06/18 07:20
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-6
Matrix: Solid
Percent Solids: 77.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 10:11	CBW	TAL SAC

Client Sample ID: BNA03-SB1-01D
Date Collected: 03/06/18 07:20
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA03-SB1-01D
Date Collected: 03/06/18 07:20
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-7
Matrix: Solid
Percent Solids: 77.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 10:19	CBW	TAL SAC

Client Sample ID: BNA03-SB1-02
Date Collected: 03/06/18 07:35
Date Received: 03/10/18 09:30

Lab Sample ID: 320-36960-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA03-SB1-02
Lab Sample ID: 320-36960-8
Date Collected: 03/06/18 07:35
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 10:27	CBW	TAL SAC

Client Sample ID: BNA03-SB2-01
Lab Sample ID: 320-36960-9
Date Collected: 03/06/18 09:20
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA03-SB2-01
Lab Sample ID: 320-36960-9
Date Collected: 03/06/18 09:20
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 75.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 10:35	CBW	TAL SAC

Client Sample ID: BNA03-SB2-01D
Lab Sample ID: 320-36960-10
Date Collected: 03/06/18 09:20
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA03-SB2-01D
Lab Sample ID: 320-36960-10
Date Collected: 03/06/18 09:20
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 74.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 10:50	CBW	TAL SAC

Client Sample ID: BNA03-SB2-02
Lab Sample ID: 320-36960-11
Date Collected: 03/06/18 09:40
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA03-SB2-02
Lab Sample ID: 320-36960-11
Date Collected: 03/06/18 09:40
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 79.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 10:58	CBW	TAL SAC

Client Sample ID: BNA04-SB1-01
Lab Sample ID: 320-36960-12
Date Collected: 03/06/18 13:30
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA04-SB1-01
Lab Sample ID: 320-36960-12
Date Collected: 03/06/18 13:30
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 78.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 11:06	CBW	TAL SAC

Client Sample ID: BNA04-SB1-02
Lab Sample ID: 320-36960-13
Date Collected: 03/06/18 14:20
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA04-SB1-02
Lab Sample ID: 320-36960-13
Date Collected: 03/06/18 14:20
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 70.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 11:14	CBW	TAL SAC

Client Sample ID: BNA05-SB1-01
Lab Sample ID: 320-36960-14
Date Collected: 03/07/18 08:25
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Lab Chronicle

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Client Sample ID: BNA05-SB1-01
Lab Sample ID: 320-36960-14
Date Collected: 03/07/18 08:25
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 79.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 11:22	CBW	TAL SAC

Client Sample ID: BNA05-SB1-02
Lab Sample ID: 320-36960-15
Date Collected: 03/07/18 08:35
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA05-SB1-02
Lab Sample ID: 320-36960-15
Date Collected: 03/07/18 08:35
Matrix: Solid
Date Received: 03/10/18 09:30
Percent Solids: 81.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 11:29	CBW	TAL SAC

Client Sample ID: BNA05-SW1-01
Lab Sample ID: 320-36960-16
Date Collected: 03/08/18 11:45
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			214457	03/22/18 18:07	TWL	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	214716	03/24/18 19:42	CBW	TAL SAC

Client Sample ID: BNA05-ER-SD-01
Lab Sample ID: 320-36960-17
Date Collected: 03/08/18 12:05
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			213387	03/16/18 10:38	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213789	03/19/18 19:57	CBW	TAL SAC

Client Sample ID: BNA05-SD1-01
Lab Sample ID: 320-36960-18
Date Collected: 03/08/18 12:10
Matrix: Solid
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	212716	03/13/18 15:10	TCS	TAL SAC

Client Sample ID: BNA05-SD1-01 — Lab Sample ID: 320-36960-18

Date Collected: 03/08/18 12:10 — **Matrix: Solid**
Date Received: 03/10/18 09:30 — **Percent Solids: 75.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			213404	03/16/18 11:19	NS1	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	216821	04/07/18 11:37	CBW	TAL SAC

Client Sample ID: BNA-ER-GW-01 — Lab Sample ID: 320-36960-19

Date Collected: 03/08/18 16:35 — **Matrix: Water**
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			213387	03/16/18 10:38	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213789	03/19/18 20:05	CBW	TAL SAC

Client Sample ID: BNA-FB-02 — Lab Sample ID: 320-36960-20

Date Collected: 03/08/18 16:45 — **Matrix: Water**
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			213387	03/16/18 10:38	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213789	03/19/18 20:13	CBW	TAL SAC

Client Sample ID: BNA-IDW-5-01 — Lab Sample ID: 320-36960-21

Date Collected: 03/08/18 16:55 — **Matrix: Solid**
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			269508	03/20/18 14:43	R1K	TAL SEA
TCLP	Analysis	8260B		100	269828	03/25/18 05:14	P1P	TAL SEA

Client Sample ID: MW-BNA05-01-01 — Lab Sample ID: 320-36960-22

Date Collected: 03/09/18 09:02 — **Matrix: Water**
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			213387	03/16/18 10:38	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213789	03/19/18 20:20	CBW	TAL SAC
Total/NA	Prep	3535	RE		214457	03/22/18 18:07	TWL	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)	RE	1	214716	03/24/18 19:50	CBW	TAL SAC

Client Sample ID: MW-BNA05-01-01D — Lab Sample ID: 320-36960-23

Date Collected: 03/09/18 09:02 — **Matrix: Water**
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			214457	03/22/18 18:07	TWL	TAL SAC

Client Sample ID: MW-BNA05-01-01D
Lab Sample ID: 320-36960-23
Date Collected: 03/09/18 09:02
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 537 (Mod)		1	214716	03/24/18 20:13	CBW	TAL SAC

Client Sample ID: MW-BNA01-01-01
Lab Sample ID: 320-36960-24
Date Collected: 03/09/18 11:34
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			214457	03/22/18 18:07	TWL	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	214716	03/24/18 20:21	CBW	TAL SAC

Client Sample ID: BNA04-SW1-01
Lab Sample ID: 320-36960-25
Date Collected: 03/09/18 13:40
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			214457	03/22/18 18:07	TWL	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	214716	03/24/18 20:29	CBW	TAL SAC

Client Sample ID: BNA-IDW-W-01
Lab Sample ID: 320-36960-26
Date Collected: 03/09/18 15:20
Matrix: Water
Date Received: 03/10/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			408888	03/23/18 13:22	DFB1	TAL DEN
TCLP	Analysis	8260B		1	409141	03/27/18 13:56	TAW	TAL DEN

Laboratory References:

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

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

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Leidos, Inc. TestAmerica Job ID: 320-36960-1
Project/Site: PFC 4 SI's - Nashville ANGB

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-29-19

Analysis Method	Prep Method	Matrix	Analyte

Laboratory: TestAmerica Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
A2LA	ISO/IEC 17025		2907.01	10-31-19
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	01-08-19
Arizona	State Program	9	AZ0713	12-20-18
Arkansas DEQ	State Program	6	88-0687	06-01-18
California	State Program	9	2513	01-18-19
Connecticut	State Program	1	PH-0686	09-30-18
Florida	NELAP	4	E87667	06-30-18
Georgia	State Program	4	N/A	01-08-18 *
Illinois	NELAP	5	200017	04-30-18
Iowa	State Program	7	370	12-01-18
Kansas	NELAP	7	E-10166	04-30-18
Louisiana	NELAP	6	02096	06-30-18
Maine	State Program	1	CO0002	03-03-19
Minnesota	NELAP	5	8-999-405	12-31-18
Nevada	State Program	9	CO0026	07-31-18
New Hampshire	NELAP	1	205310	04-28-18
New Jersey	NELAP	2	CO004	06-30-18
New York	NELAP	2	11964	04-01-19
North Carolina (WW/SW)	State Program	4	358	12-31-18
North Dakota	State Program	8	R-034	01-08-19
Oklahoma	State Program	6	8614	08-31-18
Oregon	NELAP	10	4025	01-08-19
Pennsylvania	NELAP	3	68-00664	07-31-18
South Carolina	State Program	4	72002001	01-08-19
Texas	NELAP	6	T104704183-17-14	09-30-18
USDA	Federal		P330-16-00397	12-15-19
Utah	NELAP	8	CO00026	07-31-18
Virginia	NELAP	3	460232	06-14-18
Washington	State Program	10	C583	08-03-18
West Virginia DEP	State Program	3	354	12-31-18
Wisconsin	State Program	5	999615430	08-31-18
Wyoming (UST)	A2LA	8	2907.01	10-31-19

Laboratory: TestAmerica Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Leidos, Inc. TestAmerica Job ID: 320-36960-1
Project/Site: PFC 4 SI's - Nashville ANGB

Laboratory: TestAmerica Seattle (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	10-31-18
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Method Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SEA
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
EPA 537 (Mod)	PFAS for QSM 5.1, Table B-15	DOD 5.1	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC

Protocol References:

ASTM = ASTM International

DOD 5.1 = DOD 5.1

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

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

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Client: Leidos, Inc.
Project/Site: PFC 4 SI's - Nashville ANGB

TestAmerica Job ID: 320-36960-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-36960-1	BNA-ER-SB-01	Water	03/05/18 10:45	03/10/18 09:30
320-36960-2	BNA-FB-01	Water	03/05/18 10:55	03/10/18 09:30
320-36960-3	BNA-RB-01	Water	03/05/18 11:05	03/10/18 09:30
320-36960-4	BNA01-SB1-01	Solid	03/05/18 14:15	03/10/18 09:30
320-36960-5	BNA01-SB1-02	Solid	03/05/18 15:50	03/10/18 09:30
320-36960-6	BNA03-SB1-01	Solid	03/06/18 07:20	03/10/18 09:30
320-36960-7	BNA03-SB1-01D	Solid	03/06/18 07:20	03/10/18 09:30
320-36960-8	BNA03-SB1-02	Solid	03/06/18 07:35	03/10/18 09:30
320-36960-9	BNA03-SB2-01	Solid	03/06/18 09:20	03/10/18 09:30
320-36960-10	BNA03-SB2-01D	Solid	03/06/18 09:20	03/10/18 09:30
320-36960-11	BNA03-SB2-02	Solid	03/06/18 09:40	03/10/18 09:30
320-36960-12	BNA04-SB1-01	Solid	03/06/18 13:30	03/10/18 09:30
320-36960-13	BNA04-SB1-02	Solid	03/06/18 14:20	03/10/18 09:30
320-36960-14	BNA05-SB1-01	Solid	03/07/18 08:25	03/10/18 09:30
320-36960-15	BNA05-SB1-02	Solid	03/07/18 08:35	03/10/18 09:30
320-36960-16	BNA05-SW1-01	Water	03/08/18 11:45	03/10/18 09:30
320-36960-17	BNA05-ER-SD-01	Water	03/08/18 12:05	03/10/18 09:30
320-36960-18	BNA05-SD1-01	Solid	03/08/18 12:10	03/10/18 09:30
320-36960-19	BNA-ER-GW-01	Water	03/08/18 16:35	03/10/18 09:30
320-36960-20	BNA-FB-02	Water	03/08/18 16:45	03/10/18 09:30
320-36960-21	BNA-IDW-5-01	Solid	03/08/18 16:55	03/10/18 09:30
320-36960-22	MW-BNA05-01-01	Water	03/09/18 09:02	03/10/18 09:30
320-36960-23	MW-BNA05-01-01D	Water	03/09/18 09:02	03/10/18 09:30
320-36960-24	MW-BNA01-01-01	Water	03/09/18 11:34	03/10/18 09:30
320-36960-25	BNA04-SW1-01	Water	03/09/18 13:40	03/10/18 09:30
320-36960-26	BNA-IDW-W-01	Water	03/09/18 15:20	03/10/18 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 213555

Lab Sample ID: IC 320-213555/2 Client Sample ID:

Date Analyzed: 03/16/18 23:09 Lab File ID: 2018.03.16ICAL_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorotetradecanoic acid (PFTeA)	4.55	Baseline	phomsopha t	03/18/18 12:21

Lab Sample ID: IC 320-213555/3 Client Sample ID:

Date Analyzed: 03/16/18 23:17 Lab File ID: 2018.03.16ICAL_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.69	Baseline	phomsopha t	03/18/18 12:24

Lab Sample ID: ICB 320-213555/9 Client Sample ID:

Date Analyzed: 03/17/18 00:04 Lab File ID: 2018.03.16ICAL_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.68	Assign Peak	phomsopha t	03/18/18 12:42

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 213658

Lab Sample ID: CCB 320-213658/1 Client Sample ID:

Date Analyzed: 03/19/18 10:10 Lab File ID: 2018.03.19LLA_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	hannigana	03/19/18 10:48

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 213672

Lab Sample ID: CCV 320-213672/4 Client Sample ID:

Date Analyzed: 03/19/18 11:13 Lab File ID: 2018.03.19LLA_026.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.08	Isomers	barnettj	03/19/18 13:34

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 213789

Lab Sample ID: 320-36960-1 Client Sample ID: BNA-ER-SB-01

Date Analyzed: 03/19/18 19:26 Lab File ID: 2018.03.19LLAX_037.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)		Invalid Compound ID	westendorfc	03/22/18 10:44
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	03/22/18 10:44

Lab Sample ID: 320-36960-2 Client Sample ID: BNA-FB-01

Date Analyzed: 03/19/18 19:33 Lab File ID: 2018.03.19LLAX_038.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	03/22/18 10:44

Lab Sample ID: 320-36960-3 Client Sample ID: BNA-RB-01

Date Analyzed: 03/19/18 19:41 Lab File ID: 2018.03.19LLAX_039.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	03/22/18 10:44

Lab Sample ID: 320-36960-17 Client Sample ID: BNA05-ER-SD-01

Date Analyzed: 03/19/18 19:57 Lab File ID: 2018.03.19LLAX_041.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.34	Baseline	westendorfc	03/22/18 10:45
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	03/22/18 10:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 213789

Lab Sample ID: 320-36960-19 Client Sample ID: BNA-ER-GW-01

Date Analyzed: 03/19/18 20:05 Lab File ID: 2018.03.19LLAX_042.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	03/22/18 10:46

Lab Sample ID: 320-36960-20 Client Sample ID: BNA-FB-02

Date Analyzed: 03/19/18 20:13 Lab File ID: 2018.03.19LLAX_043.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.07	Assign Peak	westendorfc	03/22/18 10:46

Lab Sample ID: 320-36960-22 Client Sample ID: MW-BNA05-01-01

Date Analyzed: 03/19/18 20:20 Lab File ID: 2018.03.19LLAX_044.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.69	Isomers	westendorfc	03/22/18 10:46

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 214176

Lab Sample ID: IC 320-214176/2 Client Sample ID:

Date Analyzed: 03/21/18 18:24 Lab File ID: 2018.03.21LLICALAX_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.07	Baseline	phomsopha t	03/21/18 19:22

Lab Sample ID: IC 320-214176/8 Client Sample ID:

Date Analyzed: 03/21/18 19:11 Lab File ID: 2018.03.21LLICALAX_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.07	Isomers	phomsopha t	03/21/18 19:25

Lab Sample ID: ICB 320-214176/9 Client Sample ID:

Date Analyzed: 03/21/18 19:19 Lab File ID: 2018.03.21LLICALAX_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.35	Baseline	roycea	03/22/18 08:31
Perfluorooctanoic acid (PFOA)	2.70	Assign Peak	roycea	03/22/18 08:32

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 214716

Lab Sample ID: MB 320-214457/1-A Client Sample ID:

Date Analyzed: 03/24/18 19:26 Lab File ID: 2018.03.24LLAA_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	03/25/18 10:46

Lab Sample ID: 320-36960-16 Client Sample ID: BNA05-SW1-01

Date Analyzed: 03/24/18 19:42 Lab File ID: 2018.03.24LLAA_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.72	Baseline	westendorfc	03/25/18 10:46
Perfluorononanoic acid (PFNA)	3.10	Baseline	westendorfc	03/25/18 10:46

Lab Sample ID: 320-36960-23 Client Sample ID: MW-BNA05-01-01D

Date Analyzed: 03/24/18 20:13 Lab File ID: 2018.03.24LLAA_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.35	Baseline	westendorfc	03/25/18 10:49
Perfluorooctanoic acid (PFOA)	2.73	Isomers	westendorfc	03/25/18 10:49

Lab Sample ID: 320-36960-24 Client Sample ID: MW-BNA01-01-01

Date Analyzed: 03/24/18 20:21 Lab File ID: 2018.03.24LLAA_014.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.75	Baseline	westendorfc	03/25/18 10:49
Perfluorooctanoic acid (PFOA)	2.71	Baseline	westendorfc	03/25/18 10:49

EPA 537 (Mod)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 214716

Lab Sample ID: 320-36960-25 Client Sample ID: BNA04-SW1-01

Date Analyzed: 03/24/18 20:29 Lab File ID: 2018.03.24LLAA_015.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.71	Isomers	westendorfc	03/25/18 10:49

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 216821

Lab Sample ID: CCB 320-216821/1 Client Sample ID:

Date Analyzed: 04/07/18 09:01 Lab File ID: 2018.04.07LLA_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	04/09/18 08:17

Lab Sample ID: CCVL 320-216821/2 Client Sample ID:

Date Analyzed: 04/07/18 09:08 Lab File ID: 2018.04.07LLA_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.31	Baseline	westendorfc	04/09/18 08:17
6:2FTS	2.63	Baseline	westendorfc	04/09/18 08:18
Perfluorononanoic acid (PFNA)	3.03	Baseline	westendorfc	04/09/18 08:18
Perfluorooctane Sulfonamide (PFOSA)	3.36	Baseline	westendorfc	04/09/18 08:18
8:2FTS	3.38	Baseline	westendorfc	04/09/18 08:18
Perfluorodecanoic acid (PFDA)	3.39	Baseline	westendorfc	04/09/18 08:18

Lab Sample ID: CCV 320-216821/3 CCVIS Client Sample ID:

Date Analyzed: 04/07/18 09:16 Lab File ID: 2018.04.07LLA_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.70	Baseline	westendorfc	04/09/18 08:19
Perfluorooctanesulfonic acid (PFOS)	3.03	Isomers	westendorfc	04/09/18 08:19

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 216821

Lab Sample ID: MB 320-213404/1-A Client Sample ID:

Date Analyzed: 04/07/18 09:24 Lab File ID: 2018.04.07LLA_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	04/09/18 08:19

Lab Sample ID: 320-36960-4 Client Sample ID: BNA01-SB1-01

Date Analyzed: 04/07/18 09:40 Lab File ID: 2018.04.07LLA_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)		Invalid Compound ID	westendorfc	04/09/18 08:20

Lab Sample ID: 320-36960-5 Client Sample ID: BNA01-SB1-02

Date Analyzed: 04/07/18 10:03 Lab File ID: 2018.04.07LLA_012.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)		Invalid Compound ID	westendorfc	04/09/18 08:22

Lab Sample ID: 320-36960-6 Client Sample ID: BNA03-SB1-01

Date Analyzed: 04/07/18 10:11 Lab File ID: 2018.04.07LLA_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)		Invalid Compound ID	westendorfc	04/09/18 08:22
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	04/09/18 08:22

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 216821

Lab Sample ID: 320-36960-7 Client Sample ID: BNA03-SB1-01D

Date Analyzed: 04/07/18 10:19 Lab File ID: 2018.04.07LLA_014.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)		Invalid Compound ID	westendorfc	04/09/18 08:22

Lab Sample ID: 320-36960-8 Client Sample ID: BNA03-SB1-02

Date Analyzed: 04/07/18 10:27 Lab File ID: 2018.04.07LLA_015.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)		Invalid Compound ID	westendorfc	04/09/18 08:22

Lab Sample ID: 320-36960-9 Client Sample ID: BNA03-SB2-01

Date Analyzed: 04/07/18 10:35 Lab File ID: 2018.04.07LLA_016.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.32	Baseline	westendorfc	04/09/18 08:22
Perfluorooctanesulfonic acid (PFOS)		Invalid Compound ID	westendorfc	04/09/18 08:23
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	04/09/18 08:23

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 216821

Lab Sample ID: 320-36960-10 Client Sample ID: BNA03-SB2-01D

Date Analyzed: 04/07/18 10:50 Lab File ID: 2018.04.07LLA_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.91	Assign Peak	westendorfc	04/09/18 08:23
Perfluorononanoic acid (PFNA)		Invalid Compound ID	westendorfc	04/09/18 08:23
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	04/09/18 08:23

Lab Sample ID: 320-36960-11 Client Sample ID: BNA03-SB2-02

Date Analyzed: 04/07/18 10:58 Lab File ID: 2018.04.07LLA_019.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.03	Assign Peak	westendorfc	04/09/18 08:24

Lab Sample ID: 320-36960-12 Client Sample ID: BNA04-SB1-01

Date Analyzed: 04/07/18 11:06 Lab File ID: 2018.04.07LLA_020.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.32	Baseline	westendorfc	04/09/18 08:24
Perfluorononanoic acid (PFNA)		Invalid Compound ID	westendorfc	04/09/18 08:24
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	04/09/18 08:24

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 216821

Lab Sample ID: 320-36960-13 Client Sample ID: BNA04-SB1-02

Date Analyzed: 04/07/18 11:14 Lab File ID: 2018.04.07LLA_021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.32	Baseline	westendorfc	04/09/18 08:24
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	westendorfc	04/09/18 08:24

Lab Sample ID: 320-36960-14 Client Sample ID: BNA05-SB1-01

Date Analyzed: 04/07/18 11:22 Lab File ID: 2018.04.07LLA_022.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.66	Baseline	westendorfc	04/09/18 08:24
Perfluorononanoic acid (PFNA)	3.02	Baseline	westendorfc	04/09/18 08:25
Perfluorooctanesulfonic acid (PFOS)	3.02	Baseline	westendorfc	04/09/18 08:25

Lab Sample ID: 320-36960-18 Client Sample ID: BNA05-SD1-01

Date Analyzed: 04/07/18 11:37 Lab File ID: 2018.04.07LLA_024.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.28	Baseline	westendorfc	04/09/18 08:25
Perfluorohexanesulfonic acid (PFHxS)	2.32	Baseline	westendorfc	04/09/18 08:25
Perfluorononanoic acid (PFNA)	3.02	Baseline	westendorfc	04/09/18 08:26
Perfluorooctanesulfonic acid (PFOS)	3.02	Baseline	westendorfc	04/09/18 08:26

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 216849

Lab Sample ID: LCS 320-213404/2-A Client Sample ID:

Date Analyzed: 04/07/18 11:53 Lab File ID: 2018.04.07LLA1_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.03	Isomers	westendorfc	04/09/18 08:28

Lab Sample ID: 320-36960-4 DL Client Sample ID: BNA01-SB1-01 DL

Date Analyzed: 04/07/18 12:01 Lab File ID: 2018.04.07LLA1_026.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.30	Baseline	westendorfc	04/09/18 08:28
Perfluorooctanoic acid (PFOA)	2.66	Baseline	westendorfc	04/09/18 08:28

Lab Sample ID: 320-36960-4 MSD DL Client Sample ID: BNA01-SB1-01 MSD DL

Date Analyzed: 04/07/18 12:16 Lab File ID: 2018.04.07LLA1_028.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.67	Baseline	westendorfc	04/09/18 08:29
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	westendorfc	04/09/18 08:30

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Instrument ID: VMS_R1 Analysis Batch Number: 406767

Lab Sample ID: STD 280-406767/11 IC Client Sample ID:

Date Analyzed: 03/05/18 08:06 Lab File ID: R6831.D GC Column: DB-624 (60.25 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Ethanol	4.59	Assign Peak	dobranskym	03/05/18 09:36
n-Butanol	7.15	Split Peak	dobranskym	03/05/18 12:47

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Instrument ID: VMS_R1 Analysis Batch Number: 407291

Lab Sample ID: STD60 280-407291/17 IC Client Sample ID:

Date Analyzed: 03/08/18 21:08 Lab File ID: R7058.D GC Column: DB-624 (60.25 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
m-Xylene & p-Xylene	9.59	Wrong peak	linesj	03/08/18 21:31

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Instrument ID: SEA102 Analysis Batch Number: 269589

Lab Sample ID: IC 580-269589/3 Client Sample ID:

Date Analyzed: 03/21/18 12:09 Lab File ID: C211803.D GC Column: DB-VRX ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Chloromethane	4.34	Assign Peak	brennanr	03/22/18 09:57
Vinyl chloride	4.62	Assign Peak	brennanr	03/22/18 09:57
Methyl methacrylate	9.80	Assign Peak	brennanr	03/22/18 09:58
Chlorobenzene	12.31	Assign Peak	brennanr	03/22/18 09:58
1,3-Dichlorobenzene	14.54	Assign Peak	brennanr	03/22/18 14:15
1,4-Dichlorobenzene	14.60	Assign Peak	brennanr	03/22/18 14:15

Lab Sample ID: IC 580-269589/4 Client Sample ID:

Date Analyzed: 03/21/18 12:37 Lab File ID: C211804.D GC Column: DB-VRX ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Methyl methacrylate	9.81	Peak assignment corrected	brennanr	03/22/18 14:16

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Instrument ID: SEA102 Analysis Batch Number: 269828

Lab Sample ID: CCVIS 580-269828/3 Client Sample ID:

Date Analyzed: 03/25/18 02:52 Lab File ID: C241828.D GC Column: DB-VRX ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Diisopropyl ether	7.86	Baseline	pimtongp	03/26/18 12:49

Lab Sample ID: MB 580-269508/1-A Client Sample ID:

Date Analyzed: 03/25/18 03:49 Lab File ID: C241830.D GC Column: DB-VRX ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Benzene		Invalid Compound ID	pimtongp	03/26/18 11:25

Lab Sample ID: 320-36960-21 Client Sample ID: BNA-IDW-5-01

Date Analyzed: 03/25/18 05:14 Lab File ID: C241833.D GC Column: DB-VRX ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloroethane	8.74	Baseline	pimtongp	03/26/18 11:30
Benzene		Invalid Compound ID	pimtongp	03/26/18 11:31

Lab Sample ID: CCVC 580-269828/13 Client Sample ID:

Date Analyzed: 03/25/18 07:07 Lab File ID: C241837.D GC Column: DB-VRX ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Diisopropyl ether	7.87	Baseline	pimtongp	03/26/18 12:53

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFC_ALL_SU_00042	09/07/18	03/07/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00001	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
.LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
.LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
.LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
.LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM3HFPO-DA_00001	06/25/19	WELLINGTON, Lot M3HFPODA0616			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
.LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
.LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCMPFC_ALL_SU_00044	09/07/18	03/07/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
.LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
.LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
.LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
.LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
.LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-IS_00030	09/08/18	03/08/18	Methanol, Lot 090285	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
.LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC-IS_00031	09/08/18	03/08/18	Methanol, Lot 090285	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
.LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC-IS_00033	09/08/18	03/08/18	Methanol, Lot 090285	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
.LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_LL0_00006	08/20/18	02/22/18	MeOH/H2O, Lot Baker 141039	200 mL	LCMPFC_ALL_SU_00041	10 mL	13C2-PFOA	2.5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_LL0_00006	08/20/18	02/22/18	MeOH/H2O, Lot Baker 141039	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5-PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC_LL1_00005	08/20/18	02/22/18	MeOH/H2O, Lot 90285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5-PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00136	50 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.02335 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0237 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.02395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.025 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.025 ng/mL
							Perfluorobutyric acid	0.025 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0221 ng/mL
							Perfluorodecanoic acid	0.025 ng/mL
							Perfluorododecanoic acid	0.025 ng/mL
							Perfluorodecane Sulfonic acid	0.0241 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid (PFHpA)	0.025 ng/mL
							Perfluoroheptanesulfonic acid	0.0238 ng/mL
							Perfluorohexanoic acid	0.025 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.02275 ng/mL
							Perfluorononanoic acid (PFNA)	0.025 ng/mL
							Perfluorononanesulfonic acid	0.024 ng/mL
							Perfluorooctanoic acid (PFOA)	0.025 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0232 ng/mL
							Perfluorooctane Sulfonamide	0.025 ng/mL
							Perfluoropentanoic acid	0.025 ng/mL
							Perfluoropentanesulfonic acid	0.02345 ng/mL
							Perfluorotetradecanoic acid	0.025 ng/mL
							Perfluorotridecanoic acid	0.025 ng/mL
							Perfluoroundecanoic acid	0.025 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00136	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LCPFCSP_00132	1 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorononanesulfonic acid	0.096 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluoropentanesulfonic acid	0.0938 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic acid	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00003	200 uL	Perfluorononanesulfonic acid	0.96 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00003	200 uL	Perfluoropentanesulfonic acid	0.938 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
...LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL
...LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
...LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
...LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC_LL2_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5-PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00136	100 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0467 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0474 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0479 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.05 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.05 ng/mL
							Perfluorobutyric acid	0.05 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0442 ng/mL
							Perfluorodecanoic acid	0.05 ng/mL
							Perfluorododecanoic acid	0.05 ng/mL
							Perfluorodecane Sulfonic acid	0.0482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.05 ng/mL
							Perfluoroheptanesulfonic acid	0.0476 ng/mL
							Perfluorohexanoic acid	0.05 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0455 ng/mL
							Perfluorononanoic acid (PFNA)	0.05 ng/mL
							Perfluorononanesulfonic acid	0.048 ng/mL
							Perfluorooctanoic acid (PFOA)	0.05 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0464 ng/mL
							Perfluorooctane Sulfonamide	0.05 ng/mL
							Perfluoropentanoic acid	0.05 ng/mL
							Perfluoropentanesulfonic acid	0.0469 ng/mL
							Perfluorotetradecanoic acid	0.05 ng/mL
							Perfluorotridecanoic acid	0.05 ng/mL
							Perfluoroundecanoic acid	0.05 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00136	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LCPFCSP_00132	1 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorononanesulfonic acid	0.096 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluoropentanesulfonic acid	0.0938 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic acid	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00003	200 uL	Perfluorononanesulfonic acid	0.96 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00003	200 uL	Perfluoropentanesulfonic acid	0.938 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
...LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL
...LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
...LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
...LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC_LL3_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5-PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00136	500 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.2335 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.237 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.2395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.25 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.25 ng/mL
							Perfluorobutyric acid	0.25 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.221 ng/mL
							Perfluorodecanoic acid	0.25 ng/mL
							Perfluorododecanoic acid	0.25 ng/mL
							Perfluorodecane Sulfonic acid	0.241 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.25 ng/mL
							Perfluoroheptanesulfonic acid	0.238 ng/mL
							Perfluorohexanoic acid	0.25 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.2275 ng/mL
							Perfluorononanoic acid (PFNA)	0.25 ng/mL
							Perfluorononanesulfonic acid	0.24 ng/mL
							Perfluorooctanoic acid (PFOA)	0.25 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.232 ng/mL
							Perfluorooctane Sulfonamide	0.25 ng/mL
							Perfluoropentanoic acid	0.25 ng/mL
							Perfluoropentanesulfonic acid	0.2345 ng/mL
							Perfluorotetradecanoic acid	0.25 ng/mL
							Perfluorotridecanoic acid	0.25 ng/mL
							Perfluoroundecanoic acid	0.25 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00136	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LCPFCSP_00132	1 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorononanesulfonic acid	0.096 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluoropentanesulfonic acid	0.0938 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic acid	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00003	200 uL	Perfluorononanesulfonic acid	0.96 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFPeS_00003	200 uL	Perfluoropentanesulfonic acid	0.938 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
...LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL
...LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
...LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
...LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC_LL4_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5-PFPeA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00132	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
							Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL
							Perfluorononanesulfonic acid	0.96 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.928 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluoropentanesulfonic acid	0.938 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic acid	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00003	200 uL	Perfluorononanesulfonic acid	0.96 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00003	200 uL	Perfluoropentanesulfonic acid	0.938 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
..LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
..LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC_LL5_00003	06/23/18	01/02/18	MeOH/H2O, Lot 090285	200 mL	LCPFC-IS_00023	10 mL	13C2-PFOA	2.5 ng/mL
.LCPFC-IS_00023	06/28/18	12/28/17	Methanol, Lot 090285	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_LL5_00003	06/23/18	01/02/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00032	10 mL	13C4-PFHpA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
					LCPFCSP_00127	500 uL	Perfluorobutanesulfonic acid (PFBS)	2.21 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	2.275 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.32 ng/mL
.LCMPFC_ALL_SU_00032	06/28/18	12/28/17	Methanol, Lot Baker 141039	200 mL	LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCPFCSP_00127	06/23/18	12/23/17	Methanol, Lot 090285	10000 uL	LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
..LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LCPFC_LL5_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5-PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00132	500 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	2.335 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	2.37 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	2.395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-methyl perfluorooctane sulfonamidoacetic acid	2.5 ng/mL
							Perfluorobutyric acid	2.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	2.21 ng/mL
							Perfluorodecanoic acid	2.5 ng/mL
							Perfluorododecanoic acid	2.5 ng/mL
							Perfluorodecane Sulfonic acid	2.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL
							Perfluoroheptanesulfonic acid	2.38 ng/mL
							Perfluorohexanoic acid	2.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	2.275 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorononanesulfonic acid	2.4 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.32 ng/mL
							Perfluorooctane Sulfonamide	2.5 ng/mL
							Perfluoropentanoic acid	2.5 ng/mL
							Perfluoropentanesulfonic acid	2.345 ng/mL
							Perfluorotetradecanoic acid	2.5 ng/mL
							Perfluorotridecanoic acid	2.5 ng/mL
							Perfluoroundecanoic acid	2.5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic acid	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00003	200 uL	Perfluorononanesulfonic acid	0.96 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFPeS_00003	200 uL	Perfluoropentanesulfonic acid	0.938 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
..LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL
..LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
..LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC_LL6_00005	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5-PFPeA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00132	1 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	4.67 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	4.74 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	4.79 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic acid	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.55 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorononanesulfonic acid	4.8 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.64 ng/mL
							Perfluorooctane Sulfonamide	5 ng/mL
							Perfluoropentanoic acid	5 ng/mL
							Perfluoropentanesulfonic acid	4.69 ng/mL
							Perfluorotetradecanoic acid	5 ng/mL
							Perfluorotridecanoic acid	5 ng/mL
							Perfluoroundecanoic acid	5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic acid	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00003	200 uL	Perfluorononanesulfonic acid	0.96 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00003	200 uL	Perfluoropentanesulfonic acid	0.938 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
..LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
..LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC_LL7_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5-PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00132	2 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	9.34 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	9.48 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	9.58 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	10 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	10 ng/mL
							Perfluorobutyric acid	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorobutanesulfonic acid (PFBS)	8.84 ng/mL
							Perfluorodecanoic acid	10 ng/mL
							Perfluorododecanoic acid	10 ng/mL
							Perfluorodecane Sulfonic acid	9.64 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluoroheptanesulfonic acid	9.52 ng/mL
							Perfluorohexanoic acid	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	9.1 ng/mL
							Perfluorononanoic acid (PFNA)	10 ng/mL
							Perfluorononanesulfonic acid	9.6 ng/mL
							Perfluorooctanoic acid (PFOA)	10 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	9.28 ng/mL
							Perfluorooctane Sulfonamide	10 ng/mL
							Perfluoropentanoic acid	10 ng/mL
							Perfluoropentanesulfonic acid	9.38 ng/mL
							Perfluorotetradecanoic acid	10 ng/mL
							Perfluorotridecanoic acid	10 ng/mL
							Perfluoroundecanoic acid	10 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic acid	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00003	200 uL	Perfluorononanesulfonic acid	0.96 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00003	200 uL	Perfluoropentanesulfonic acid	0.938 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
..LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL
..LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
..LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFCIC_FULL_00011	07/02/18	02/22/18	MeOH/H2O, Lot 09285	200 mL	LCMPFC_ALL_SU_00041	10 mL	13C2-PFOA	2.5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFCIC_FULL_00011	07/02/18	02/22/18	MeOH/H2O, Lot 09285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C5-PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFAC-24PAR_00001	250 uL	Perfluorobutanesulfonic acid (PFBS)	2.2125 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	2.28 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.31375 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5-PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM4PFHPA_00012	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFAC-24PAR_00001	09/15/22	Wellington Laboratories, Lot PFAC24PAR0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.824 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.851 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00118	03/29/18	10/02/17	Methanol, Lot 090285	250 mL	LC4:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.01868 ug/mL
					LC6:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.01896 ug/mL
					LC8:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.01916 ug/mL
					LCN-EtFOSA-M_00005	100 uL	N-ethylperfluoro-1-octanesulfonamide	0.02 ug/mL
					LCN-EtFOSAA_00004	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCN-MeFOSA-M_00004	100 uL	MeFOSA	0.02 ug/mL
					LCN-MeFOSAA_00004	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCPFBA_00007	100 uL	Perfluorobutyric acid	0.02 ug/mL
					LCPFBS_00008	100 uL	Perfluorobutane Sulfonate	0.01768 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA_00007	100 uL	Perfluorodecanoic acid	0.02 ug/mL
					LCPFDoA_00007	100 uL	Perfluorododecanoic acid	0.02 ug/mL
					LCPFDSA_00002	100 uL	Perfluorodecane Sulfonic acid	0.01928 ug/mL
					LCPFHpA_00008	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic acid	0.01904 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxA_00007	100 uL	Perfluorohexanoic acid	0.02 ug/mL
					LCPFHxDA_00008	100 uL	Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHxS-br_00004	100 uL	Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA_00009	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
					LCPFOA_00008	100 uL	Perfluorooctanoic acid (PFOA)	0.02 ug/mL
					LCPFODA_00008	100 uL	Perfluorooctadecanoic acid	0.02 ug/mL
					LCPFOS-br_00004	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00010	100 uL	Perfluorooctane Sulfonamide	0.02 ug/mL
					LCPFPeA_00007	100 uL	Perfluoropentanoic acid	0.02 ug/mL
					LCPFTeDA_00007	100 uL	Perfluorotetradecanoic acid	0.02 ug/mL
					LCPFTrDA_00007	100 uL	Perfluorotridecanoic acid	0.02 ug/mL
					LCPFUdA_00007	100 uL	Perfluoroundecanoic acid	0.02 ug/mL
.LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
.LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
.LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
.LCN-EtFOSA-M_00005	05/24/21	WELLINGTON, Lot NEtFOSA0516M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
.LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCN-MeFOSA-M_00004	05/24/21	WELLINGTON, Lot NMeFOSA0516M			(Purchased Reagent)		MeFOSA	50 ug/mL
.LCN-MeFOSAA_00004	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00007	05/31/21	Wellington Laboratories, Lot PFDA0516			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00007	05/31/21	Wellington Laboratories, Lot PFDoA0516			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL
.LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA_00008	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA_00008	08/02/21	Wellington Laboratories, Lot PFOA0716			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00008	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
.LCPFTeDA_00007	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA_00007	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFCSP_00138	09/20/18	03/20/18	Methanol, Lot 090285	250 mL	LC11CIPF3OUdS_00001	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.01884 ug/mL
					LC4:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.01868 ug/mL
					LC6:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.01896 ug/mL
					LC8:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.01916 ug/mL
					LC9CI-PF3ONS_00001	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.01864 ug/mL
					LCDONA_00001	100 uL	Adona	0.02 ug/mL
					LCHFPO-DA_00001	100 uL	Perfluoro(2-propoxypropanoic) acid	0.02 ug/mL
					LCN-EtFOSA-M_00005	100 uL	N-ethylperfluoro-1-octanesulfonamide	0.02 ug/mL
					LCN-EtFOSAA_00004	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCN-MeFOSA-M_00004	100 uL	MeFOSA	0.02 ug/mL
					LCN-MeFOSAA_00004	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCPFBA_00007	100 uL	Perfluorobutyric acid	0.02 ug/mL
					LCPFBS_00008	100 uL	Perfluorobutane Sulfonate	0.01768 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA_00007	100 uL	Perfluorodecanoic acid	0.02 ug/mL
					LCPFDoA_00007	100 uL	Perfluorododecanoic acid	0.02 ug/mL
					LCPFDSA_00002	100 uL	Perfluorodecane Sulfonic acid	0.01928 ug/mL
					LCPFHpA_00008	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic acid	0.01904 ug/mL
					LCPFHxA_00007	100 uL	Perfluorohexanoic acid	0.02 ug/mL
					LCPFHxDA_00008	100 uL	Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHxS-br_00004	100 uL	Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA_00009	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid	0.0192 ug/mL
					LCPFOA_00008	100 uL	Perfluorooctanoic acid (PFOA)	0.02 ug/mL
					LCPFODA_00008	100 uL	Perfluorooctadecanoic acid	0.02 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS-br_00004	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00010	100 uL	Perfluorooctane Sulfonamide	0.02 ug/mL
					LCPFPeA_00007	100 uL	Perfluoropentanoic acid	0.02 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.01876 ug/mL
					LCPFTeDA_00007	100 uL	Perfluorotetradecanoic acid	0.02 ug/mL
					LCPFTrDA_00007	100 uL	Perfluorotridecanoic acid	0.02 ug/mL
					LCPFUdA_00007	100 uL	Perfluoroundecanoic acid	0.02 ug/mL
.LC11CIPF3OUdS_00001	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
.LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
.LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
.LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
.LC9CI-PF3ONS_00001	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
.LCDONA_00001	04/10/22	WELLINGTON, Lot NADONA0417			(Purchased Reagent)		Adona	50 ug/mL
.LCHFPO-DA_00001	07/03/20	WELLINGTON, Lot HFPODA0717			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
.LCN-EtFOSA-M_00005	05/24/21	WELLINGTON, Lot NEtFOSA0516M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
.LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NEtFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCN-MeFOSA-M_00004	05/24/21	WELLINGTON, Lot NMeFOSA0516M			(Purchased Reagent)		MeFOSA	50 ug/mL
.LCN-MeFOSAA_00004	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00007	05/31/21	Wellington Laboratories, Lot PFDA0516			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00007	05/31/21	Wellington Laboratories, Lot PFDoA0516			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic acid	47.6 ug/mL
.LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA_00008	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
.LCPFOA_00008	08/02/21	Wellington Laboratories, Lot PFOA0716			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFODA_00008	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
.LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
.LCPFTeDA_00007	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA_00007	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
MV-2cleve+AVA_00033	03/31/18	02/01/18	P&T Methanol, Lot 177891	10 mL	MV-568720_00019	202.5 uL	Acrolein	399.938 ug/mL
					MV-569723_00003	160 uL	2-Chloroethyl vinyl ether	40 ug/mL
					MV-569724_00013	160 uL	Vinyl acetate	80 ug/mL
.MV-568720_00019	03/31/18	RESTEK, Lot A0130770			(Purchased Reagent)		Acrolein	19750 ug/mL
.MV-569723_00003	01/31/20	RESTEK, Lot A0123891			(Purchased Reagent)		2-Chloroethyl vinyl ether	2500 ug/mL
.MV-569724_00013	04/30/18	RESTEK, Lot A0131948			(Purchased Reagent)		Vinyl acetate	5000 ug/mL
MV-568718-D_00008	03/31/21	RESTEK, Lot A0118105			(Purchased Reagent)		1,4-Dichlorobenzene-d4	250 ug/mL
							Chlorobenzene-d5	250 ug/mL
							Fluorobenzene	250 ug/mL
							TBA-d9 (IS)	5000 ug/mL
MV-568718-D_00014	05/31/22	RESTEK, Lot A0127975			(Purchased Reagent)		1,4-Dichlorobenzene-d4	250 ug/mL
							Chlorobenzene-d5	250 ug/mL
							Fluorobenzene	250 ug/mL
							TBA-d9 (IS)	5000 ug/mL
MV-ARCH SS A_00091	09/04/18	03/04/18	P&T Methanol, Lot 177891	50 mL	MV-567650_00027	5 mL	1,2-Dichloroethane-d4 (Surr)	250 ug/mL
							4-Bromofluorobenzene (Surr)	250 ug/mL
							Dibromofluoromethane (Surr)	250 ug/mL
							Toluene-d8 (Surr)	250 ug/mL
.MV-567650_00027	01/31/22	Restek, Lot A0124069			(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Dibromofluoromethane (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL
MV-BFB_00025							1,2-Dichloroethene, Total	
							1,2-Dichloroethene, Total (URS)	
							1,3-Dichloropropene, Total	
							TAH	
							Tentatively Identified Compound	
							Total BTEX	
							Trihalomethanes, Total	
							Xylenes, Total	
							Xylenes, Total (URS)	
					MV-STS110N1_00066	1.25 mL	BFB	50 ug/mL
.MV-STS110N1_00066	10/31/19	Ultra Scientific, Lot CH-3248Z			(Purchased Reagent)		BFB	2000 ug/mL
MV-Gas/Ket A_00071	09/04/18	03/04/18	P&T Methanol, Lot 177891	10 mL	MV-569721_00004	128 uL	2-Butanone (MEK)	160 ug/mL
							2-Hexanone	160 ug/mL
							4-Methyl-2-pentanone (MIBK)	160 ug/mL
							Acetone	160 ug/mL
					MV-569722_00006	160 uL	Bromomethane	40 ug/mL
							Chloroethane	40 ug/mL
							Chloromethane	40 ug/mL
							Dichlorodifluoromethane	40 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Dichlorofluoromethane	40 ug/mL
							Trichlorofluoromethane	40 ug/mL
							Vinyl chloride	40 ug/mL
					MV-569727_00006	640 uL	Cyclohexanone	1600 ug/mL
.MV-569721_00004	01/31/20		RESTEK, Lot A0123890		(Purchased Reagent)		2-Butanone (MEK)	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone (MIBK)	12500 ug/mL
							Acetone	12500 ug/mL
.MV-569722_00006	01/31/20		RESTEK, Lot A0124278		(Purchased Reagent)		Bromomethane	2500 ug/mL
							Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Dichlorodifluoromethane	2500 ug/mL
							Dichlorofluoromethane	2500 ug/mL
							Trichlorofluoromethane	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.MV-569727_00006	03/31/19		RESTEK, Lot A0118487		(Purchased Reagent)		Cyclohexanone	25000 ug/mL
MV-Gas/Ket B_00041	08/25/18	02/25/18	P&T Methanol, Lot 177891	10 mL	MV-569721.sec_00005	128 uL	2-Butanone (MEK)	160 ug/mL
					MV-569722.sec_00004	160 uL	Vinyl chloride	40 ug/mL
.MV-569721.sec_00005	01/31/20		RESTEK, Lot A0113880		(Purchased Reagent)		2-Butanone (MEK)	12500 ug/mL
.MV-569722.sec_00004	01/31/20		RESTEK, Lot A0124116		(Purchased Reagent)		Vinyl chloride	2500 ug/mL
MV-Main A_00034	03/31/18	02/06/18	P&T Methanol, Lot 177891	20 mL	MV-569720_00003	320 uL	1,1,1,2-Tetrachloroethane	40 ug/mL
							1,1,1-Trichloroethane	40 ug/mL
							1,1,2,2-Tetrachloroethane	40 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	40 ug/mL
							1,1,2-Trichloroethane	40 ug/mL
							1,1-Dichloroethane	40 ug/mL
							1,1-Dichloroethene	40 ug/mL
							1,1-Dichloropropene	40 ug/mL
							1,2,3-Trichlorobenzene	40 ug/mL
							1,2,3-Trichloropropane	40 ug/mL
							1,2,4-Trichlorobenzene	40 ug/mL
							1,2,4-Trimethylbenzene	40 ug/mL
							1,2-Dibromo-3-Chloropropane	40 ug/mL
							1,2-Dichlorobenzene	40 ug/mL
							1,2-Dichloroethane	40 ug/mL
							1,2-Dichloropropane	40 ug/mL
							1,3,5-Trimethylbenzene	40 ug/mL
							1,3-Dichlorobenzene	40 ug/mL
							1,3-Dichloropropane	40 ug/mL
							1,4-Dichlorobenzene	40 ug/mL
							1,4-Dioxane	800 ug/mL
							2,2-Dichloropropane	40 ug/mL
							2-Chlorotoluene	40 ug/mL
							2-Methyl-2-propanol	400 ug/mL
							3-Chloro-1-propene	40 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Chlorotoluene	40 ug/mL
							4-Isopropyltoluene	40 ug/mL
							Acrylonitrile	400 ug/mL
							Benzene	40 ug/mL
							Bromobenzene	40 ug/mL
							Bromoform	40 ug/mL
							Carbon disulfide	40 ug/mL
							Carbon tetrachloride	40 ug/mL
							Chlorobenzene	40 ug/mL
							Chlorobromomethane	40 ug/mL
							Chlorodibromomethane	40 ug/mL
							Chloroform	40 ug/mL
							cis-1,2-Dichloroethene	40 ug/mL
							cis-1,3-Dichloropropene	40 ug/mL
							Cyclohexane	40 ug/mL
							Dibromomethane	40 ug/mL
							Dichlorobromomethane	40 ug/mL
							Ethyl ether	40 ug/mL
							Ethyl methacrylate	40 ug/mL
							Ethylbenzene	40 ug/mL
							Ethylene Dibromide	40 ug/mL
							Hexachlorobutadiene	40 ug/mL
							Hexane	40 ug/mL
							Iodomethane	40 ug/mL
							Isobutyl alcohol	1000 ug/mL
							Isopropylbenzene	40 ug/mL
							m-Xylene & p-Xylene	40 ug/mL
							Methyl acetate	200 ug/mL
							Methyl tert-butyl ether	40 ug/mL
							Methylcyclohexane	40 ug/mL
							Methylene Chloride	40 ug/mL
							n-Butylbenzene	40 ug/mL
							N-Propylbenzene	40 ug/mL
							Naphthalene	40 ug/mL
							o-Xylene	40 ug/mL
							sec-Butylbenzene	40 ug/mL
							Styrene	40 ug/mL
							tert-Butylbenzene	40 ug/mL
							Tetrachloroethene	40 ug/mL
							Tetrahydrofuran	80 ug/mL
							Toluene	40 ug/mL
							trans-1,2-Dichloroethene	40 ug/mL
							trans-1,3-Dichloropropene	40 ug/mL
							trans-1,4-Dichloro-2-butene	40 ug/mL
							Trichloroethene	40 ug/mL
					MV-CUS17739_00002	800 uL	1-Chlorohexane	40 ug/mL
							2-Pentanone	160 ug/mL
							sec-Butyl Alcohol	1200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.MV-569720_00003	03/31/18		RESTEK, Lot A0118177		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2500 ug/mL
							1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,1-Dichloropropene	2500 ug/mL
							1,2,3-Trichlorobenzene	2500 ug/mL
							1,2,3-Trichloropropane	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2,4-Trimethylbenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dichlorobenzene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							1,3,5-Trimethylbenzene	2500 ug/mL
							1,3-Dichlorobenzene	2500 ug/mL
							1,3-Dichloropropane	2500 ug/mL
							1,4-Dichlorobenzene	2500 ug/mL
							1,4-Dioxane	50000 ug/mL
							2,2-Dichloropropane	2500 ug/mL
							2-Chlorotoluene	2500 ug/mL
							2-Methyl-2-propanol	25000 ug/mL
							3-Chloro-1-propene	2500 ug/mL
							4-Chlorotoluene	2500 ug/mL
							4-Isopropyltoluene	2500 ug/mL
							Acrylonitrile	25000 ug/mL
							Benzene	2500 ug/mL
							Bromobenzene	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorobromomethane	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Cyclohexane	2500 ug/mL
							Dibromomethane	2500 ug/mL
							Dichlorobromomethane	2500 ug/mL
							Ethyl ether	2500 ug/mL
							Ethyl methacrylate	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Ethylene Dibromide	2500 ug/mL
							Hexachlorobutadiene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexane	2500 ug/mL
							Iodomethane	2500 ug/mL
							Isobutyl alcohol	62500 ug/mL
							Isopropylbenzene	2500 ug/mL
							m-Xylene & p-Xylene	2500 ug/mL
							Methyl acetate	12500 ug/mL
							Methyl tert-butyl ether	2500 ug/mL
							Methylcyclohexane	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							n-Butylbenzene	2500 ug/mL
							N-Propylbenzene	2500 ug/mL
							Naphthalene	2500 ug/mL
							o-Xylene	2500 ug/mL
							sec-Butylbenzene	2500 ug/mL
							Styrene	2500 ug/mL
							tert-Butylbenzene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Tetrahydrofuran	5000 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							trans-1,4-Dichloro-2-butene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.MV-CUS17739_00002	07/31/19		Ultra, Lot CR-2819		(Purchased Reagent)		1-Chlorohexane	1000 ug/mL
							2-Pentanone	4000 ug/mL
							sec-Butyl Alcohol	30000 ug/mL
MV-Main B_00020	07/25/18	01/25/18	P&T Methanol, Lot 127999	20 mL	MV-569720.sec_00002	320 uL	1,1-Dichloroethene	40 ug/mL
							1,2-Dichloroethane	40 ug/mL
							Benzene	40 ug/mL
							Carbon tetrachloride	40 ug/mL
							Chlorobenzene	40 ug/mL
							Chloroform	40 ug/mL
							Tetrachloroethene	40 ug/mL
							Trichloroethene	40 ug/mL
.MV-569720.sec_00002	07/31/18		RESTEK, Lot A0120604		(Purchased Reagent)		1,1-Dichloroethene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							Benzene	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chloroform	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Trichloroethene	2500 ug/mL
MV-Supp A_00029	06/30/18	03/04/18	P&T Methanol, Lot 12799	10 mL	mv-570808_00003	160 uL	1,2,3-Trimethylbenzene	40 ug/mL
							2-Chloro-1,3-butadiene	40 ug/mL
							2-Nitropropane	80 ug/mL
							Isopropyl alcohol	400 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Methacrylonitrile	400 ug/mL
							n-Butanol	1000 ug/mL
					mv-570809_00003	160 uL	Ethyl acetate	80 ug/mL
							Methyl methacrylate	80 ug/mL
					mv-571993_00001	160 uL	Acetonitrile	400 ug/mL
							Isopropyl ether	40 ug/mL
							Propionitrile	400 ug/mL
							Tert-amyl methyl ether	40 ug/mL
							Tert-butyl ethyl ether	40 ug/mL
					mv-571994_00001	240 uL	Ethanol	2400 ug/mL
					mv-VO-TAOH-5_00004	800 uL	cis-1,4-Dichloro-2-butene	80 ug/mL
.mv-570808_00003	06/30/18		Restek, Lot A0123685		(Purchased Reagent)		1,2,3-Trimethylbenzene	2500 ug/mL
							2-Chloro-1,3-butadiene	2500 ug/mL
							2-Nitropropane	5000 ug/mL
							Isopropyl alcohol	25000 ug/mL
							Methacrylonitrile	25000 ug/mL
							n-Butanol	62500 ug/mL
.mv-570809_00003	06/30/18		Restek, Lot A0123728		(Purchased Reagent)		Ethyl acetate	5000 ug/mL
							Methyl methacrylate	5000 ug/mL
.mv-571993_00001	12/31/18		RESTEK, Lot A0123796		(Purchased Reagent)		Acetonitrile	25000 ug/mL
							Isopropyl ether	2500 ug/mL
							Propionitrile	25000 ug/mL
							Tert-amyl methyl ether	2500 ug/mL
							Tert-butyl ethyl ether	2500 ug/mL
.mv-571994_00001	06/30/20		RESTEK, Lot A0128797		(Purchased Reagent)		Ethanol	100000 ug/mL
.mv-VO-TAOH-5_00004	08/19/18		SPEX, Lot TS180220004		(Purchased Reagent)		cis-1,4-Dichloro-2-butene	1000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
BFB_00002							1,2-Dichloroethane-d4 (Surr)	
							1,4-Dichlorobenzene-d4	
							4-Bromofluorobenzene (Surr)	
							Chlorobenzene-d5	
							Dibromofluoromethane (Surr)	
							Fluorobenzene (IS)	
							TAH	
							TBA-d9 (IS)	
							Tentatively Identified Compound	
							Toluene-d8 (Surr)	
							Trifluorotoluene (Surr)	
							Xylenes, Total	
					v-BFB-Tune_00001	250 uL	BFB	4015 mg/L
.v-BFB-Tune_00001	11/04/10		Aldrich, Lot 20401KO		(Purchased Reagent)		BFB	1.606 g/mL
SURR/IS/TFT_00100	03/26/18	01/23/18	blk, Lot voarsurr/is_00046	25 mL	V-TFTStk_00032	625 uL	Trifluorotoluene (Surr)	249.9 ppm
					VOARSURR/IS_00046	24.375 mL	1,2-Dichloroethane-d4 (Surr)	243.75 ppm
							1,4-Dichlorobenzene-d4	243.75 ppm
							4-Bromofluorobenzene (Surr)	243.75 ppm
							Chlorobenzene-d5	243.75 ppm
							Dibromofluoromethane (Surr)	243.75 ppm
							Fluorobenzene (IS)	243.75 ppm
							TBA-d9 (IS)	4875 ppm
							Toluene-d8 (Surr)	243.75 ppm
.V-TFTStk_00032	03/26/18	09/26/17	methanol, Lot 177891	50 mL	TFTneat_00013	420 uL	Trifluorotoluene (Surr)	9996 mg/L
..TFTneat_00013	03/31/19		Sigma-Aldrich, Lot STBG2214V		(Purchased Reagent)		Trifluorotoluene (Surr)	1190000 mg/L
.VOARSURR/IS_00046	04/30/22		Restek, Lot A0126559		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	250 ug/mL
							1,4-Dichlorobenzene-d4	250 ug/mL
							4-Bromofluorobenzene (Surr)	250 ug/mL
							Chlorobenzene-d5	250 ug/mL
							Dibromofluoromethane (Surr)	250 ug/mL
							Fluorobenzene (IS)	250 ug/mL
							TBA-d9 (IS)	5000 ug/mL
							Toluene-d8 (Surr)	250 ug/mL
VOAMasterMix_00018	03/31/18	02/20/18	MeOH, Lot 177891	50 mL	8260 L2/S7_00009	1000 uL	Ethyl acetate	100 ug/mL
							Ethyl acrylate	50 ug/mL
							Methyl methacrylate	100 ug/mL
							n-Butyl acetate	50 ug/mL
					VOAR2CEVE__00013	1000 uL	2-Chloroethyl vinyl ether	50 ug/mL
					VOARAcrolein_00040	750 uL	Acrolein	300 ug/mL
					VOARADDCOM__00017	1000 uL	1,2,3-Trimethylbenzene	50 ug/mL
							1,3,5-Trichlorobenzene	50 ug/mL
							2-Chloro-1,3-butadiene	50 ug/mL
							2-Nitropropane	100 ug/mL
							Benzyl chloride	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Isopropyl alcohol	500 ug/mL
							Methacrylonitrile	500 ug/mL
							n-Butanol	1250 ug/mL
					VOARGAS__00015	1000 uL	Bromomethane	50 ug/mL
							Butadiene	50 ug/mL
							Chloroethane	50 ug/mL
							Chloromethane	50 ug/mL
							Dichlorodifluoromethane	50 ug/mL
							Dichlorofluoromethane	50 ug/mL
							Trichlorofluoromethane	50 ug/mL
							Vinyl chloride	50 ug/mL
					VOARKETON__00013	1000 uL	2-Butanone (MEK)	250 ug/mL
							2-Hexanone	250 ug/mL
							4-Methyl-2-pentanone (MIBK)	250 ug/mL
							Acetone	250 ug/mL
					VOARMegMix__00022	1000 uL	1,1,1,2-Tetrachloroethane	50 ug/mL
							1,1,1-Trichloroethane	50 ug/mL
							1,1,2,2-Tetrachloroethane	50 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	50 ug/mL
							1,1,2-Trichloroethane	50 ug/mL
							1,1-Dichloroethane	50 ug/mL
							1,1-Dichloroethene	50 ug/mL
							1,1-Dichloropropene	50 ug/mL
							1,2,3-Trichlorobenzene	50 ug/mL
							1,2,3-Trichloropropane	50 ug/mL
							1,2,4-Trichlorobenzene	50 ug/mL
							1,2,4-Trimethylbenzene	50 ug/mL
							1,2-Dibromo-3-Chloropropane	50 ug/mL
							1,2-Dichlorobenzene	50 ug/mL
							1,2-Dichloroethane	50 ug/mL
							1,2-Dichloropropane	50 ug/mL
							1,3,5-Trimethylbenzene	50 ug/mL
							1,3-Dichlorobenzene	50 ug/mL
							1,3-Dichloropropane	50 ug/mL
							1,4-Dichlorobenzene	50 ug/mL
							2,2-Dichloropropane	50 ug/mL
							2-Chlorotoluene	50 ug/mL
							2-Methyl-2-propanol	500 ug/mL
							3-Chloro-1-propene	50 ug/mL
							4-Chlorotoluene	50 ug/mL
							4-Isopropyltoluene	50 ug/mL
							Acrylonitrile	500 ug/mL
							Benzene	50 ug/mL
							Bromobenzene	50 ug/mL
							Bromoform	50 ug/mL
							Carbon disulfide	50 ug/mL
							Carbon tetrachloride	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Chlorobenzene	50 ug/mL
							Chlorobromomethane	50 ug/mL
							Chlorodibromomethane	50 ug/mL
							Chloroform	50 ug/mL
							cis-1,2-Dichloroethene	50 ug/mL
							cis-1,3-Dichloropropene	50 ug/mL
							Cyclohexane	50 ug/mL
							Dibromomethane	50 ug/mL
							Dichlorobromomethane	50 ug/mL
							Ethyl ether	50 ug/mL
							Ethyl methacrylate	50 ug/mL
							Ethylbenzene	50 ug/mL
							Ethylene Dibromide	50 ug/mL
							Hexachlorobutadiene	50 ug/mL
							Hexane	50 ug/mL
							Iodomethane	50 ug/mL
							Isobutyl alcohol	1250 ug/mL
							Isopropylbenzene	50 ug/mL
							m-Xylene & p-Xylene	50 ug/mL
							Methyl acetate	250 ug/mL
							Methyl tert-butyl ether	50 ug/mL
							Methylcyclohexane	50 ug/mL
							Methylene Chloride	50 ug/mL
							n-Butylbenzene	50 ug/mL
							n-Heptane	50 ug/mL
							N-Propylbenzene	50 ug/mL
							Naphthalene	50 ug/mL
							o-Xylene	50 ug/mL
							sec-Butylbenzene	50 ug/mL
							Styrene	50 ug/mL
							tert-Butylbenzene	50 ug/mL
							Tetrachloroethene	50 ug/mL
							Tetrahydrofuran	100 ug/mL
							Toluene	50 ug/mL
							trans-1,2-Dichloroethene	50 ug/mL
							trans-1,3-Dichloropropene	50 ug/mL
							trans-1,4-Dichloro-2-butene	50 ug/mL
							Trichloroethene	50 ug/mL
					VOARPOLARAD__00010	1250 uL	Acetonitrile	625 ug/mL
							Isopropyl ether	62.5 ug/mL
							Propionitrile	625 ug/mL
							Tert-amyl methyl ether	62.5 ug/mL
							Tert-butyl ethyl ether	62.5 ug/mL
					VOARVA__00032	1250 uL	Vinyl acetate	125 ug/mL
.8260 L2/S7_00009	04/30/19		Restek, Lot A0131668		(Purchased Reagent)		Ethyl acetate	5000 ug/mL
							Ethyl acrylate	2500 ug/mL
							Methyl methacrylate	5000 ug/mL
							n-Butyl acetate	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.VOAR2CEVE__00013	01/31/20		Restek, Lot A0123891		(Purchased Reagent)		2-Chloroethyl vinyl ether	2500 ug/mL
.VOARAcrolein_00040	03/31/18		Restek, Lot A0130770		(Purchased Reagent)		Acrolein	20000 ug/mL
.VOARADDCOM__00017	05/31/19		Restek, Lot A0132816		(Purchased Reagent)		1,2,3-Trimethylbenzene	2500 ug/mL
							1,3,5-Trichlorobenzene	2500 ug/mL
							2-Chloro-1,3-butadiene	2500 ug/mL
							2-Nitropropane	5000 ug/mL
							Benzyl chloride	2500 ug/mL
							Isopropyl alcohol	25000 ug/mL
							Methacrylonitrile	25000 ug/mL
							n-Butanol	62500 ug/mL
.VOARGAS__00015	10/31/20		Restek, Lot A0131502		(Purchased Reagent)		Bromomethane	2500 ug/mL
							Butadiene	2500 ug/mL
							Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Dichlorodifluoromethane	2500 ug/mL
							Dichlorofluoromethane	2500 ug/mL
							Trichlorofluoromethane	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.VOARKETON__00013	10/31/20		Restek, Lot A0131486		(Purchased Reagent)		2-Butanone (MEK)	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone (MIBK)	12500 ug/mL
							Acetone	12500 ug/mL
.VOARMegMix__00022	03/31/18		Restek, Lot A0118177		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2500 ug/mL
							1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,1-Dichloropropene	2500 ug/mL
							1,2,3-Trichlorobenzene	2500 ug/mL
							1,2,3-Trichloropropane	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2,4-Trimethylbenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dichlorobenzene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							1,3,5-Trimethylbenzene	2500 ug/mL
							1,3-Dichlorobenzene	2500 ug/mL
							1,3-Dichloropropane	2500 ug/mL
							1,4-Dichlorobenzene	2500 ug/mL
							2,2-Dichloropropane	2500 ug/mL
							2-Chlorotoluene	2500 ug/mL
							2-Methyl-2-propanol	25000 ug/mL
							3-Chloro-1-propene	2500 ug/mL
							4-Chlorotoluene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Isopropyltoluene	2500 ug/mL
							Acrylonitrile	25000 ug/mL
							Benzene	2500 ug/mL
							Bromobenzene	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorobromomethane	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Cyclohexane	2500 ug/mL
							Dibromomethane	2500 ug/mL
							Dichlorobromomethane	2500 ug/mL
							Ethyl ether	2500 ug/mL
							Ethyl methacrylate	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Ethylene Dibromide	2500 ug/mL
							Hexachlorobutadiene	2500 ug/mL
							Hexane	2500 ug/mL
							Iodomethane	2500 ug/mL
							Isobutyl alcohol	62500 ug/mL
							Isopropylbenzene	2500 ug/mL
							m-Xylene & p-Xylene	2500 ug/mL
							Methyl acetate	12500 ug/mL
							Methyl tert-butyl ether	2500 ug/mL
							Methylcyclohexane	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							n-Butylbenzene	2500 ug/mL
							n-Heptane	2500 ug/mL
							N-Propylbenzene	2500 ug/mL
							Naphthalene	2500 ug/mL
							o-Xylene	2500 ug/mL
							sec-Butylbenzene	2500 ug/mL
							Styrene	2500 ug/mL
							tert-Butylbenzene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Tetrahydrofuran	5000 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							trans-1,4-Dichloro-2-butene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.VOARPOLARAD__00010	12/31/18		Restek, Lot A0123796		(Purchased Reagent)		Acetonitrile	25000 ug/mL
							Isopropyl ether	2500 ug/mL
							Propionitrile	25000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Tert-amyl methyl ether	2500 ug/mL
							Tert-butyl ethyl ether	2500 ug/mL
.VOARVA__00032	04/30/18		Restek, Lot A0131948		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
VOAMasterSEC_00014	03/31/18	01/30/18	methanol, Lot 177891	25 mL	VOASGAS2__00015	500 uL	Vinyl chloride	50 ug/mL
					VOASKETON2__00012	500 uL	2-Butanone (MEK)	250 ug/mL
					VOASMegMix2__00016	500 uL	1,1-Dichloroethene	50 ug/mL
							1,2-Dichloroethane	50 ug/mL
							Benzene	50 ug/mL
							Carbon tetrachloride	50 ug/mL
							Chlorobenzene	50 ug/mL
							Chloroform	50 ug/mL
							Tetrachloroethene	50 ug/mL
							Trichloroethene	50 ug/mL
.VOASGAS2__00015	06/30/20		Restek, Lot A0128832		(Purchased Reagent)		Vinyl chloride	2500 ug/mL
.VOASKETON2__00012	01/31/20		Restek, Lot A0123880		(Purchased Reagent)		2-Butanone (MEK)	12500 ug/mL
.VOASMegMix2__00016	07/31/18		Restek, Lot A0120604		(Purchased Reagent)		1,1-Dichloroethene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							Benzene	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chloroform	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Trichloroethene	2500 ug/mL

Reagent

LC11CIPF3OUdS_00001

r: 9/5/17 SW

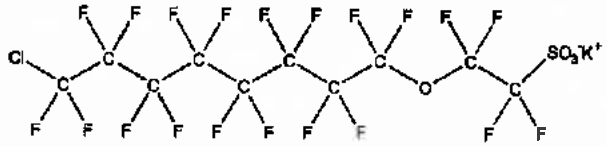
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 11Cl-PF3OUdS **LOT NUMBER:** 11ClPF3OUdS0916

COMPOUND: Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate

STRUCTURE: **CAS #:** 83329-89-9



MOLECULAR FORMULA:	$C_{10}F_{20}ClSO_4K$	**MOLECULAR WEIGHT:**	670.69
CONCENTRATION:	50.0 ± 2.5 µg/ml (K Salt)	**SOLVENT(S):**	Methanol
	47.1 ± 2.4 µg/ml (11Cl-PF3OUdS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- This compound is a minor component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/19/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

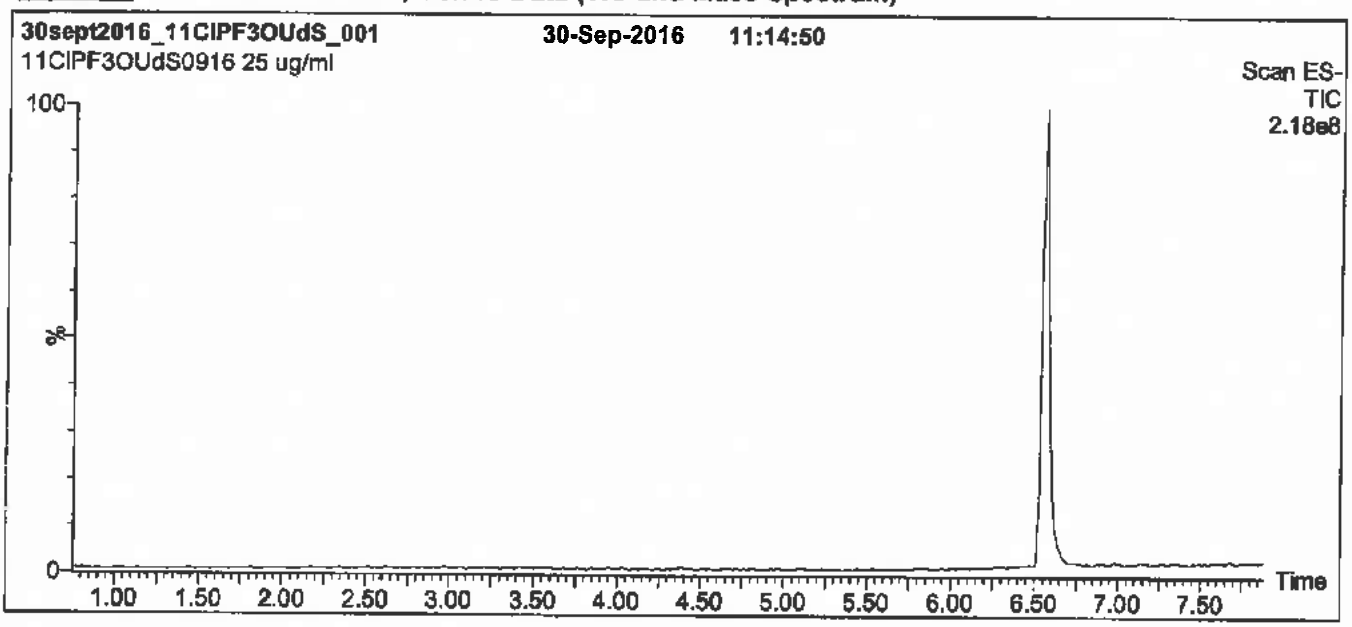
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

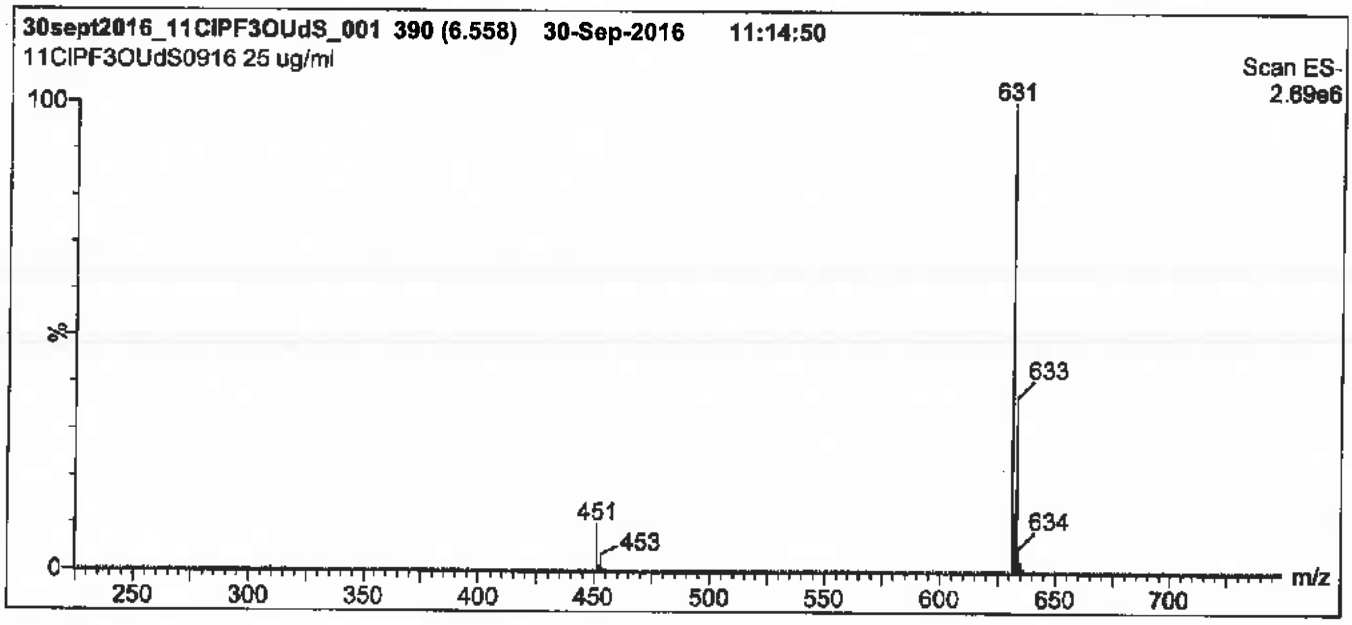
CALA

ANAB ACCREDITED

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

Figure 1: **11Cl-PF3OUdS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

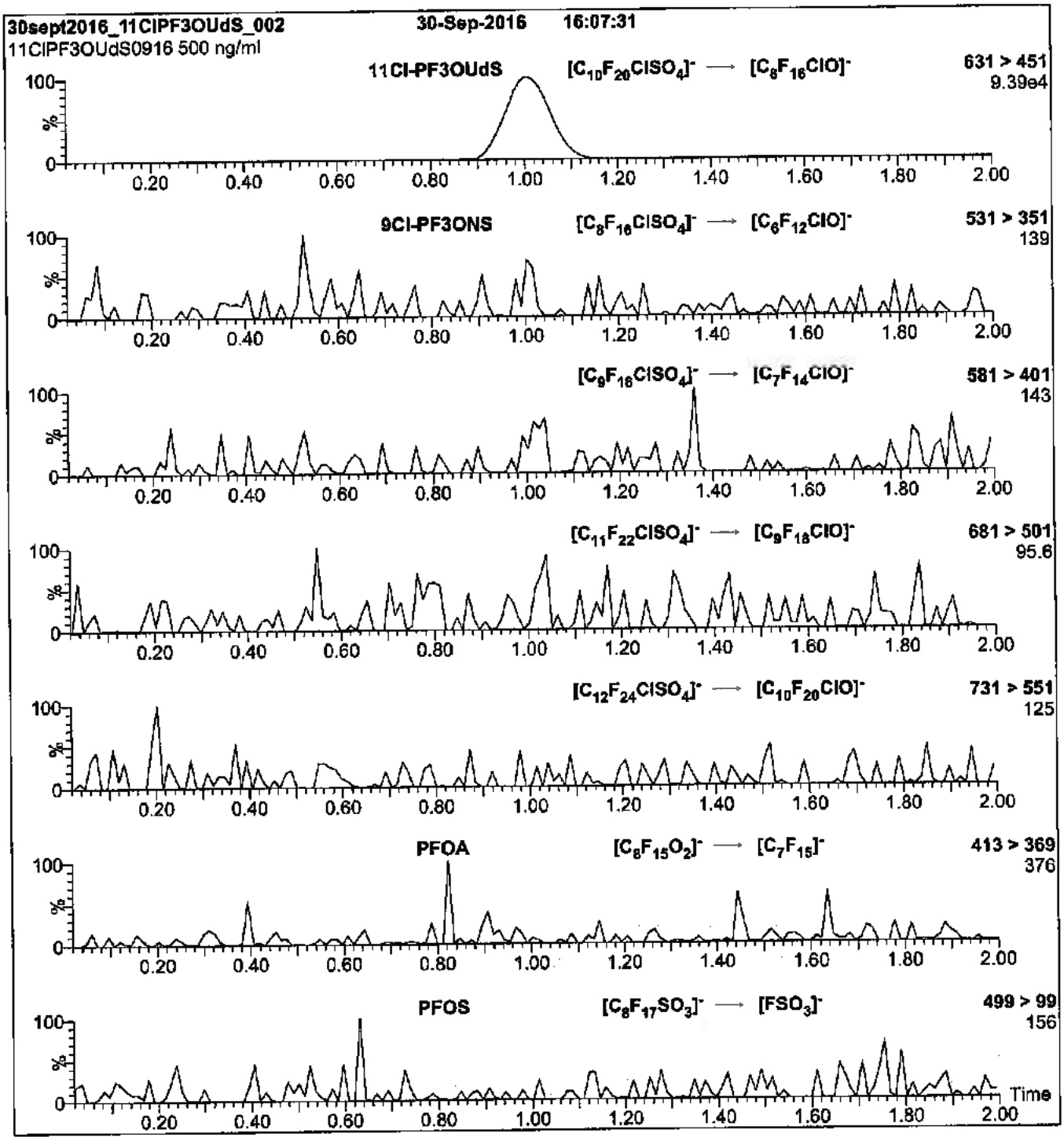
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 45.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **11Cl-PF3OUdS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 11Cl-PF3OUdS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 20

Reagent

LC4:2FTS_00003

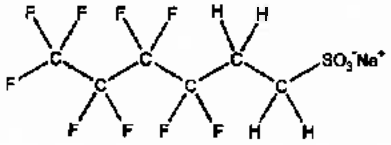
n: 7/12/17 SK

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 4:2FTS **LOT NUMBER:** 42FTS1216
COMPOUND: Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_8H_4F_8SO_3Na$	**MOLECULAR WEIGHT:**	350.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	46.7 ± 2.3 µg/ml (4:2FTS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/12/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/21/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

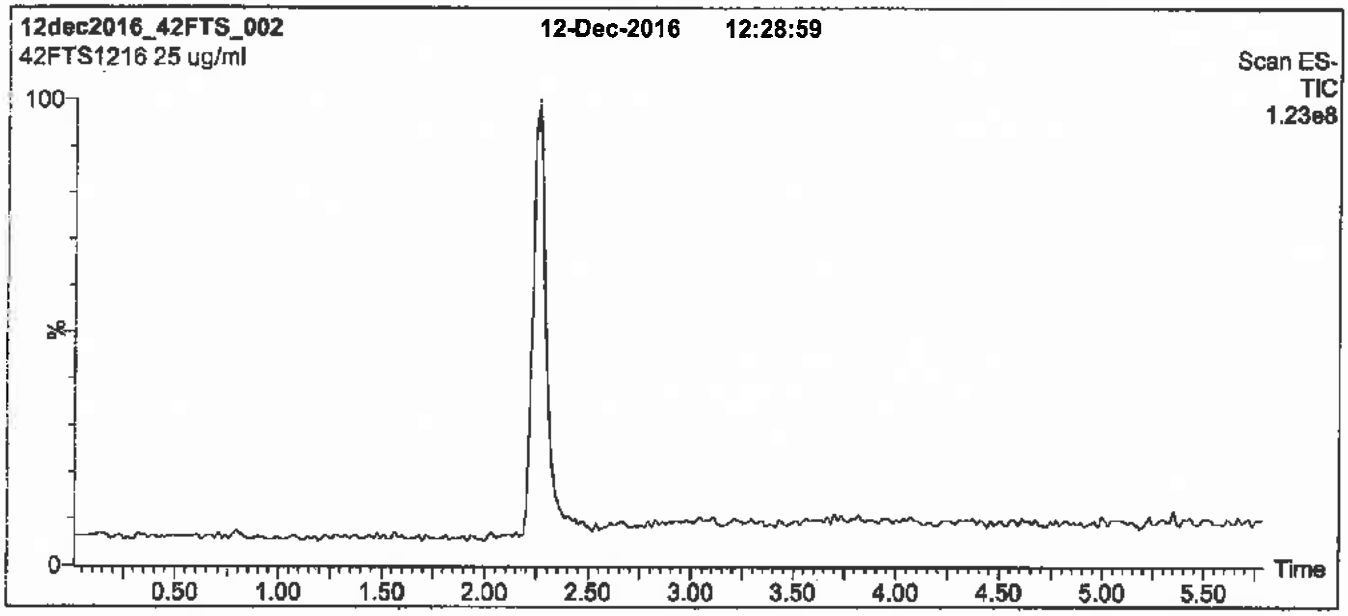
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

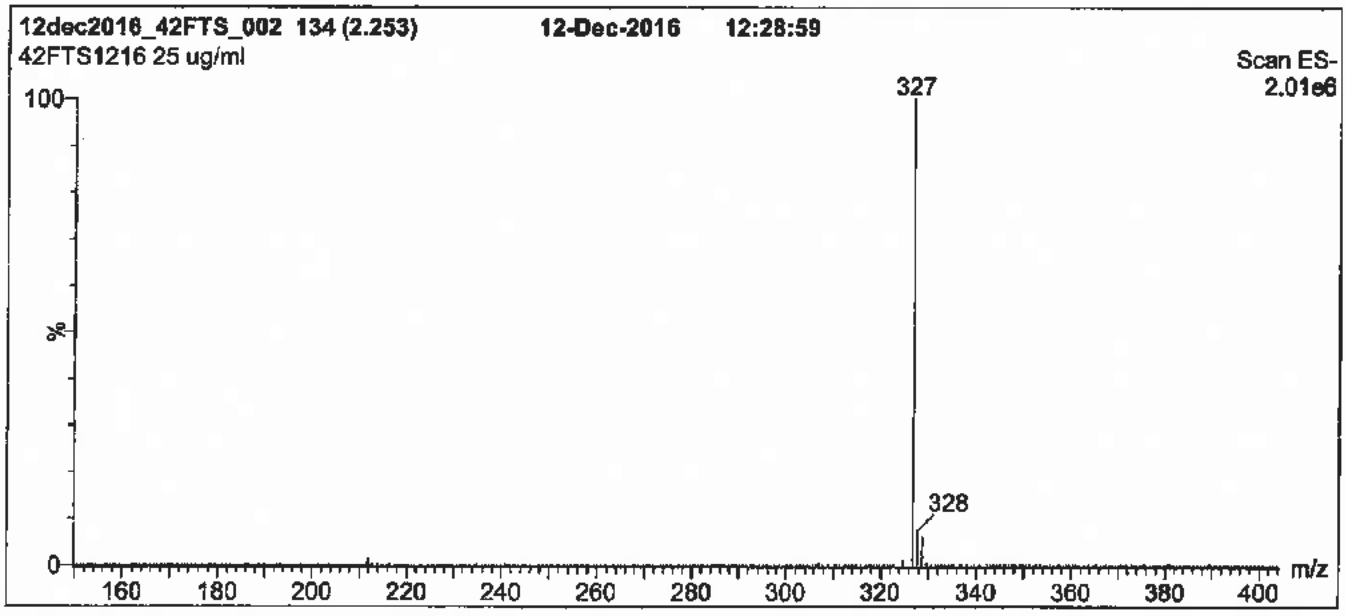
CALA

ANAB ACCREDITED

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

Figure 1: **4:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

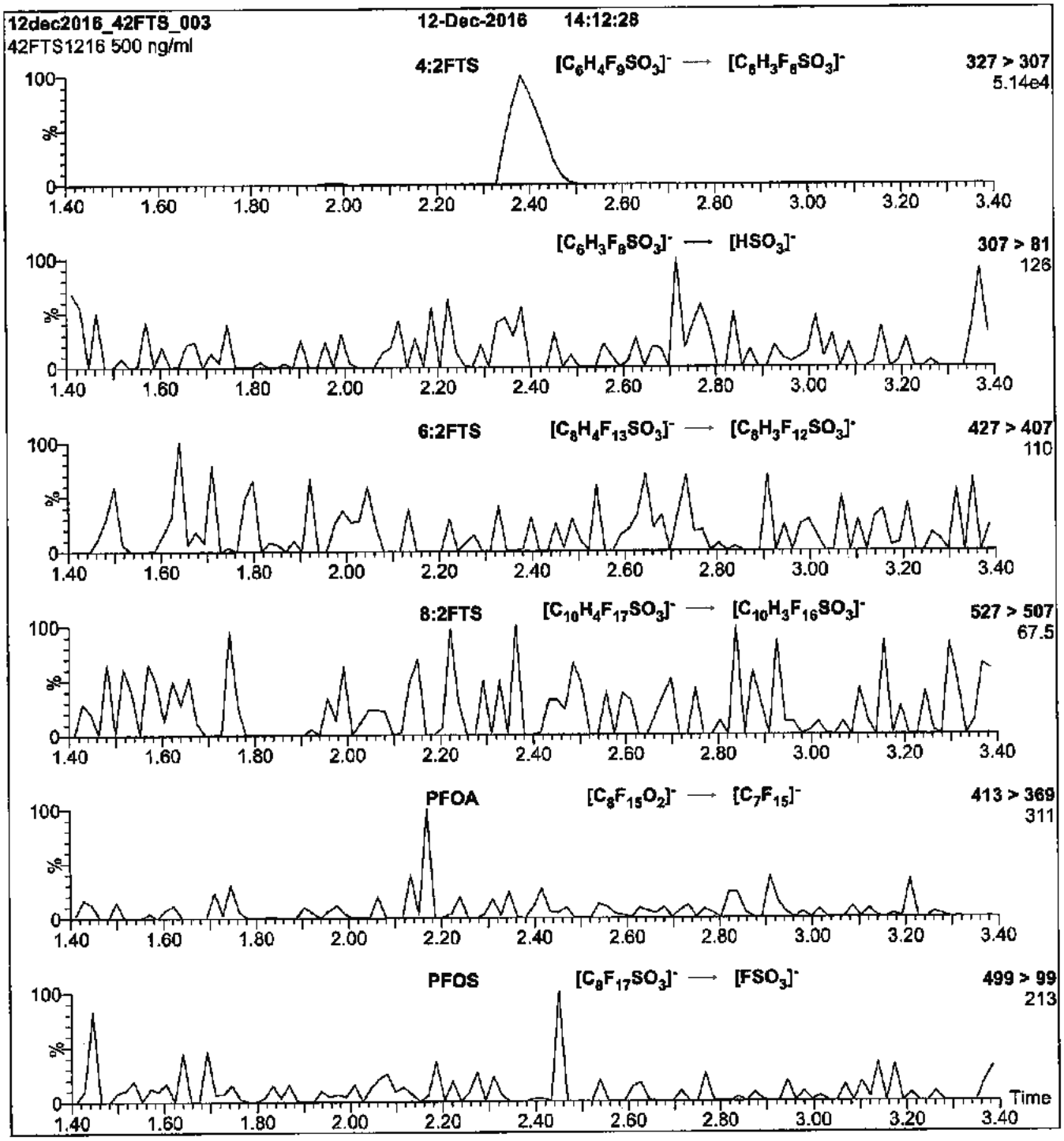
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **4:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml 4:2FTS)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

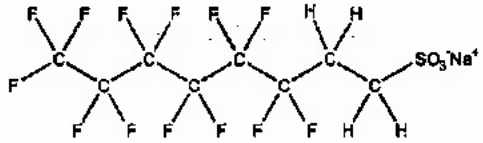
LC6:2FTS_00003

P: 12/29/16 SRV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	6:2FTS	**LOT NUMBER:**	62FTS0616
COMPOUND:	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate		
STRUCTURE:		**CAS #:**	Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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ANAB ACCREDITED

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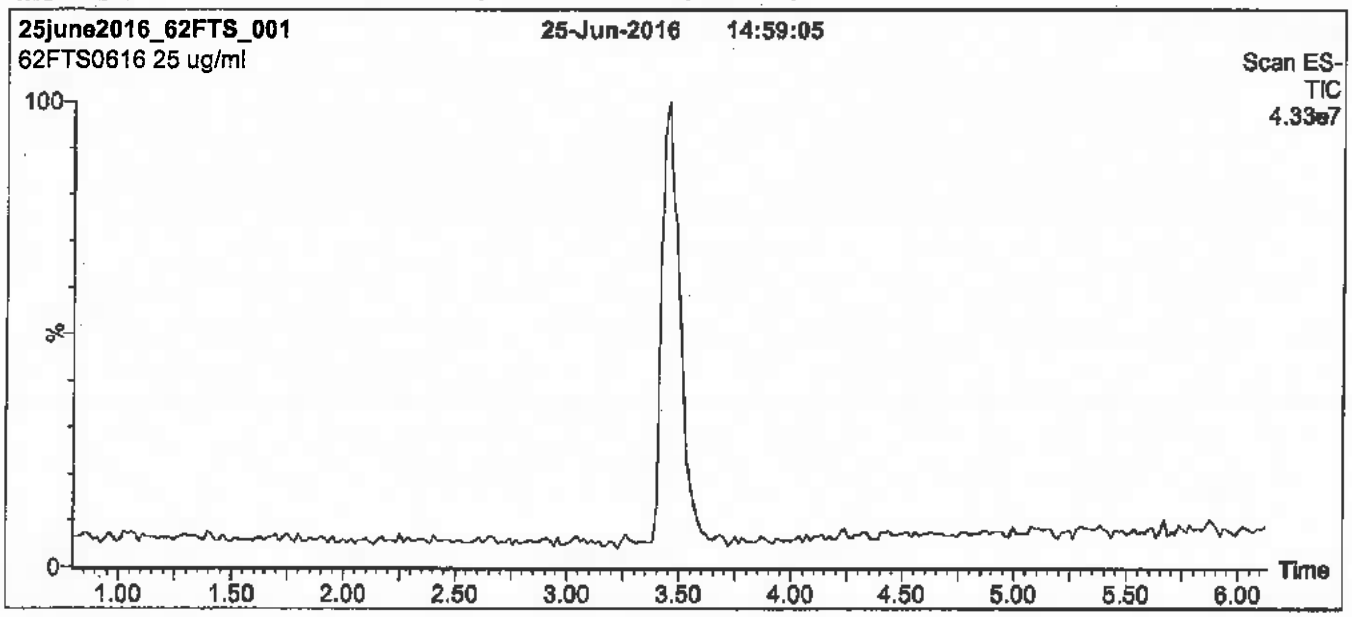
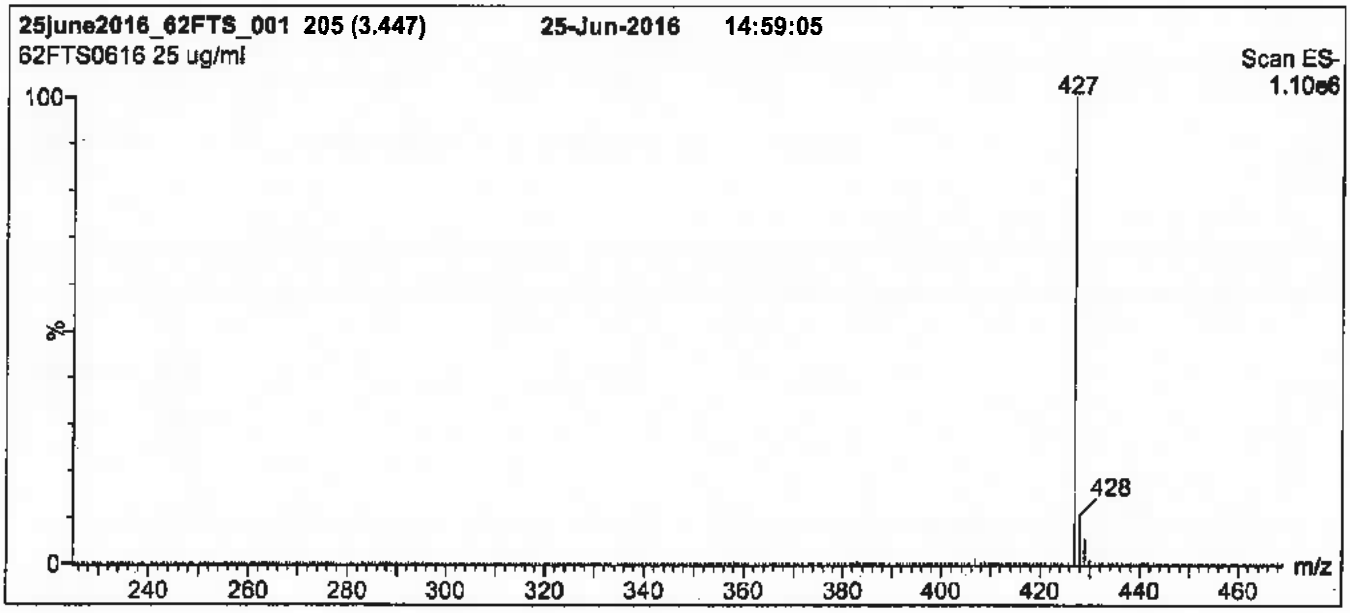
Figure 1: **6;2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

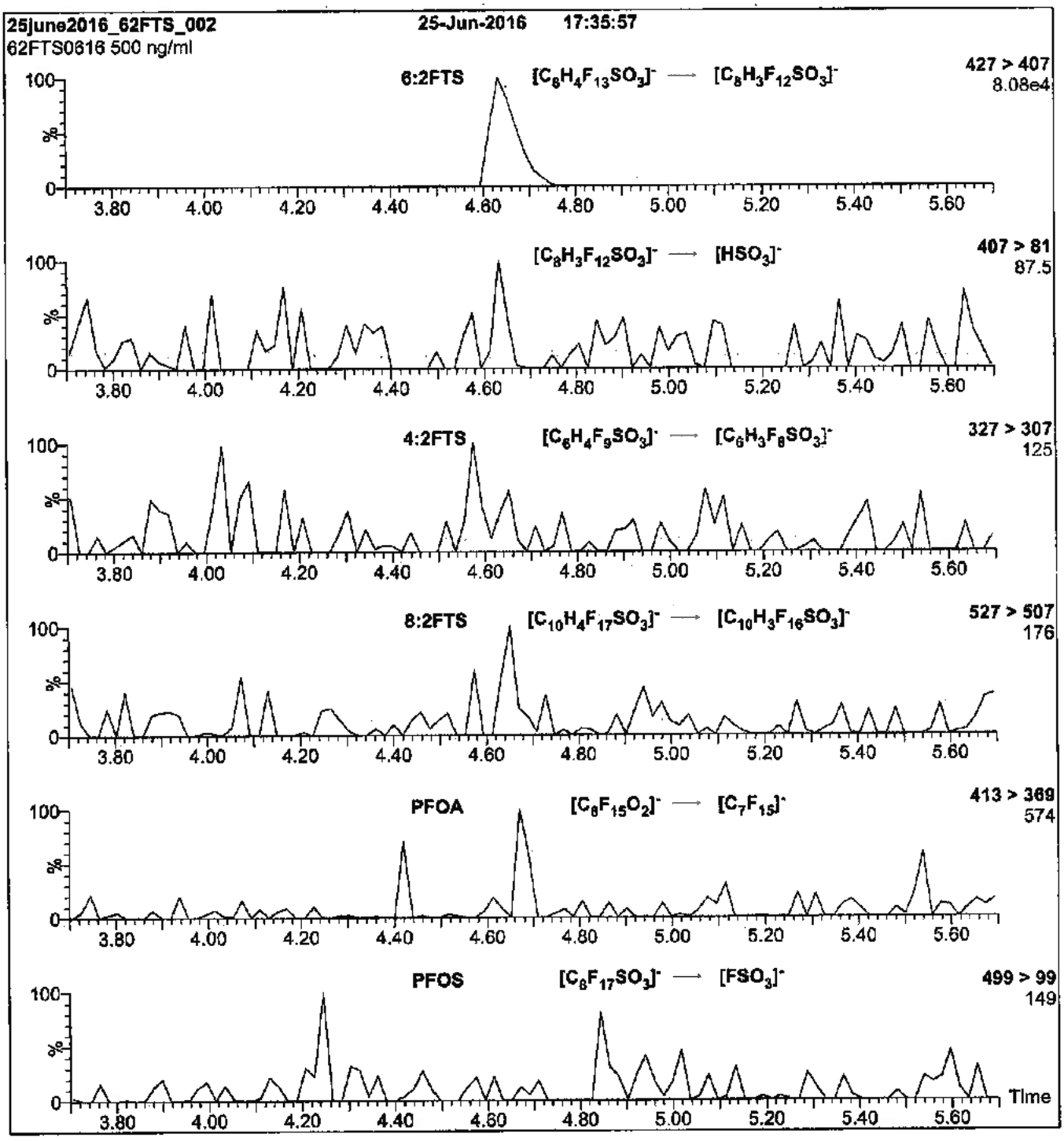
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LC8:2FTS_00003

P: 12/29/16

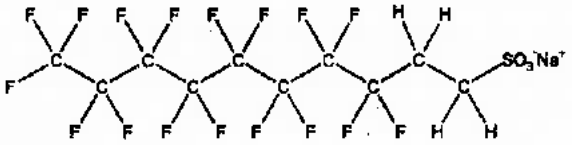
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS0816

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{10}H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	550.16
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (8:2FTS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	08/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/22/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/25/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

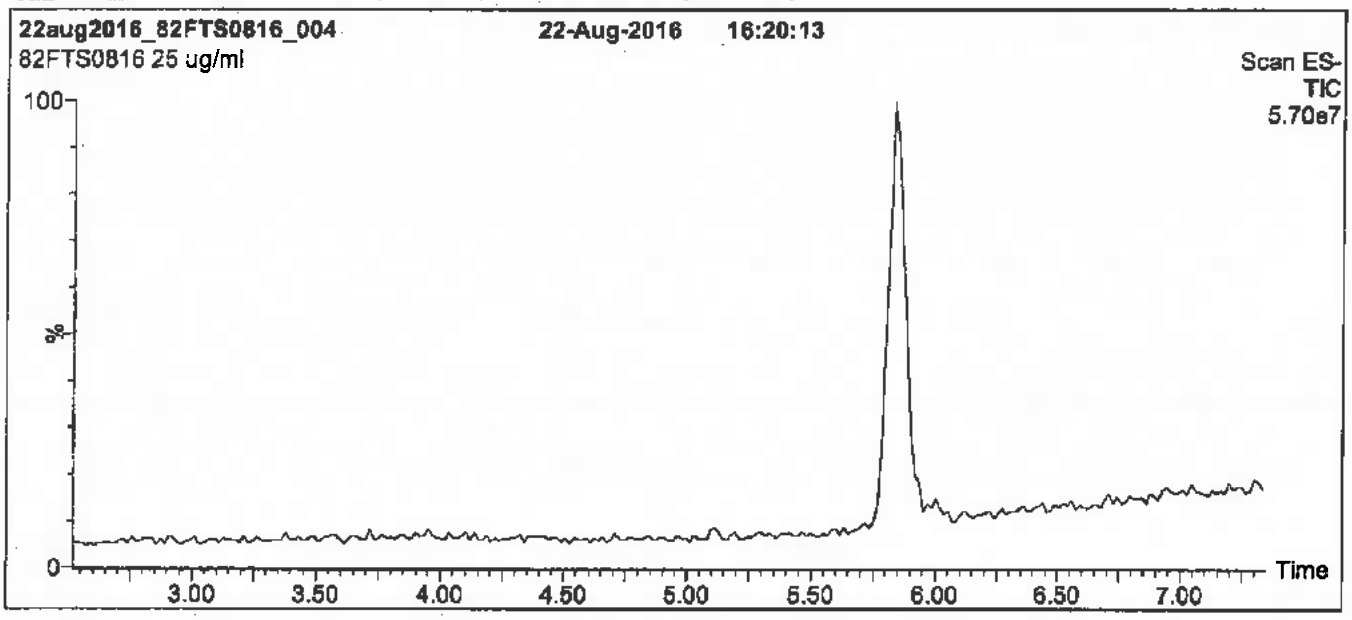
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

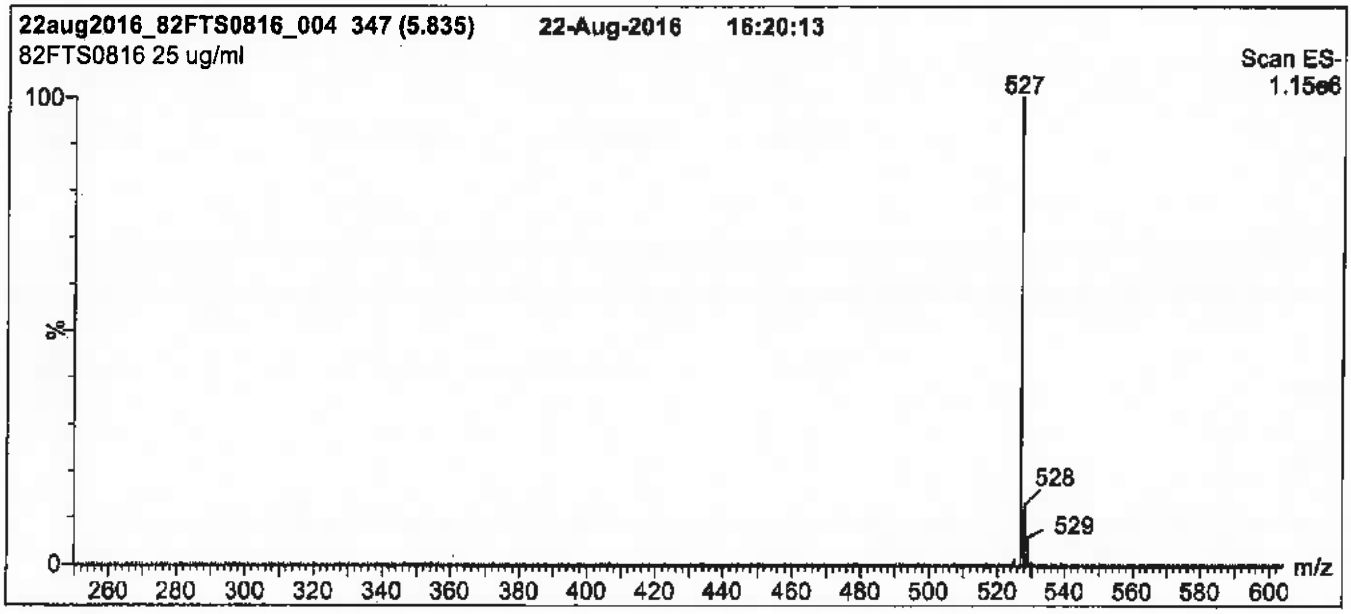
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Agilent Zorbax Bonus-RP
1.8 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH/ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

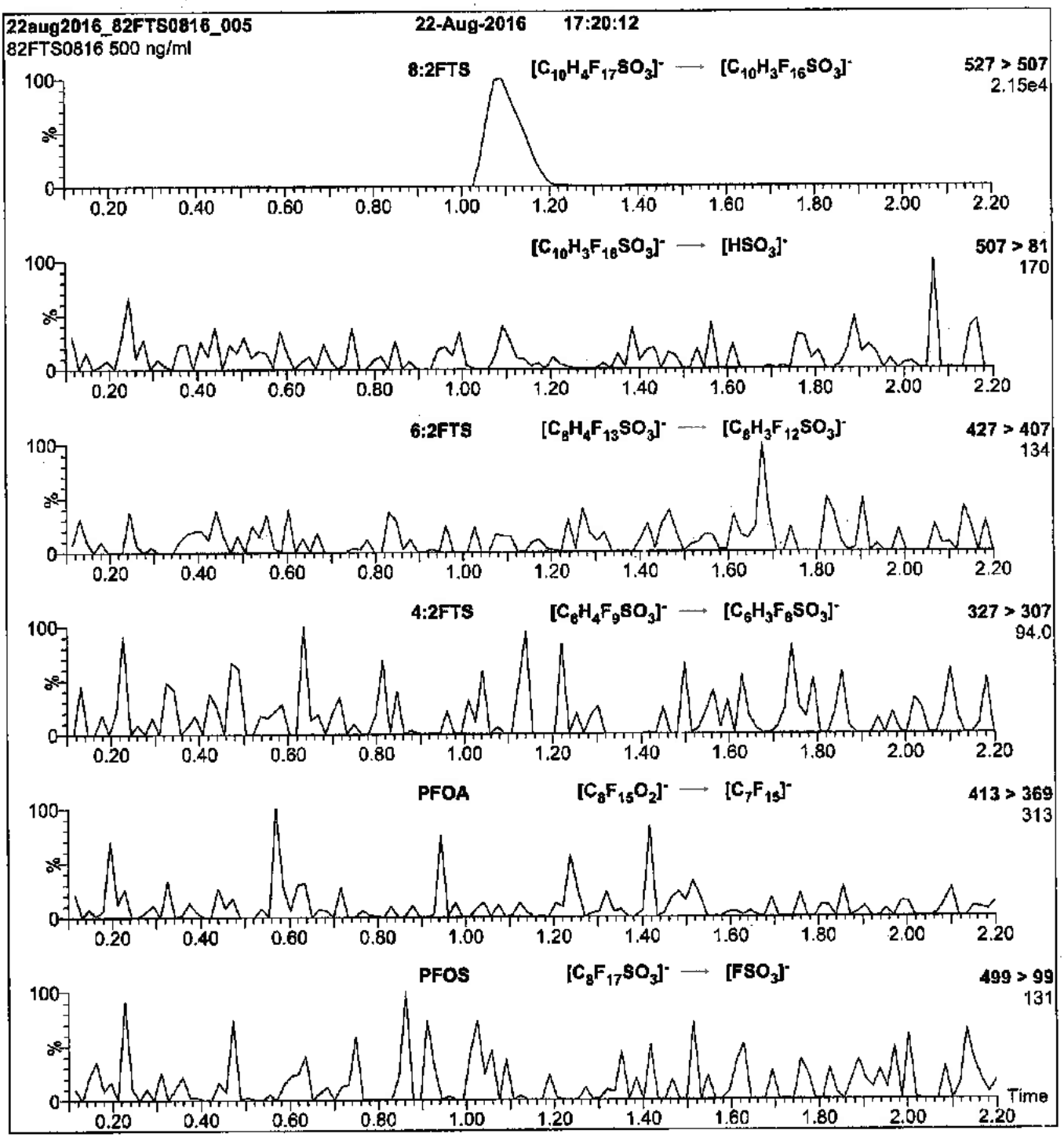
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250- 650 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 30

Reagent

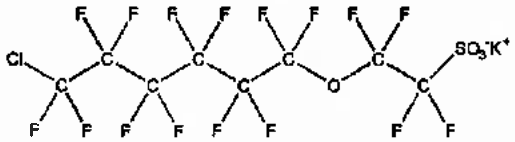
LC9CI-PF3ONS_00001

r: 9/5/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	9Cl-PF3ONS	**LOT NUMBER:**	9ClPF3ONS0916
COMPOUND:	Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate		
STRUCTURE:		**CAS #:**	73606-19-6



MOLECULAR FORMULA:	$C_8F_{16}ClSO_4K$	**MOLECULAR WEIGHT:**	570.67
CONCENTRATION:	50.0 ± 2.5 µg/ml (K Salt) 46.6 ± 2.3 µg/ml (9Cl-PF3ONS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- This compound is the major component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/19/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED

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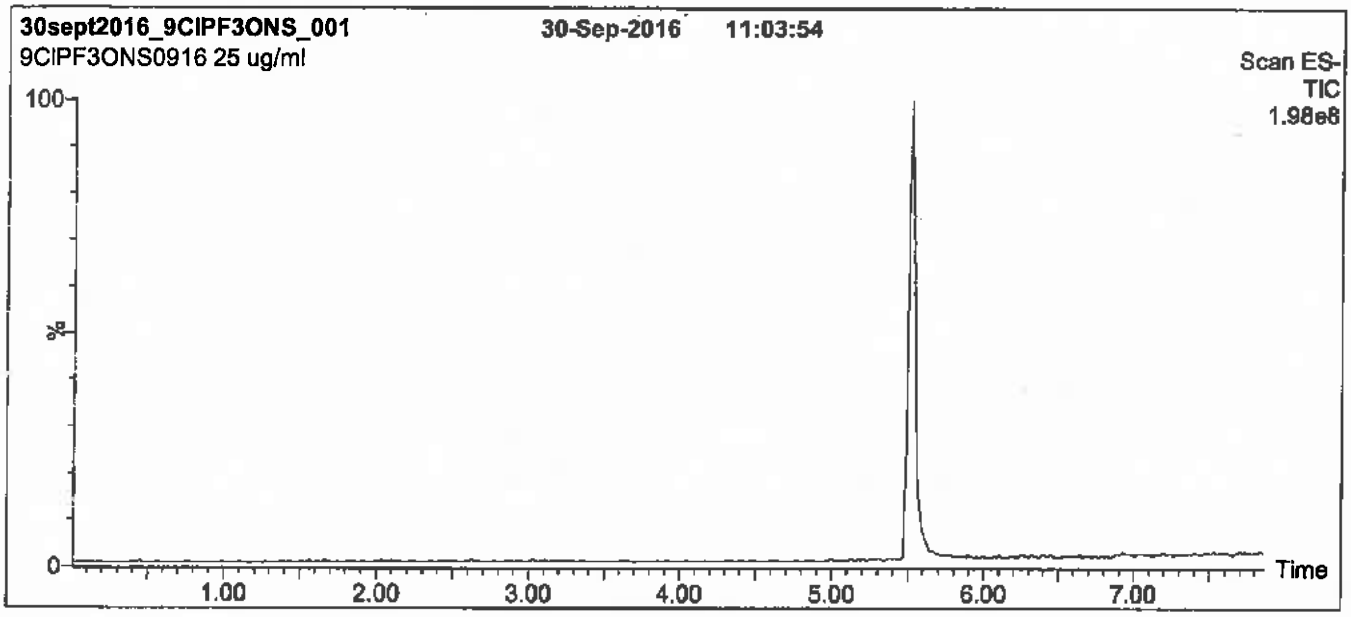
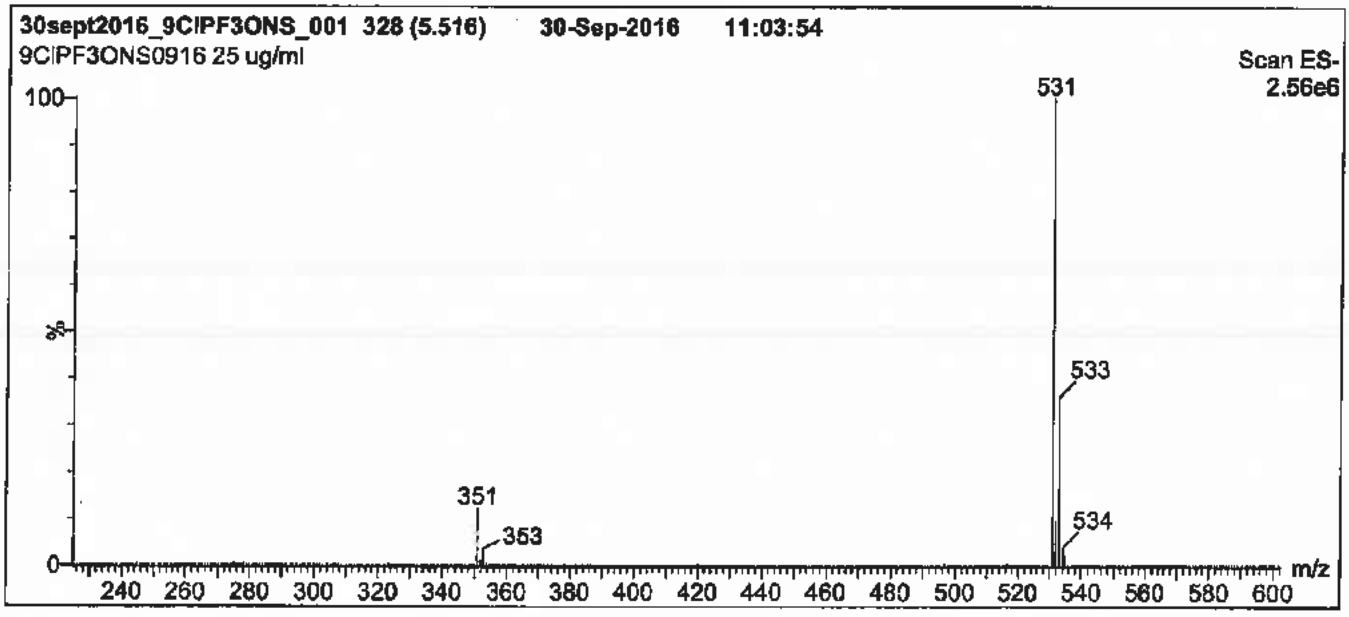
Figure 1: 9Cl-PF3ONS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

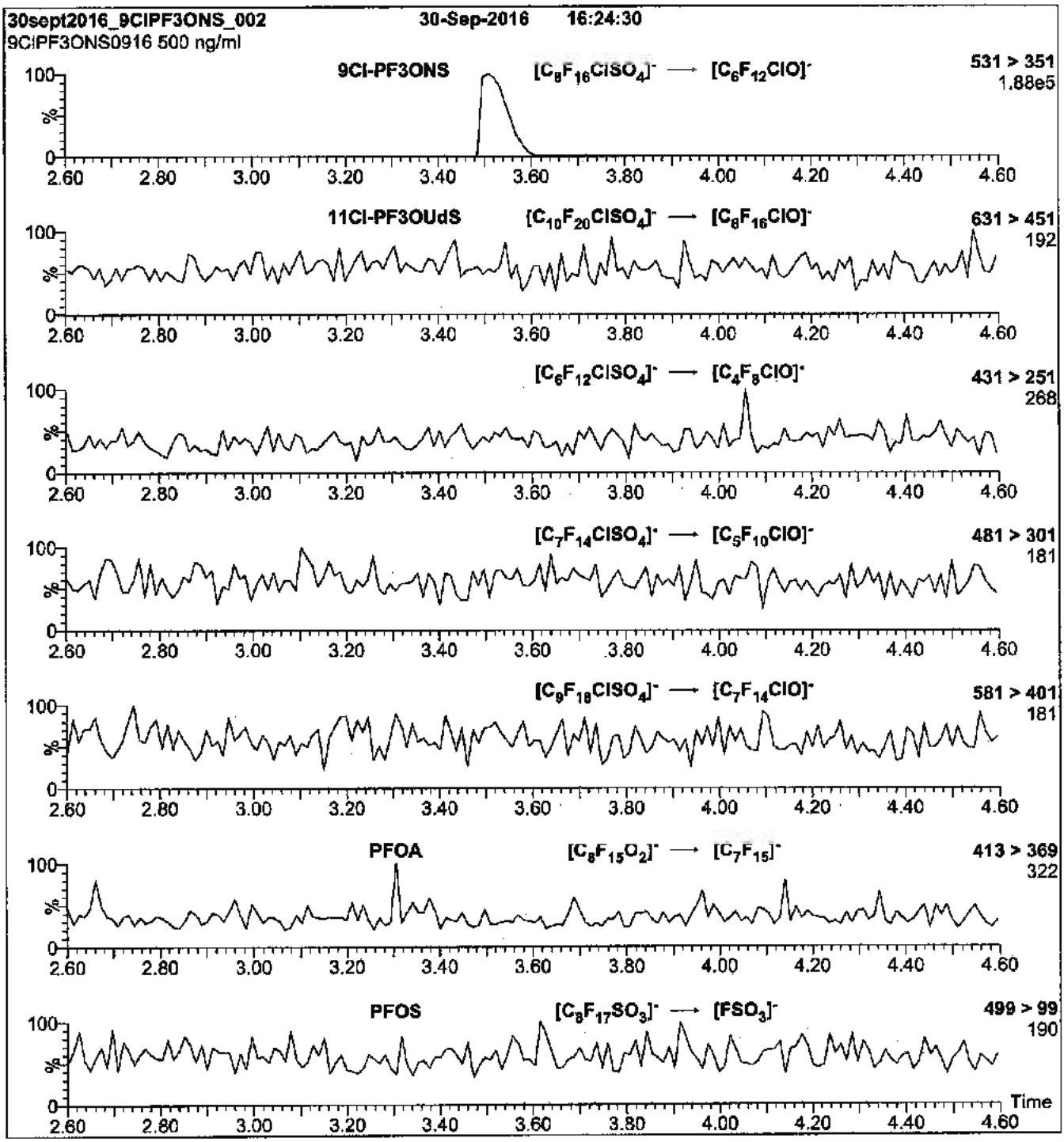
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **9Cl-PF3ONS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 9Cl-PF3ONS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 25

Reagent

LCd3-NMeFOSAA_00006

1106123
ID: LCd3-NMeFOSAA_00006
Exp: 05/19/22 Rpkd: CCL
d3-N-MeFOSAA

R: 12/4/17 CCL

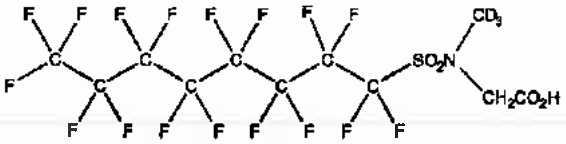
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0517

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_3H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	05/19/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/19/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/31/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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UNCERTAINTY:

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

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

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

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CALA

ANAB ACCREDITED CERTIFIED REFERENCE MATERIAL PRODUCER

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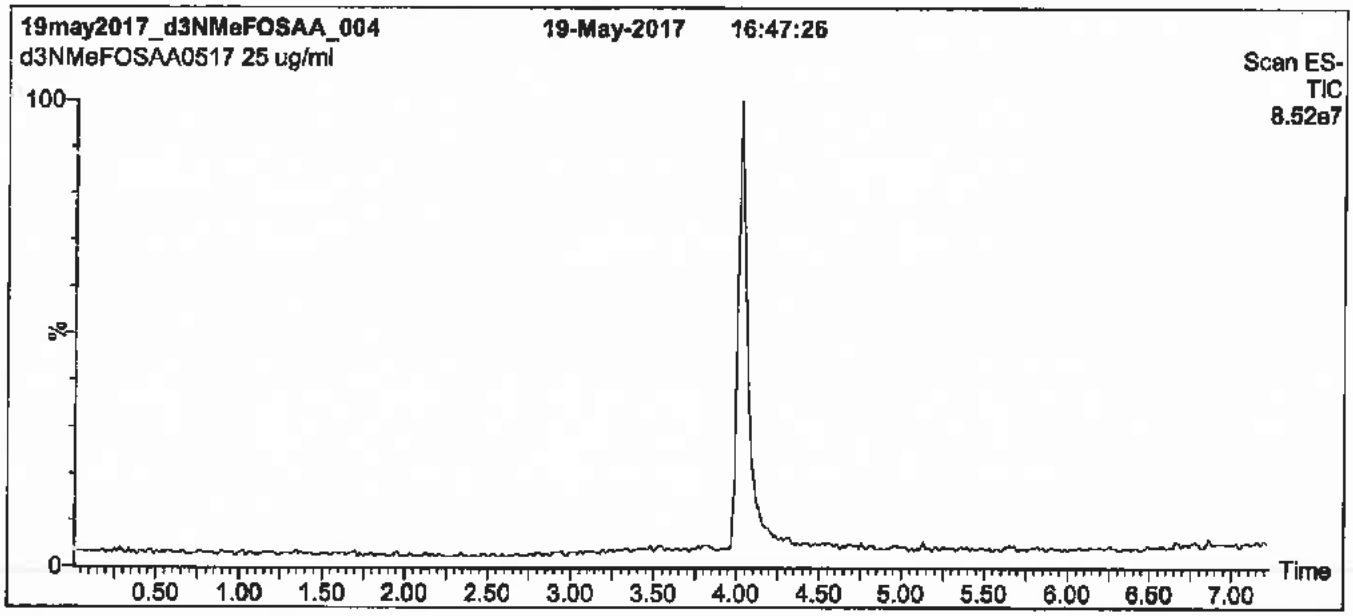
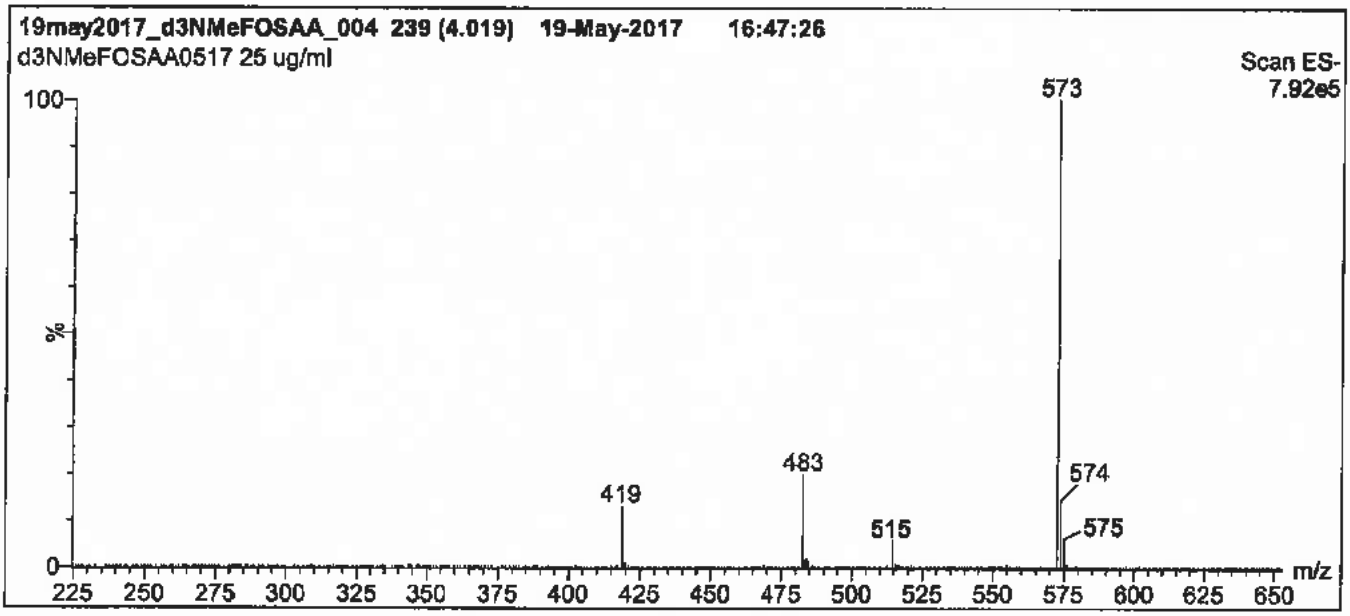
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

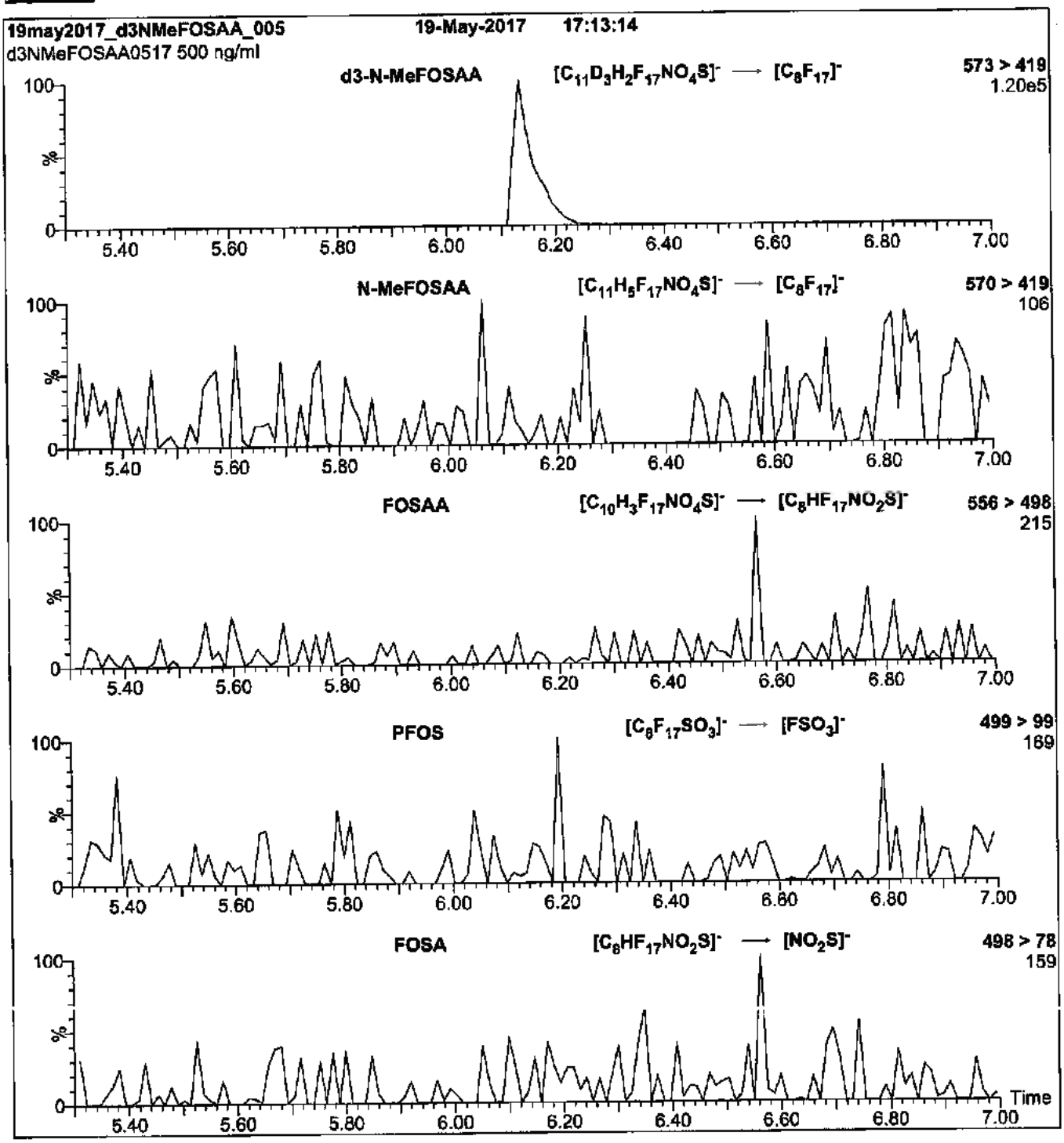
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d3-N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 20

Reagent

LCd5-NEtFOSAA_00006

1106105
ID: LCd5-NEtFOSAA_00006
Exp: 11/08/22 Prpd: CCL
d5-N-EtFOSAA

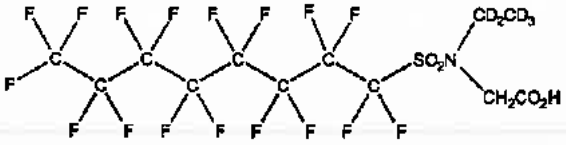
R: 12/4/17 ccc

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1117
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{12}D_5H_3F_{17}NO_4S$ **MOLECULAR WEIGHT:** 590.26
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy) 11/08/2017
EXPIRY DATE: (mm/dd/yyyy) 11/08/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager **Date:** 11/16/2017 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

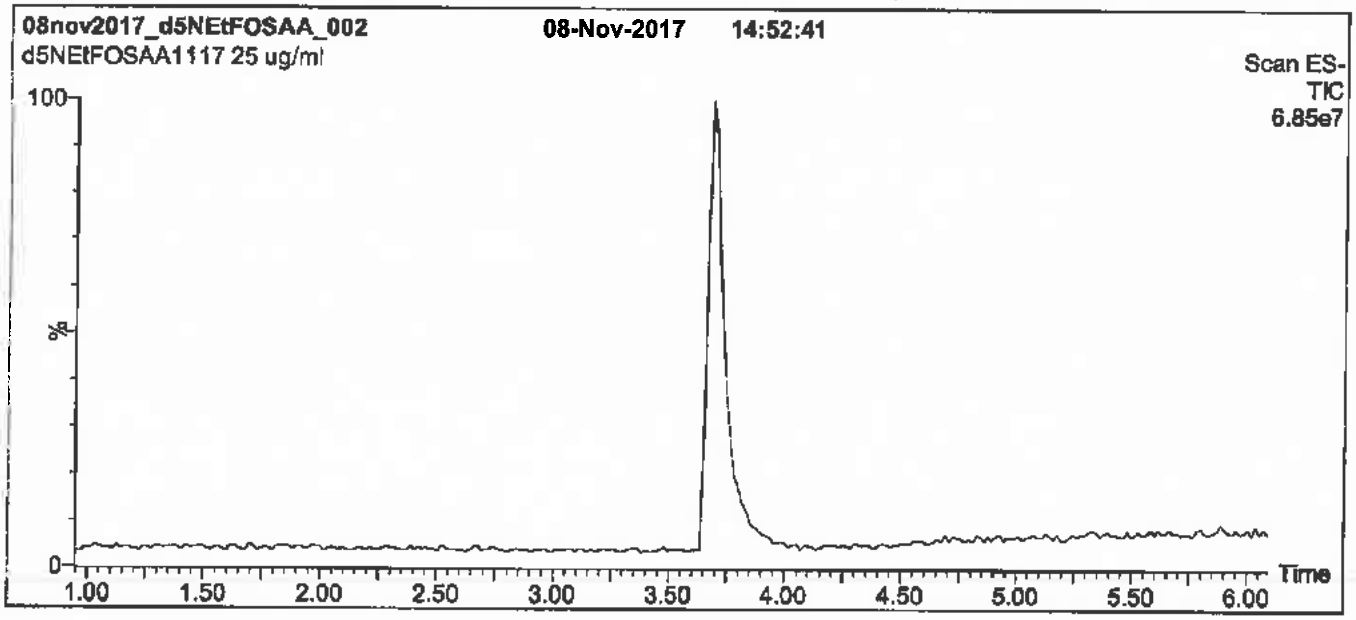
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

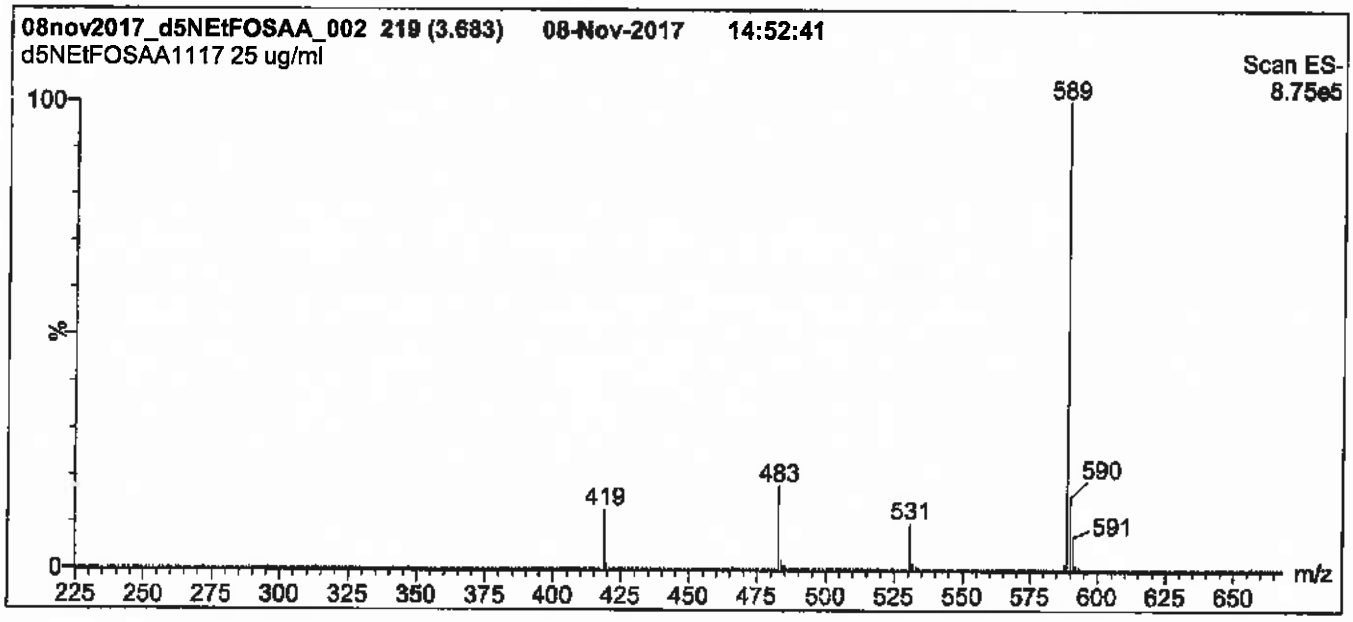
CALA

ANAB ACCREDITED

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

Figure 1: **d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

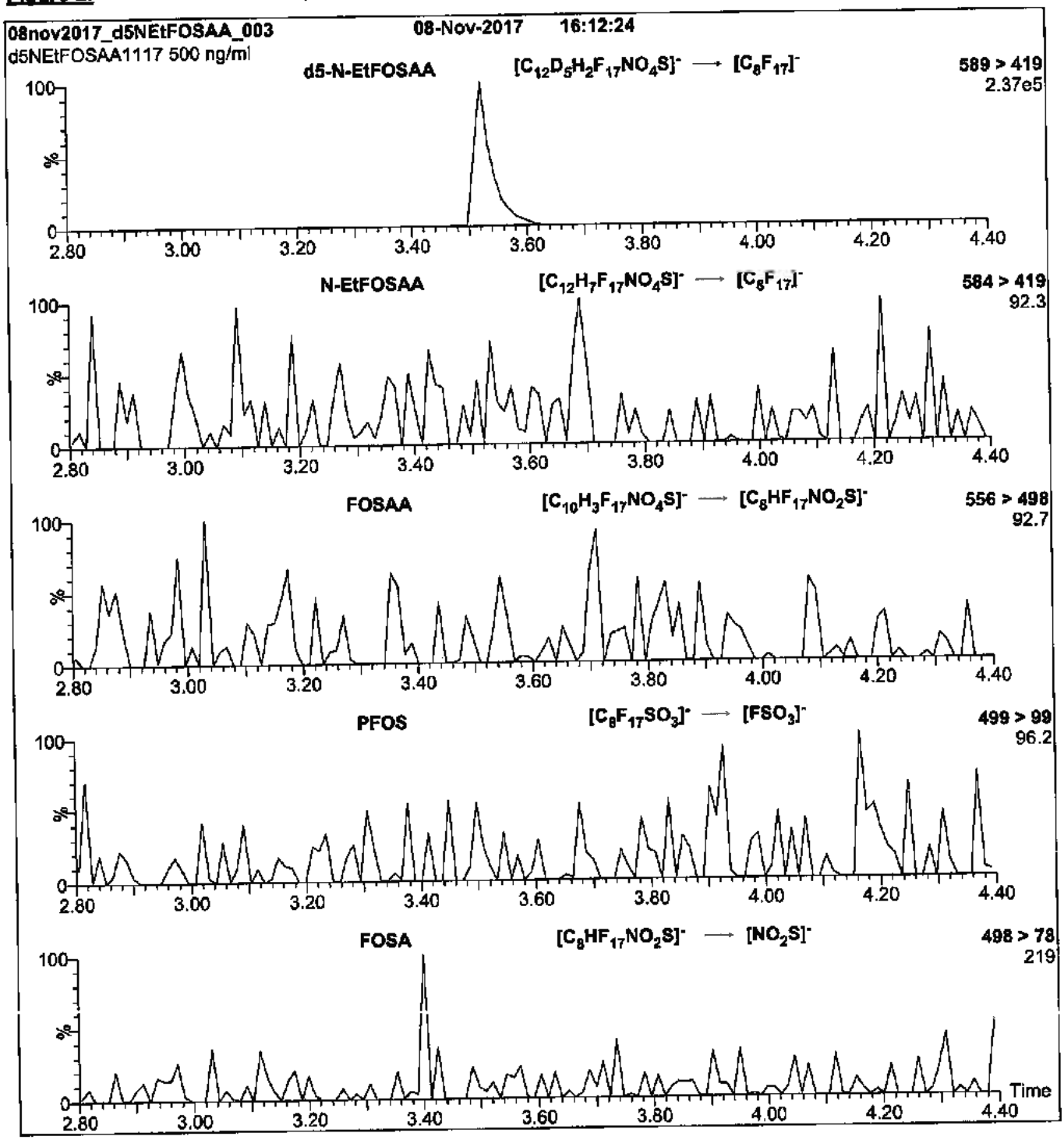
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d5-N-EtFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 20

Reagent

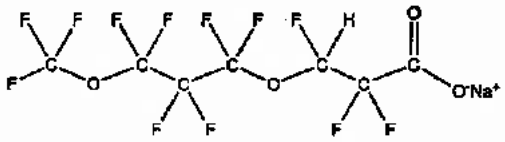
LCDONA_00001

R: 9/5/17 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	NaDONA	**LOT NUMBER:**	NaDONA0417
COMPOUND:	Sodium dodecafluoro-3H-4,8-dioxanonanoate		
STRUCTURE:		**CAS #:**	958445-44-8 (ammonium salt)



MOLECULAR FORMULA:	$C_7HF_{12}O_4Na$	**MOLECULAR WEIGHT:**	400.05
CONCENTRATION:	50 ± 2.5 µg/ml (Na Salt)	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/10/2017		
EXPIRY DATE: (mm/dd/yyyy)	04/10/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Product is commercially known as ADONA.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/12/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED

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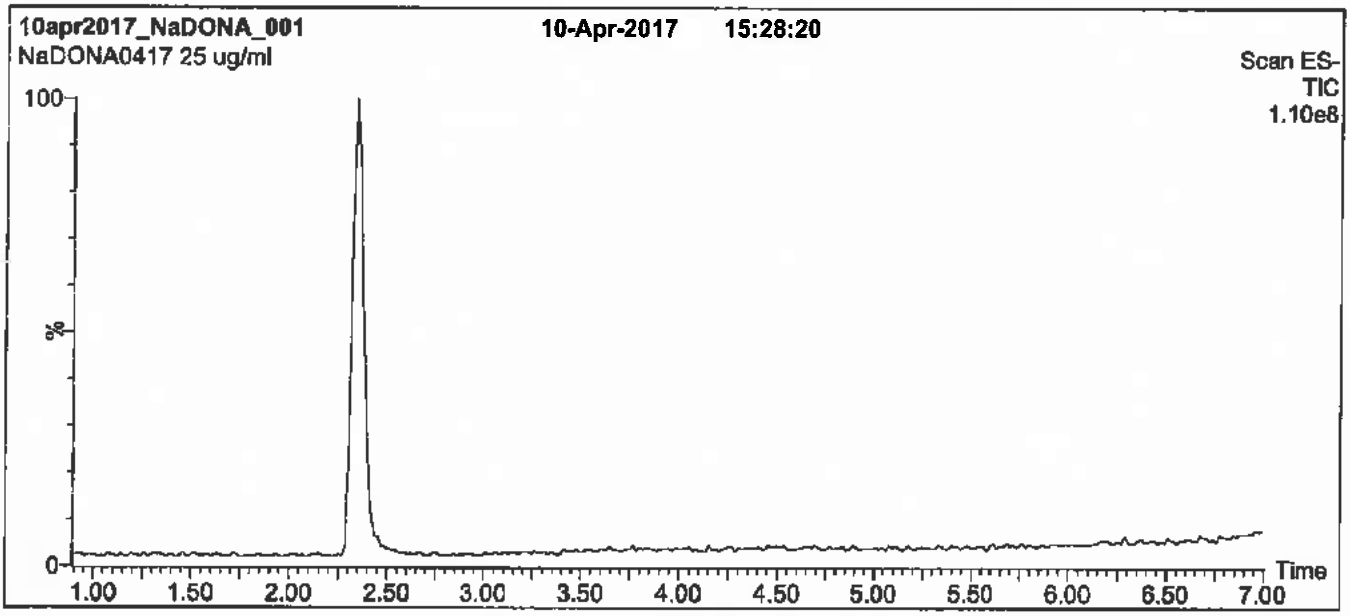
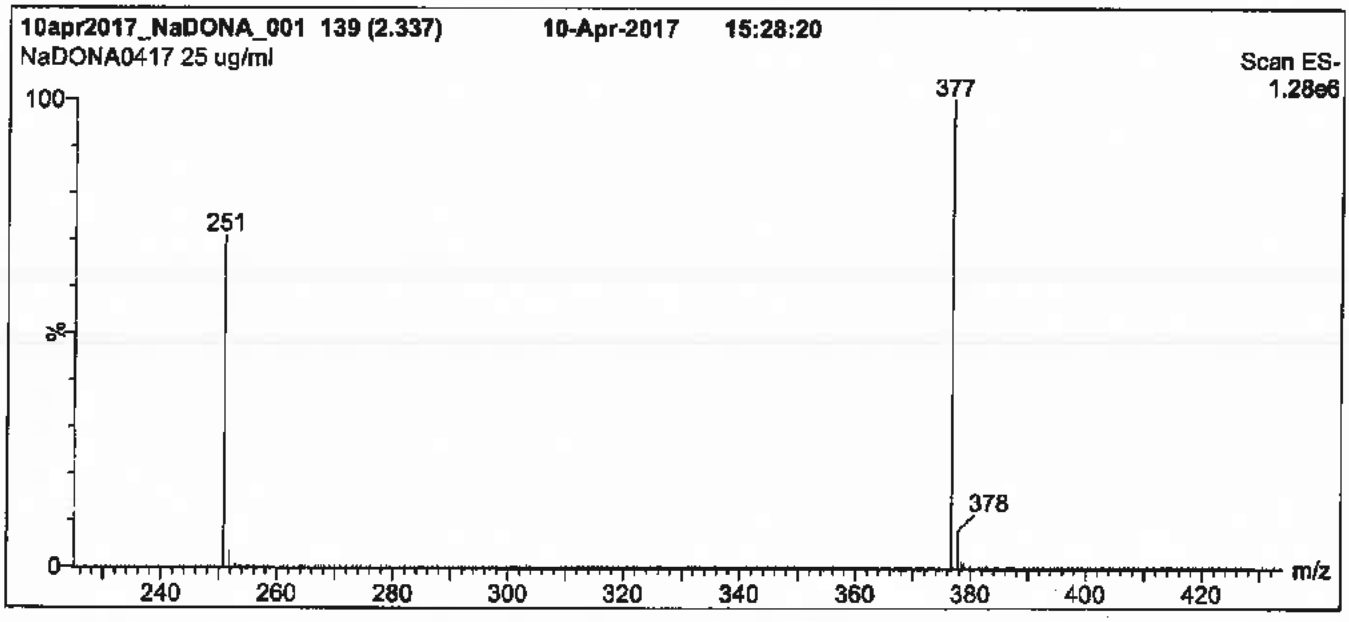
Figure 1: NaDONA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

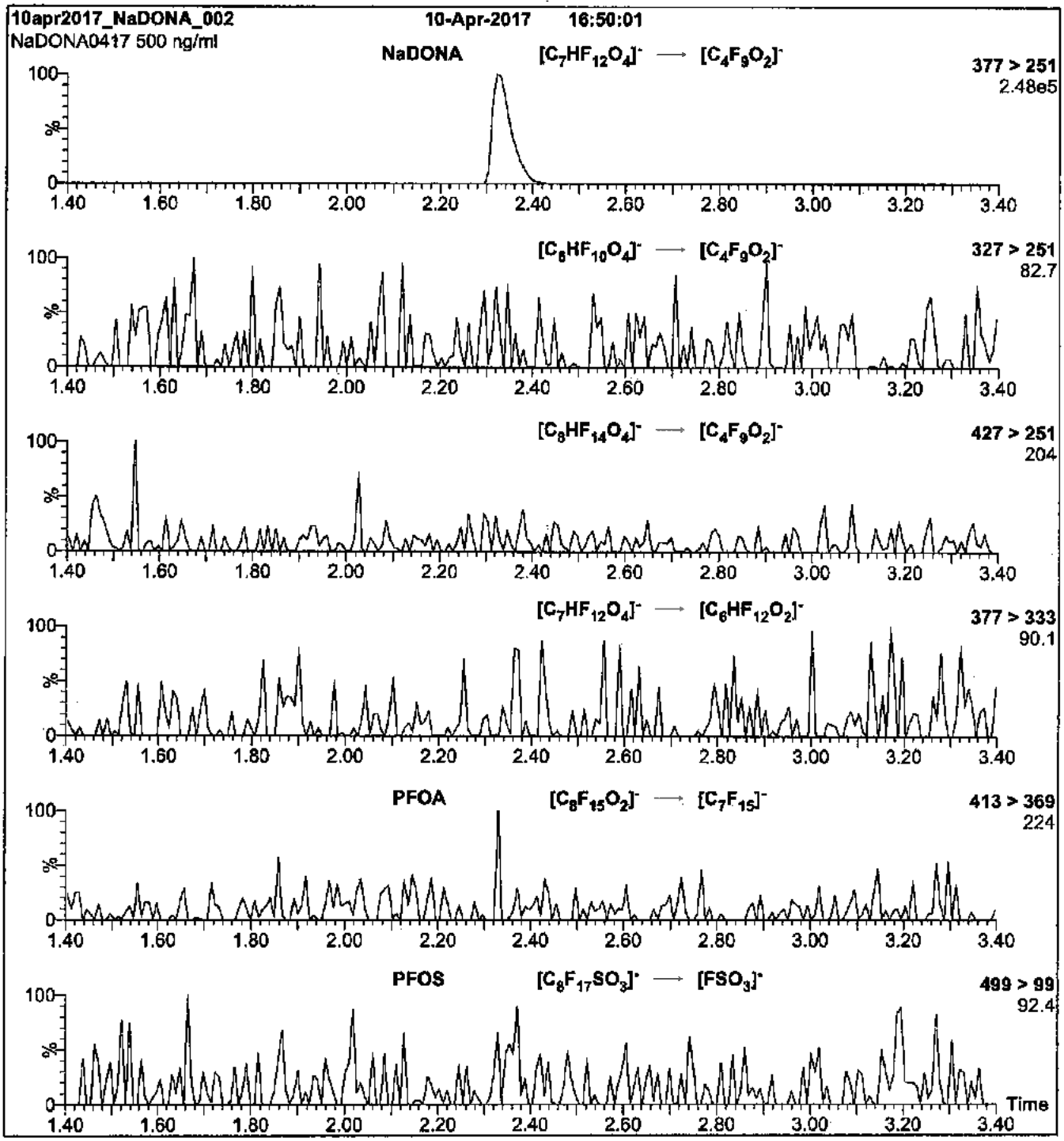
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml NaDONA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 10

Reagent

LCHFPO-DA_00001

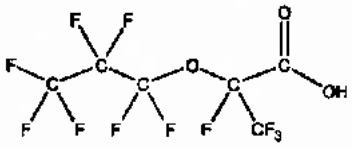
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: HFPO-DA **LOT NUMBER:** HFPODA0717

COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid

STRUCTURE:



CAS #: 13252-13-6

MOLECULAR FORMULA:	$C_6HF_{11}O_3$	**MOLECULAR WEIGHT:**	330.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/13/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/13/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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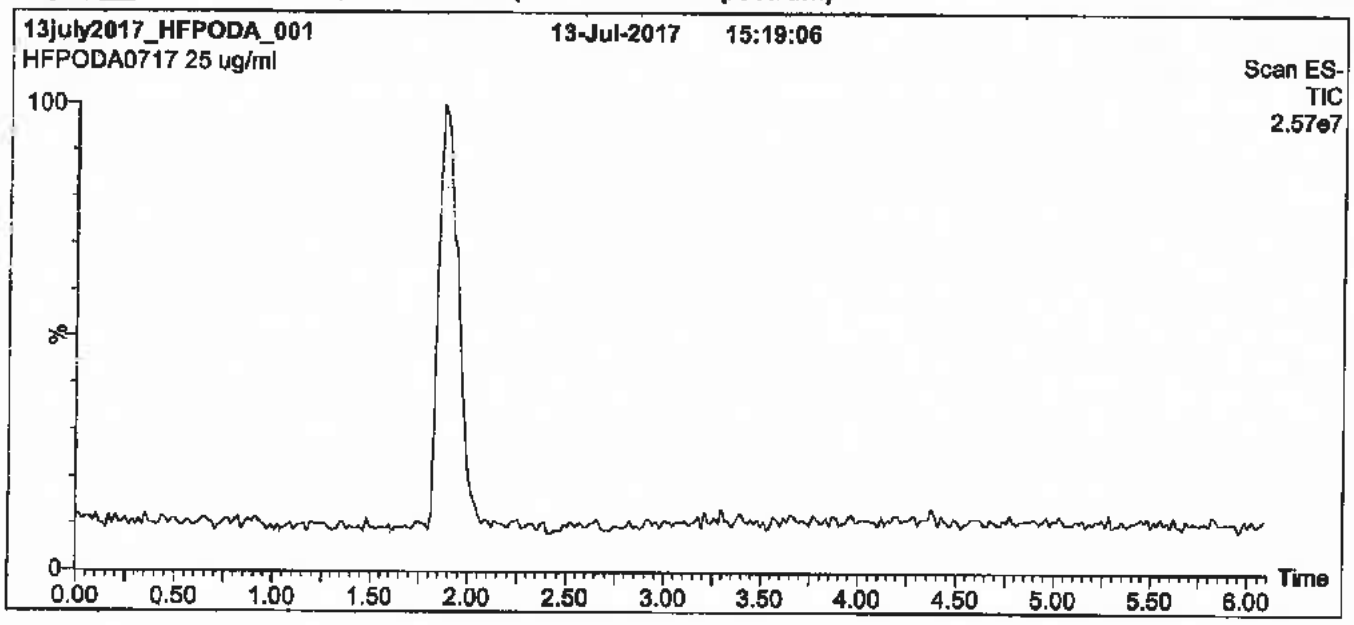
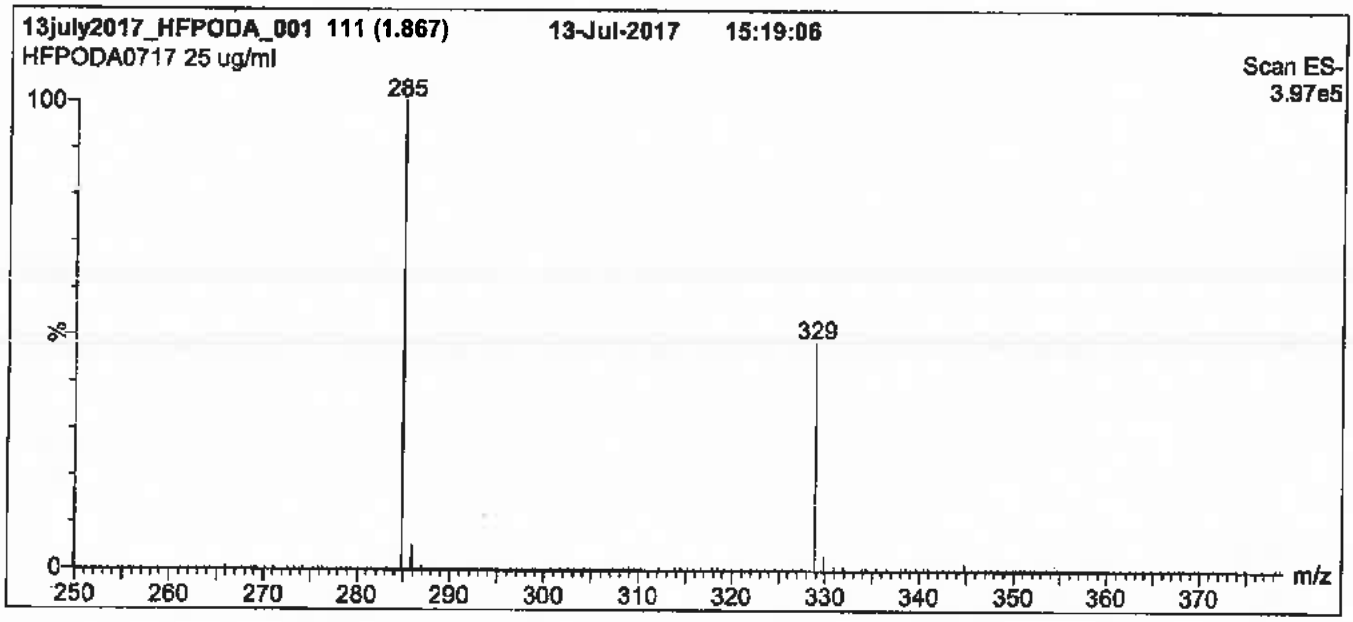
Figure 1: **HFPO-DA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% MeOH / 45% H_2O with 10 mM NH_4OAc buffer
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.

Time: 10 min

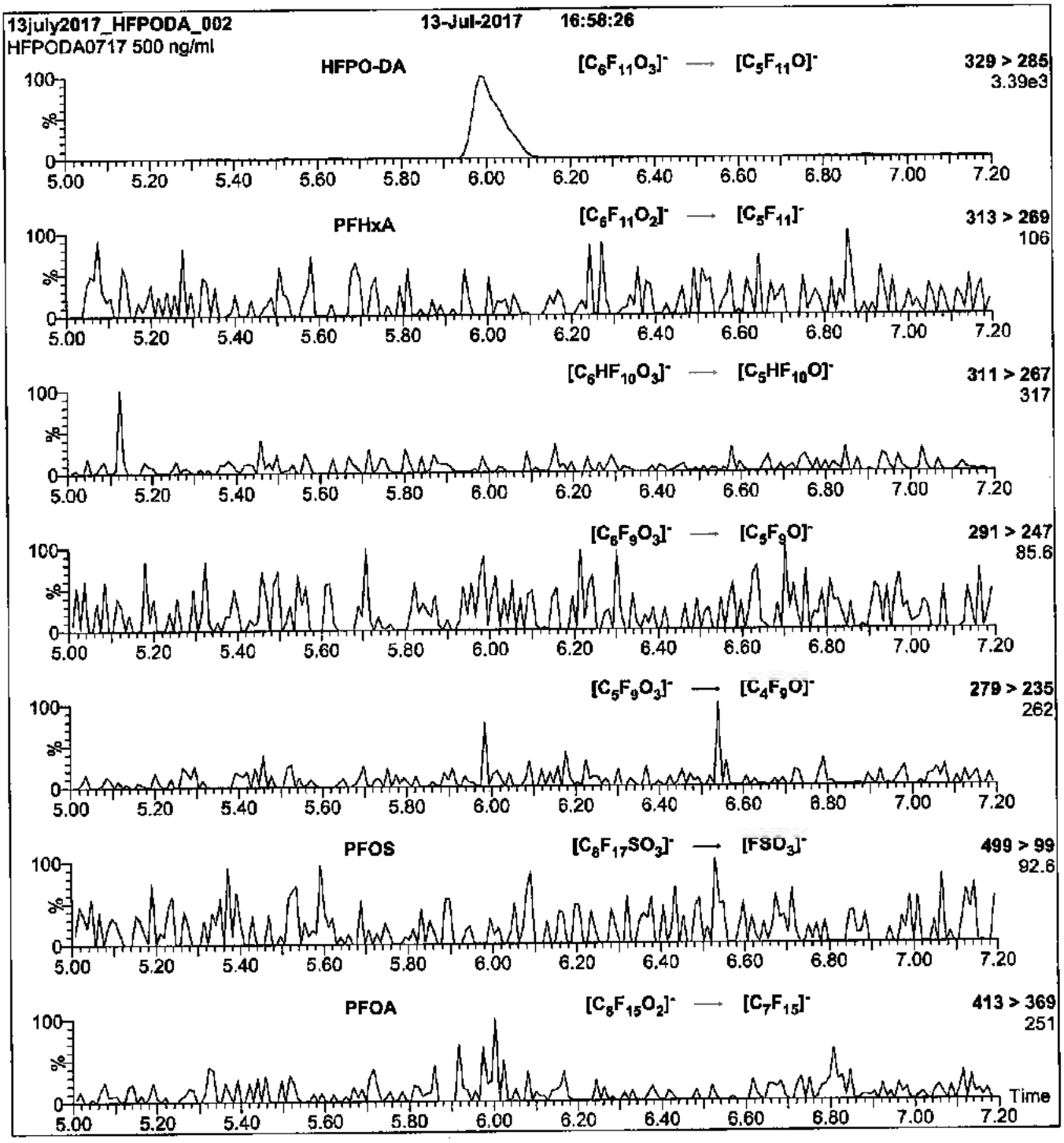
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 700

Figure 2: **HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml HFPO-DA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O with 10 mM NH_4OAc buffer

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 5

Reagent

LCM2-6:FTS_00006

r: 12/4/17 ccl

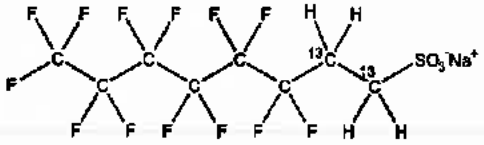
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0217

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	452.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.5 ± 2.4 µg/ml (M2-6:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	02/17/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/24/2017 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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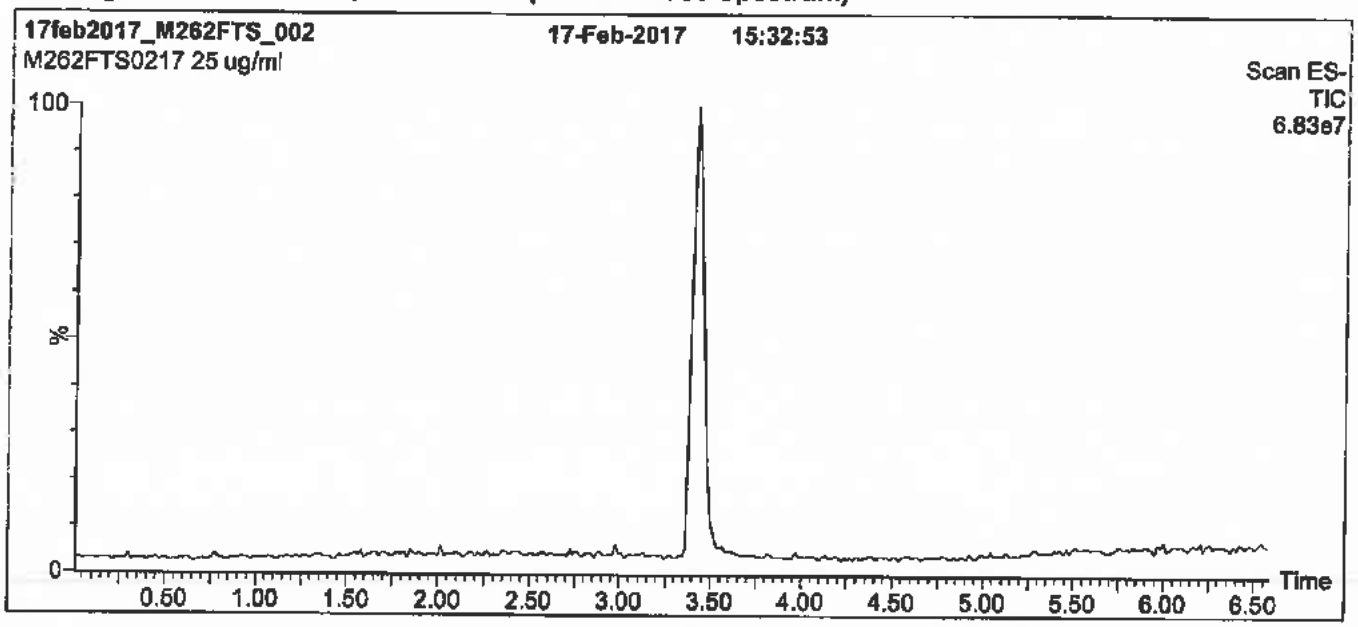
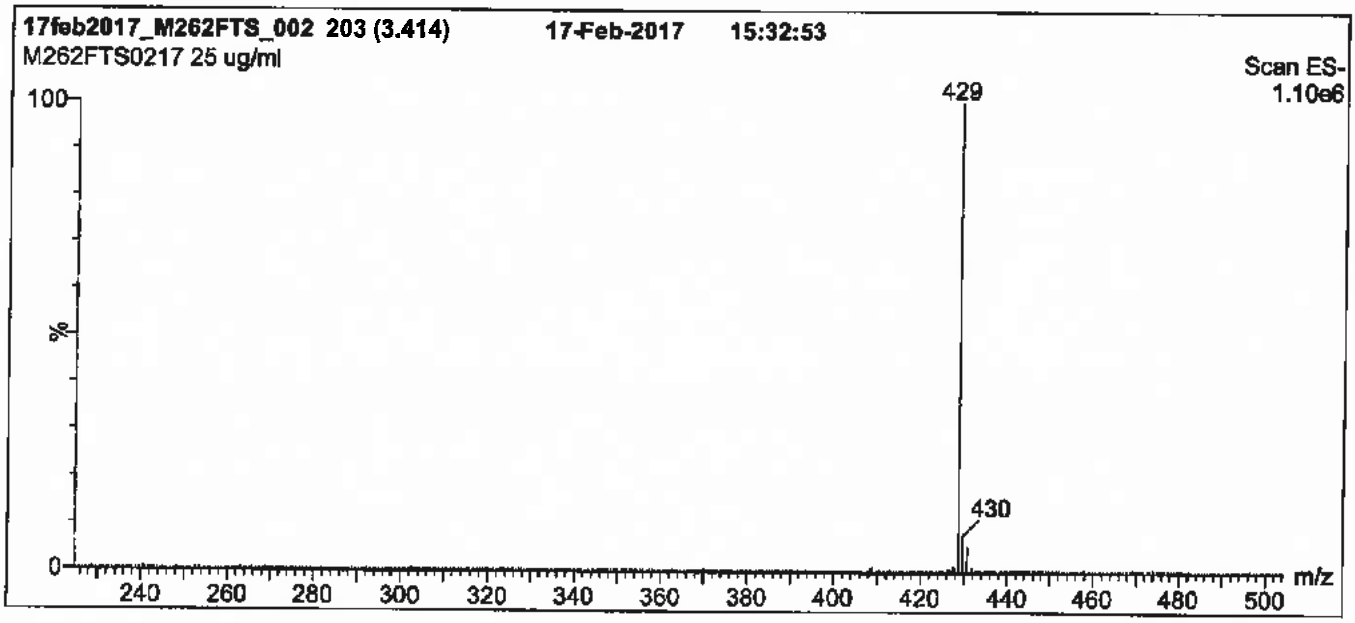
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

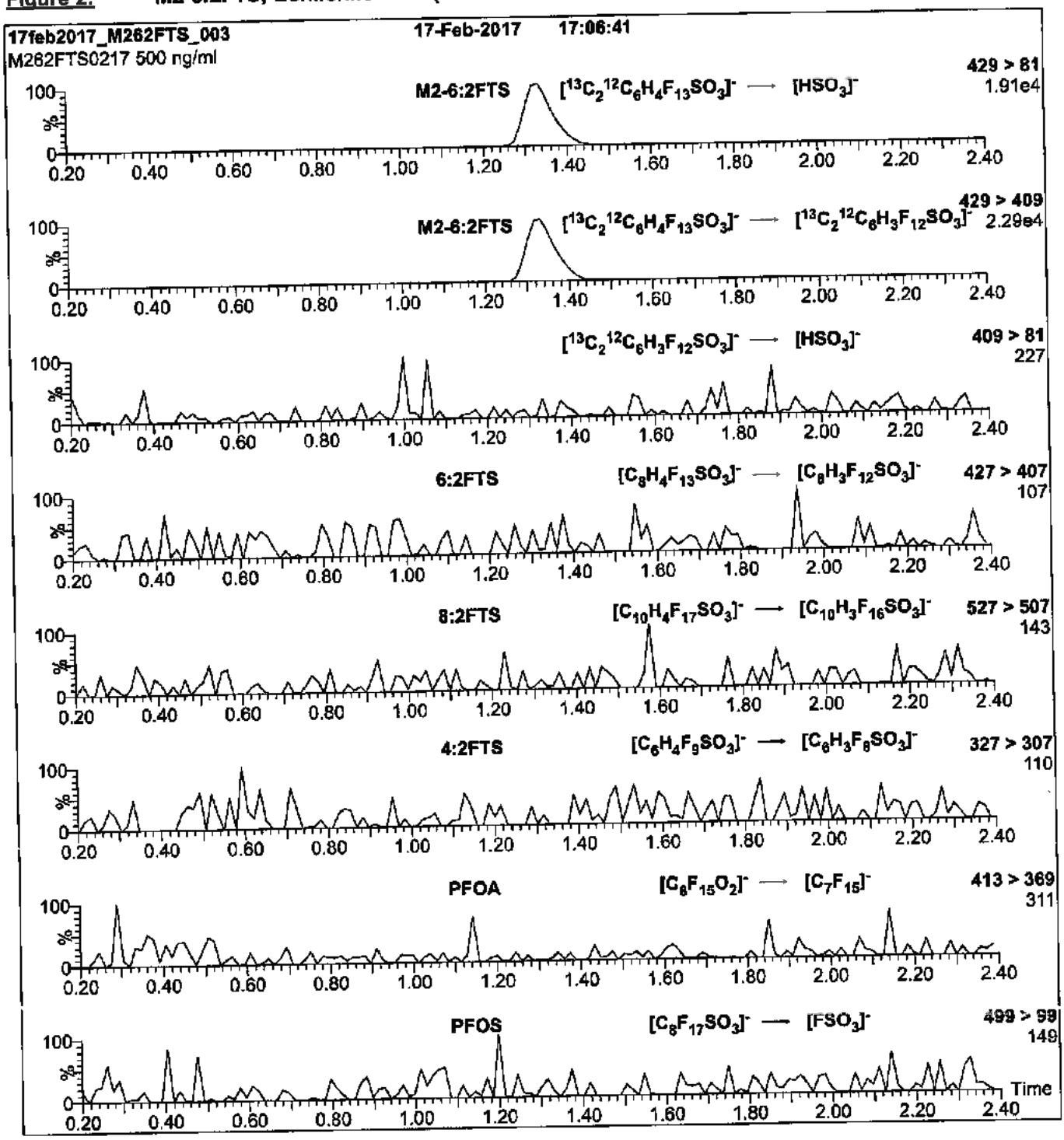
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-6:2FTS)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM2-8:2FTS_00008

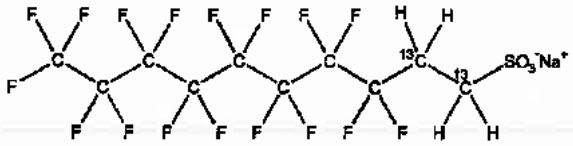
1106092
ID: LCM2-8:2FTS_00008
Exp: 07/05/22 Prpd: CCL
M2-8:2FTS

R: 12/4/19 CCL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2-8:2FTS	**LOT NUMBER:**	M282FTS0717
COMPOUND:	Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.9 ± 2.4 µg/ml (M2-8:2FTS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/07/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

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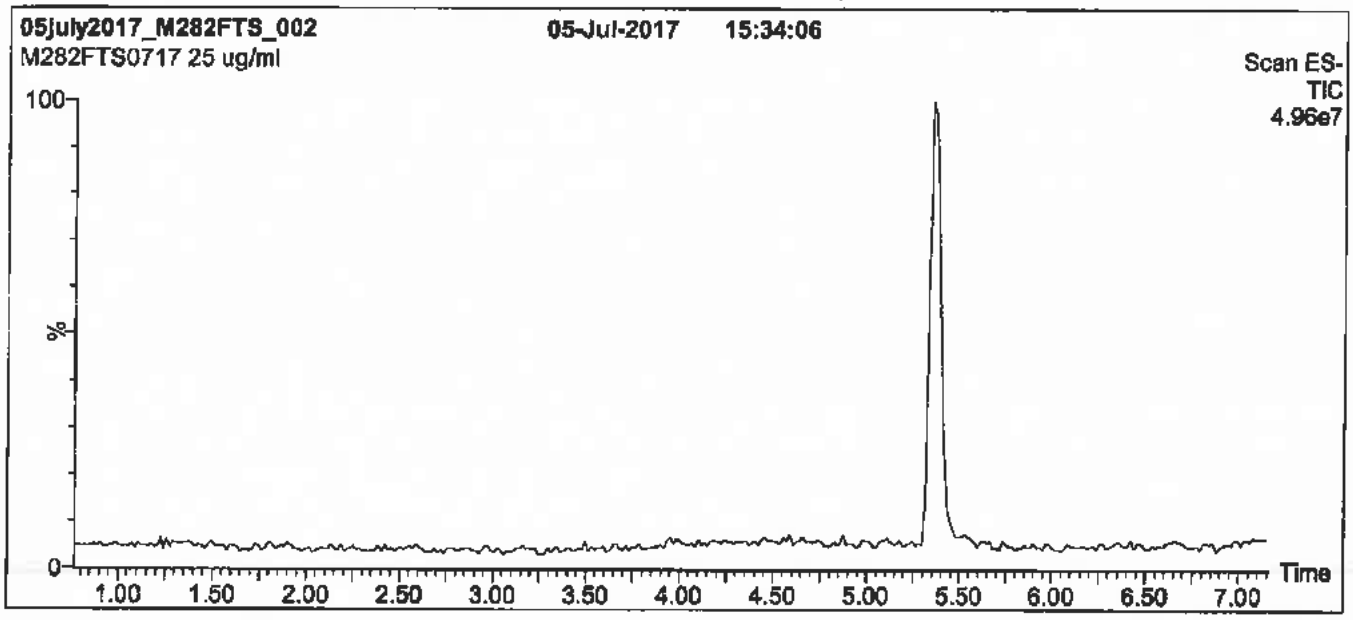
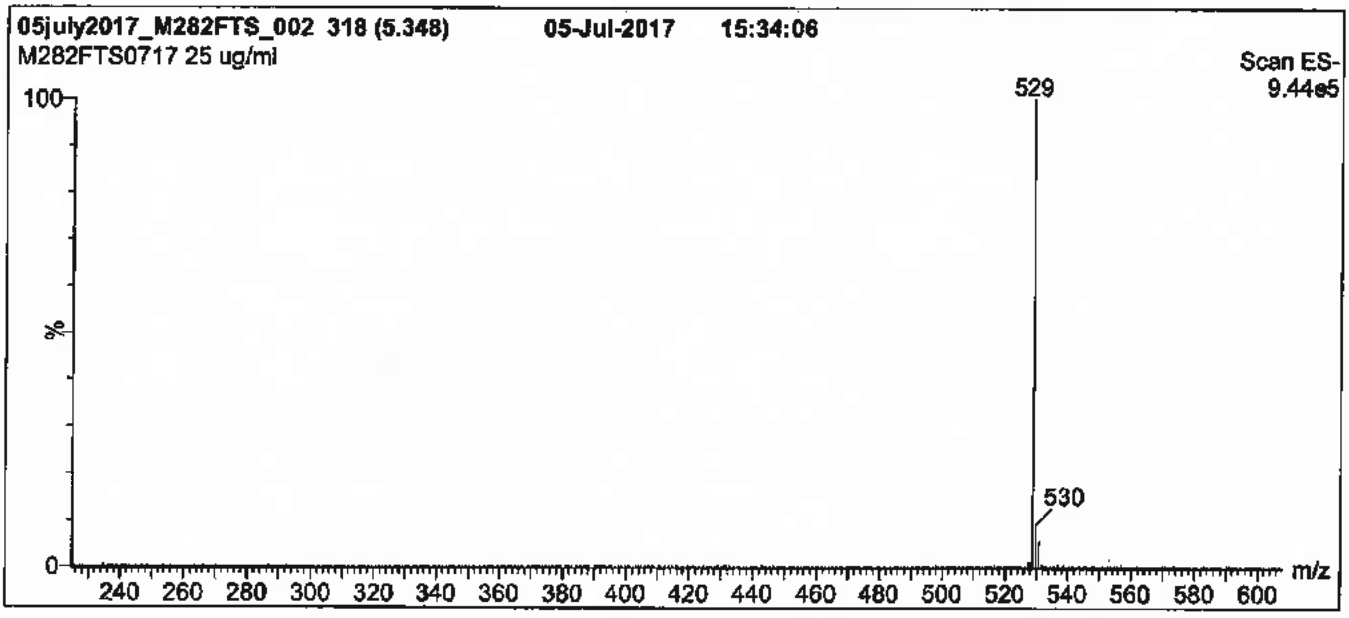
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

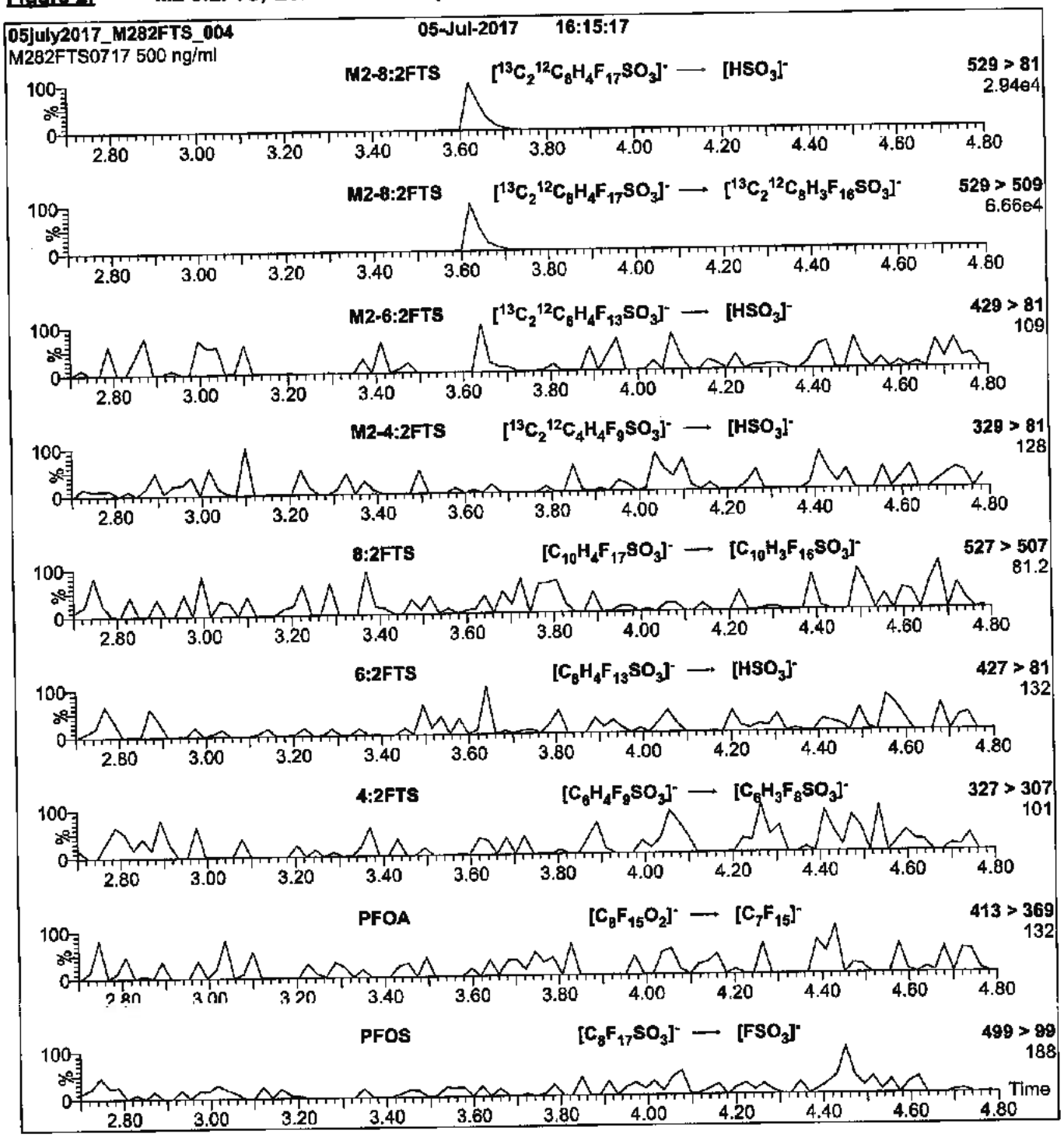
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-8:2FTS)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM2PFHxDA_00013

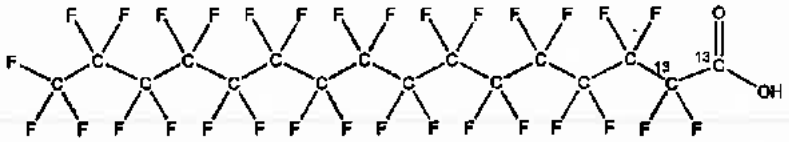
1106068
ID: LCM2PFHxDA_00013
Exp: 07/13/22 Prpd: CCL
13C2-PFHxDA at 50ug/mL

R: 12/4/17 cc

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFHxDA	**LOT NUMBER:**	M2PFHxDA0717
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/13/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/13/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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CALA

ANAB ACCREDITED

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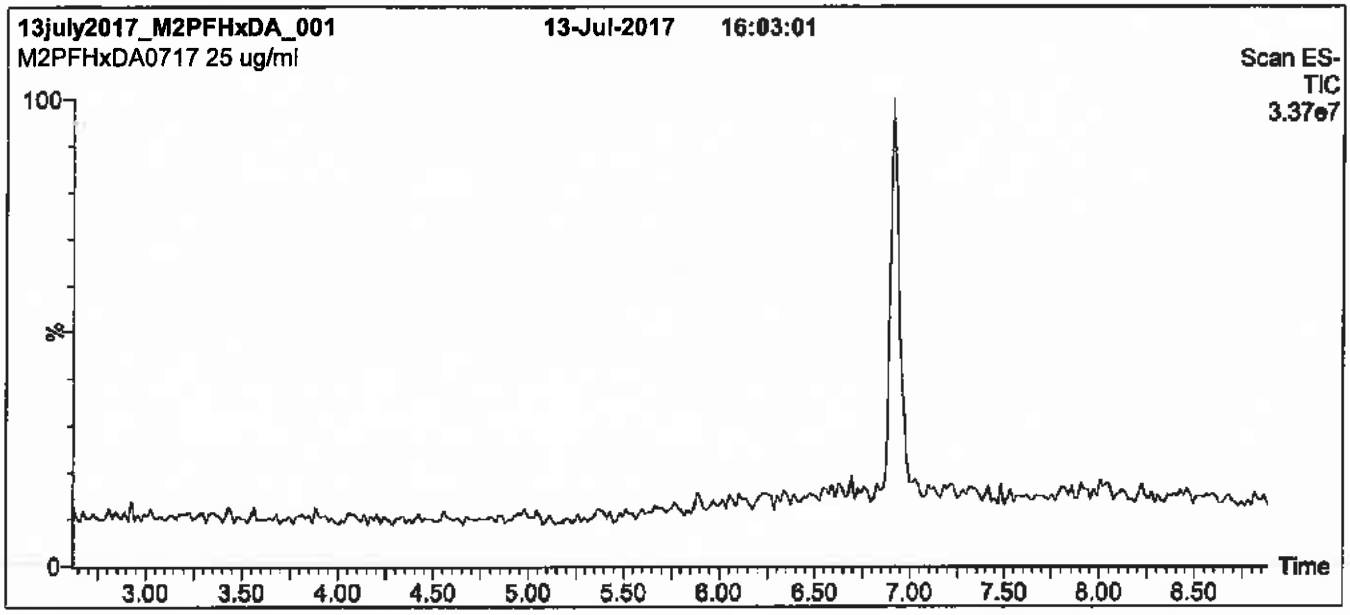
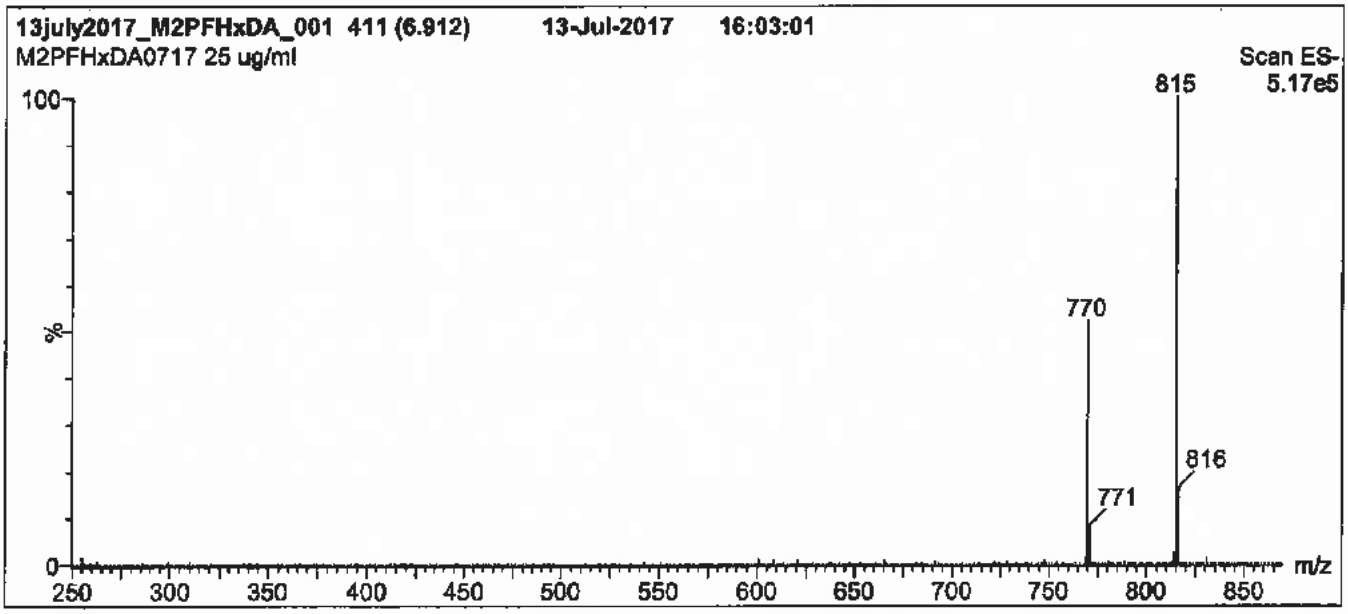
Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

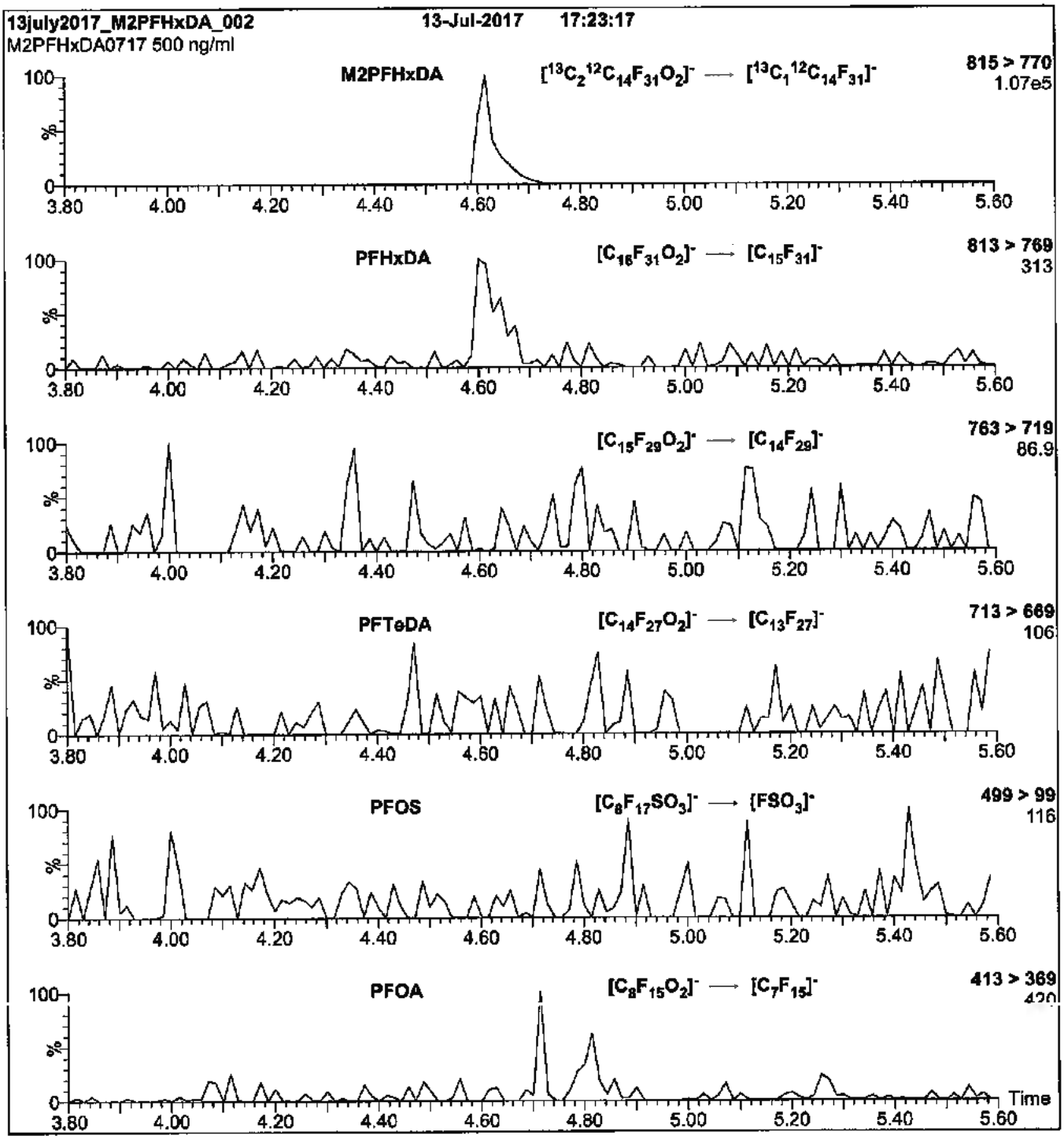
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFHxDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

Reagent

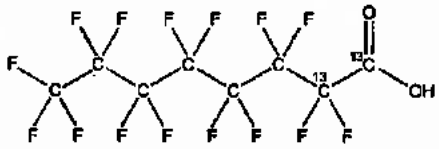
LCM2PFOA_00008

R. 5/8/17 SKW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFOA	**LOT NUMBER:**	M2PFOA0216
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ B.G. Chittim **Date:** 02/24/2016 (mm/dd/yyyy)

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

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HAZARDS:

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UNCERTAINTY:

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

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

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

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

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

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CALA ANAB

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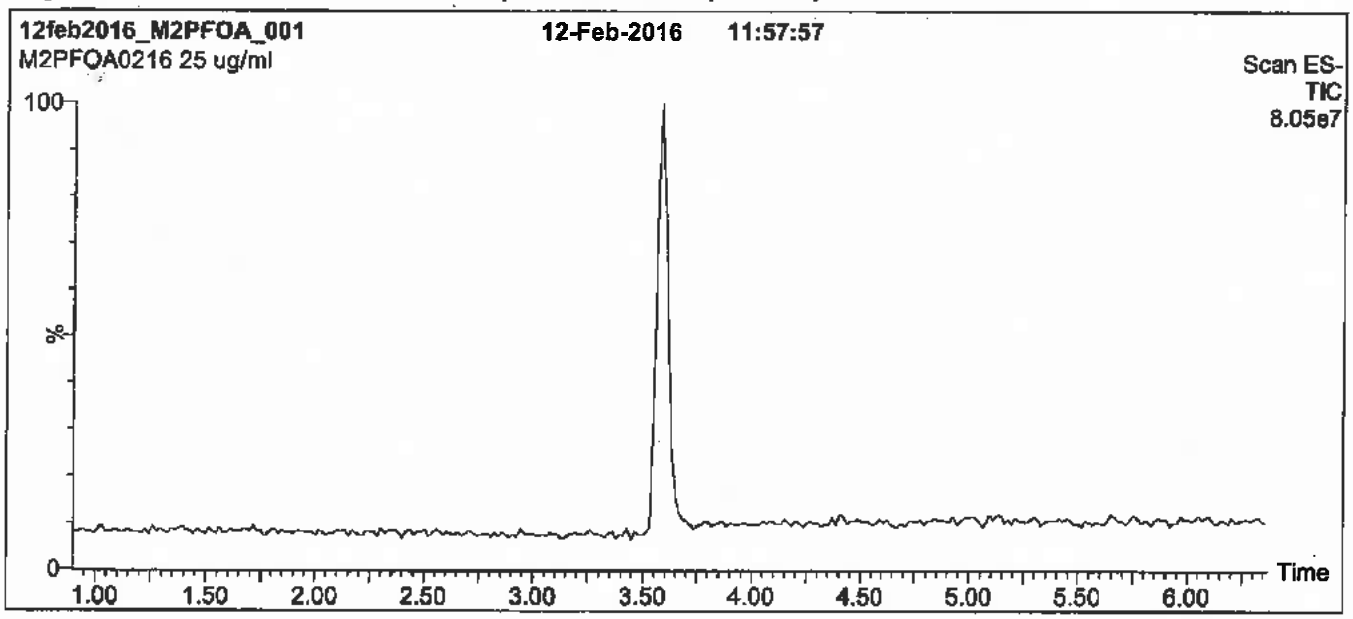
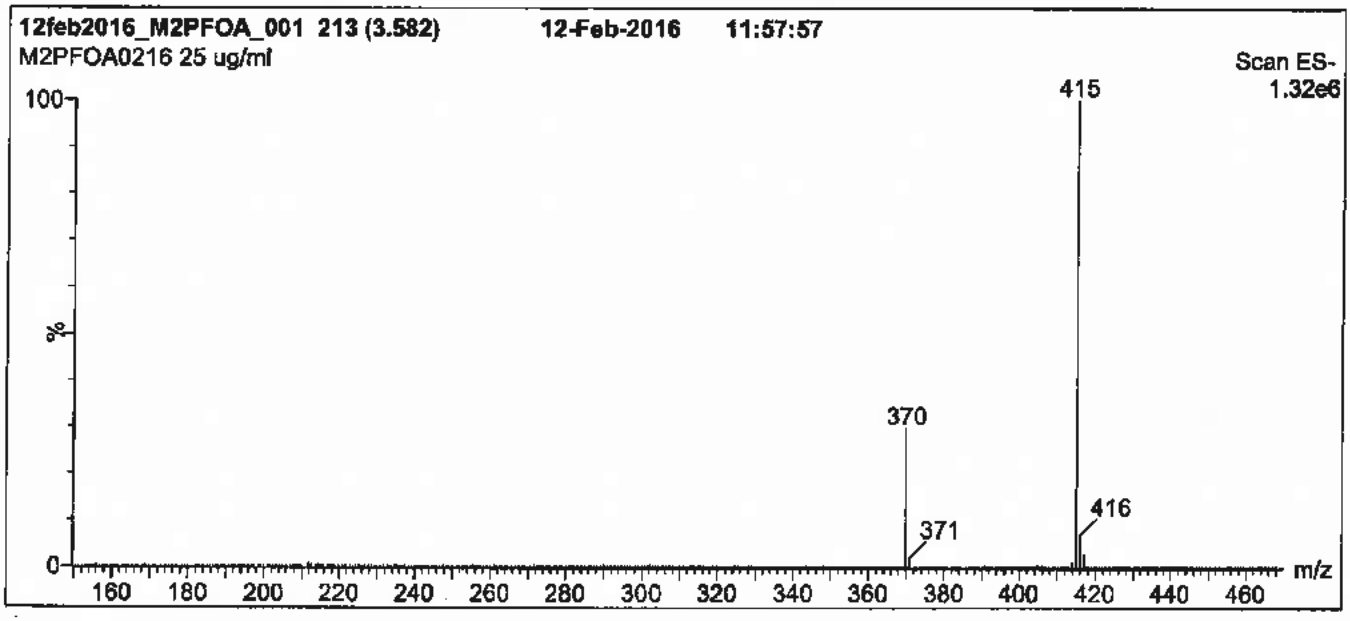
Figure 1: **M2PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

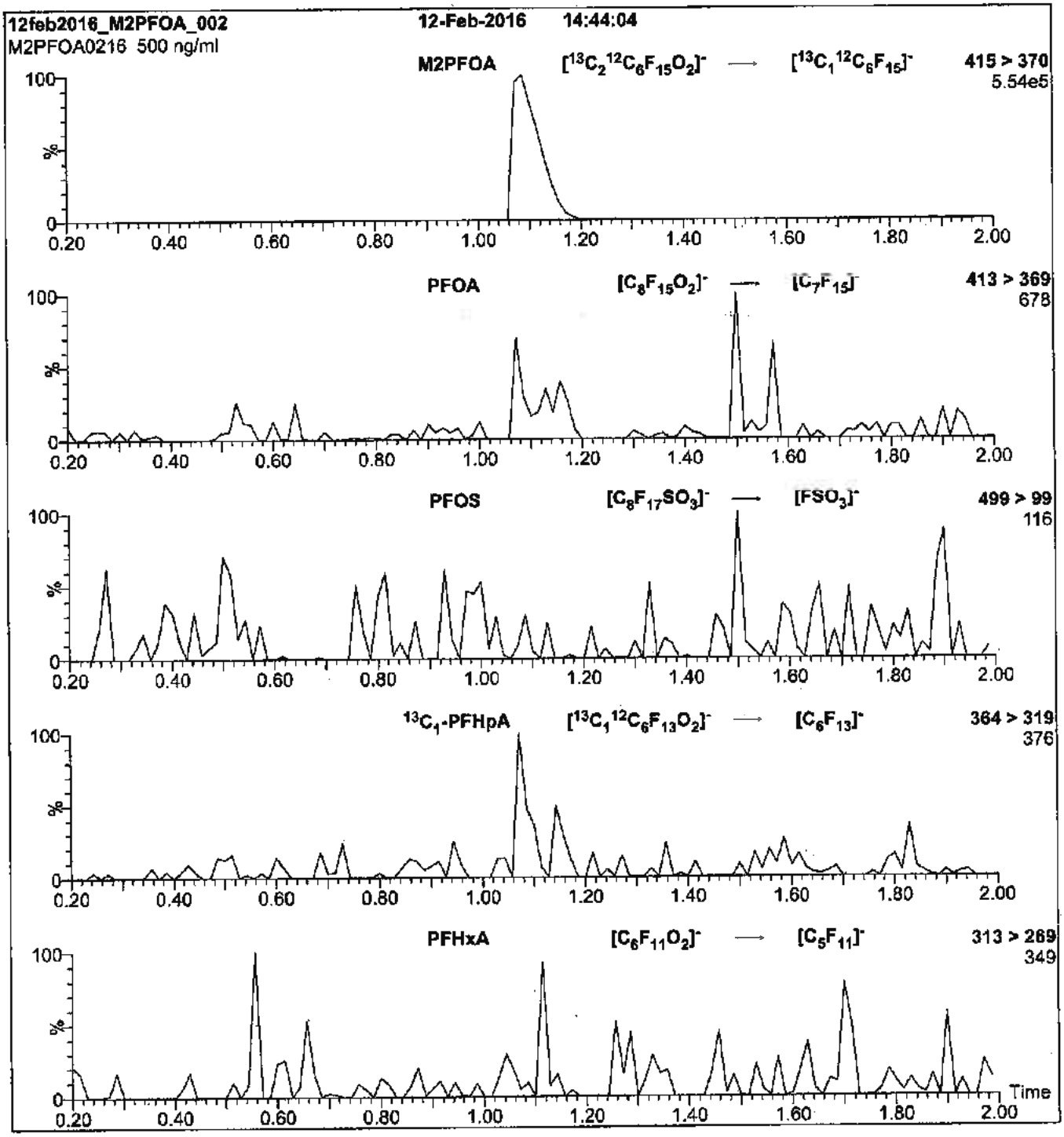
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

Reagent

LCM2PFTeDA_00012

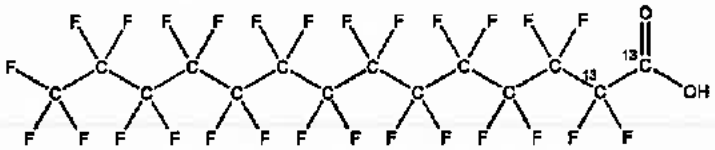
1106065
ID: LCM2PFTeDA_00012
Exp: 11/30/22 Prpd: CCL
13C2-PFTeDA at 50ug/mL

r: 12/4/17 ccl

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFTeDA	**LOT NUMBER:**	M2PFTeDA1117
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	11/30/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/30/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/01/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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UNCERTAINTY:

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CALA

ANAB ACCREDITED

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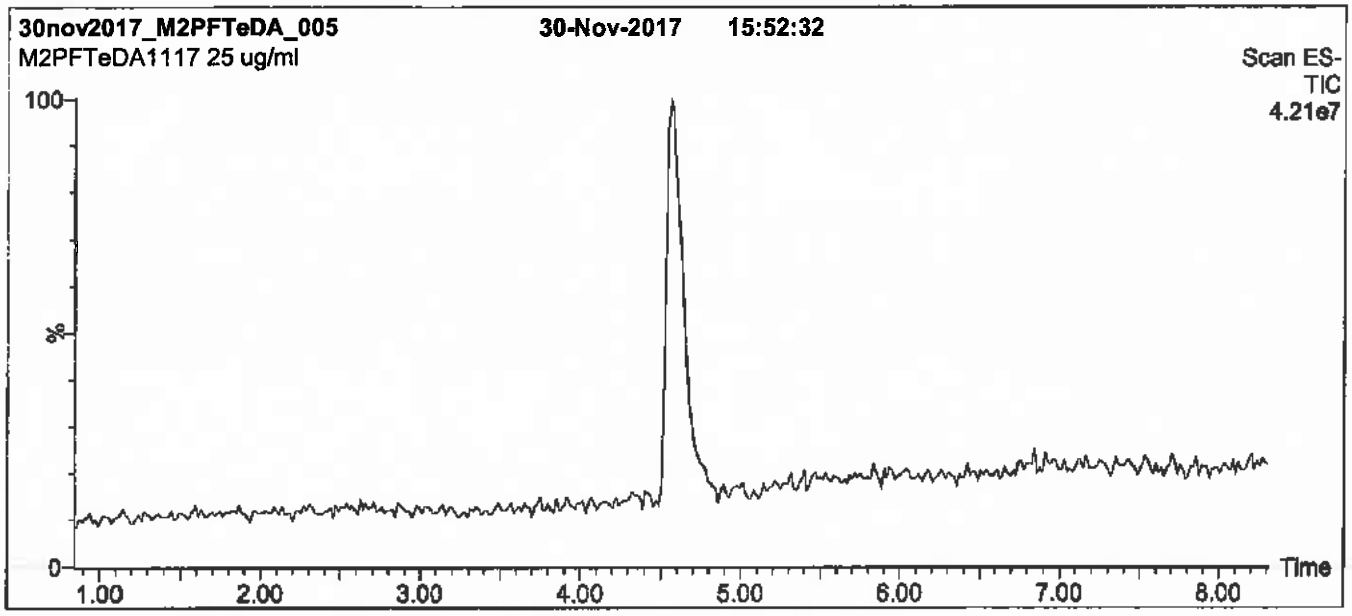
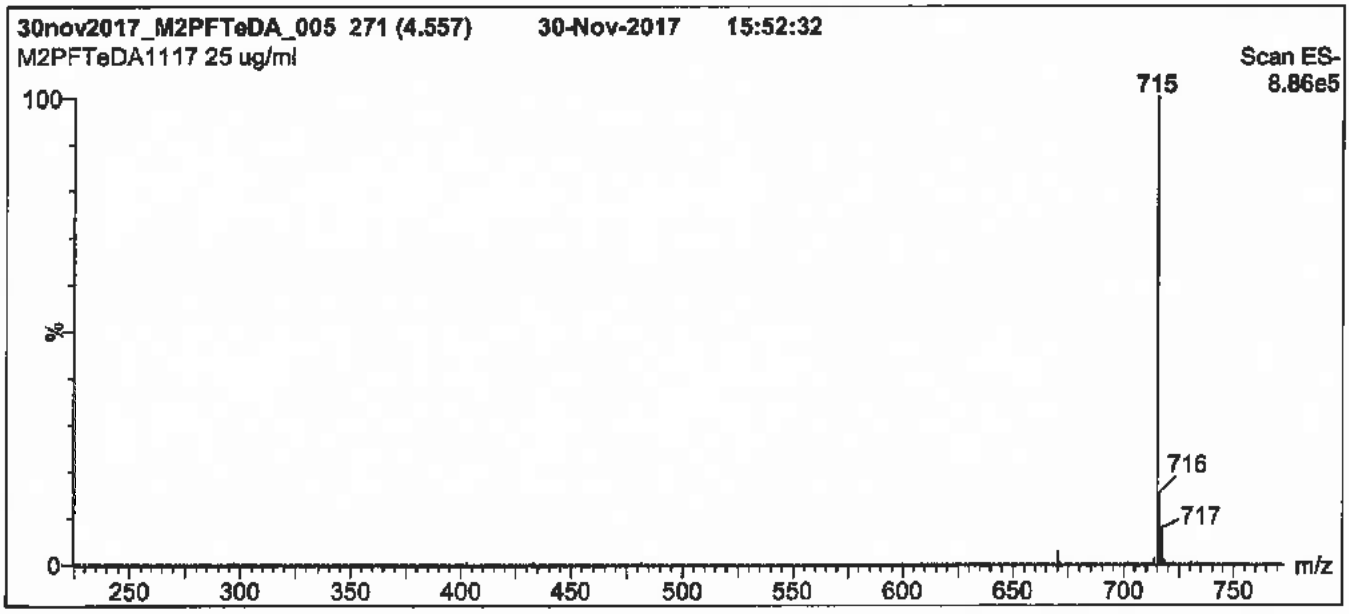




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

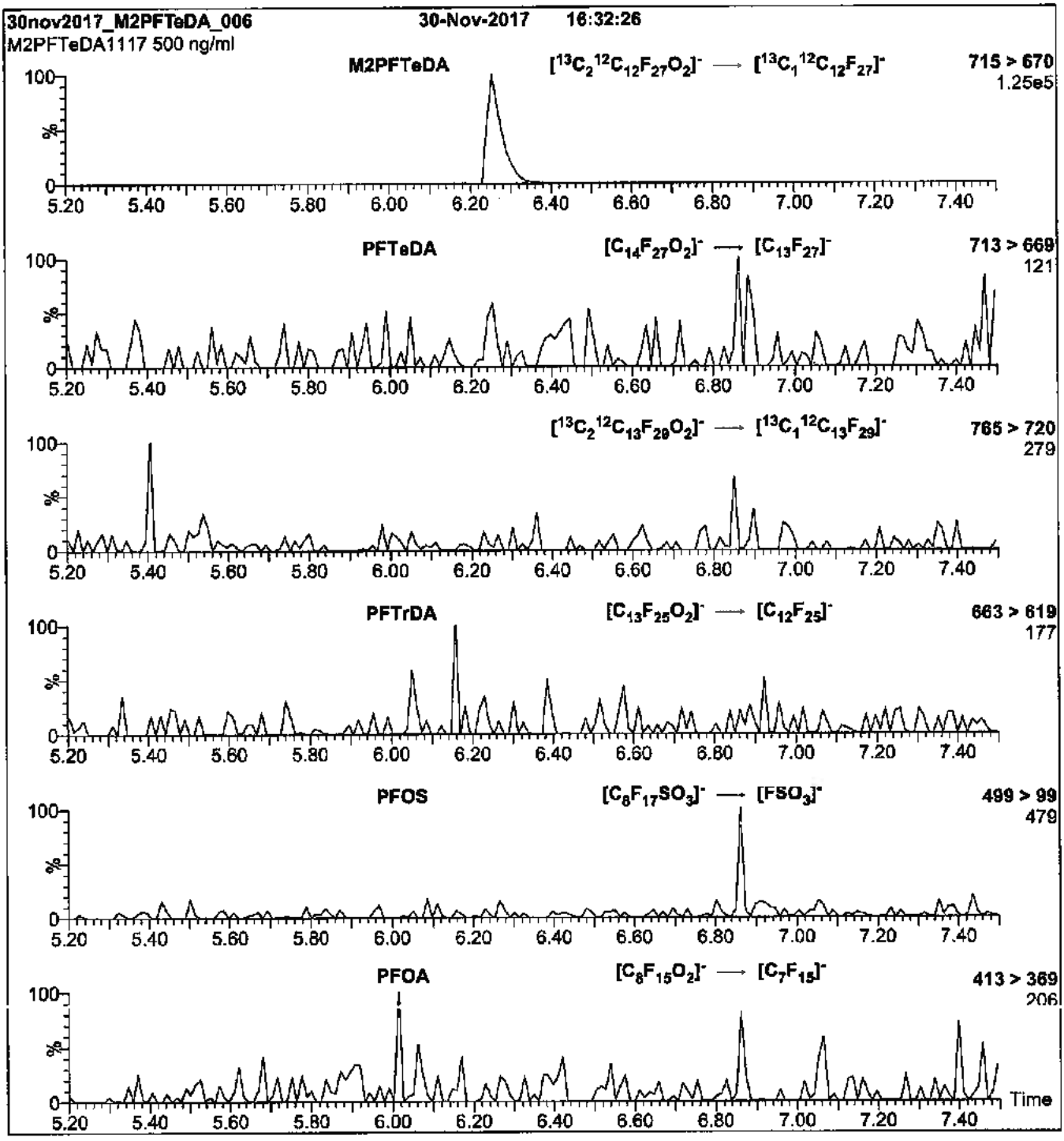
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFTeDA)

Mobile phase: Isocratic 80% (60:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 14

Reagent

LCM3HFPO-DA_00001

P:9/5/17 SCV

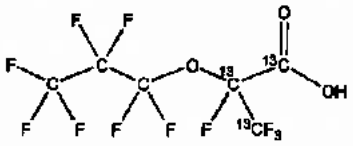
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M3HFPO-DA **LOT NUMBER:** M3HFPODA0616

COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-$^{13}C_3$-propanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_3HF_{11}O_3$	**MOLECULAR WEIGHT:**	333.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	06/25/2016		
EXPIRY DATE: (mm/dd/yyyy)	06/25/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.5% of two constitutional isomers.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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CALA

ANAB ACCREDITED

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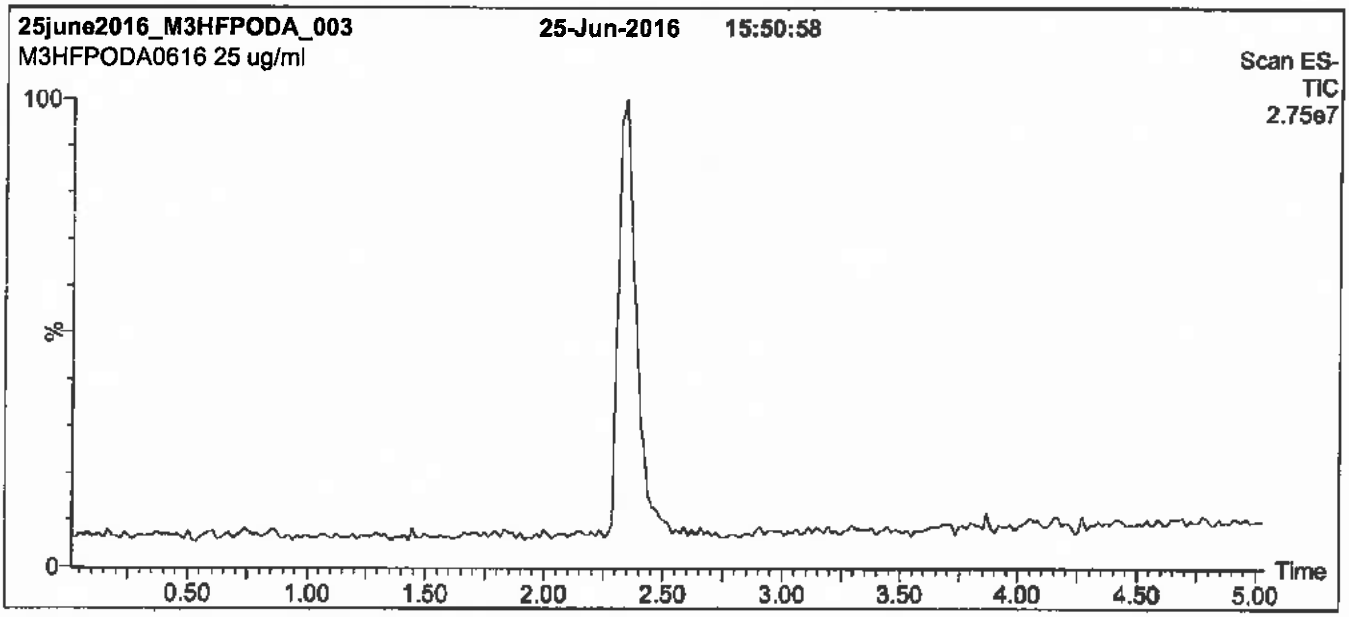
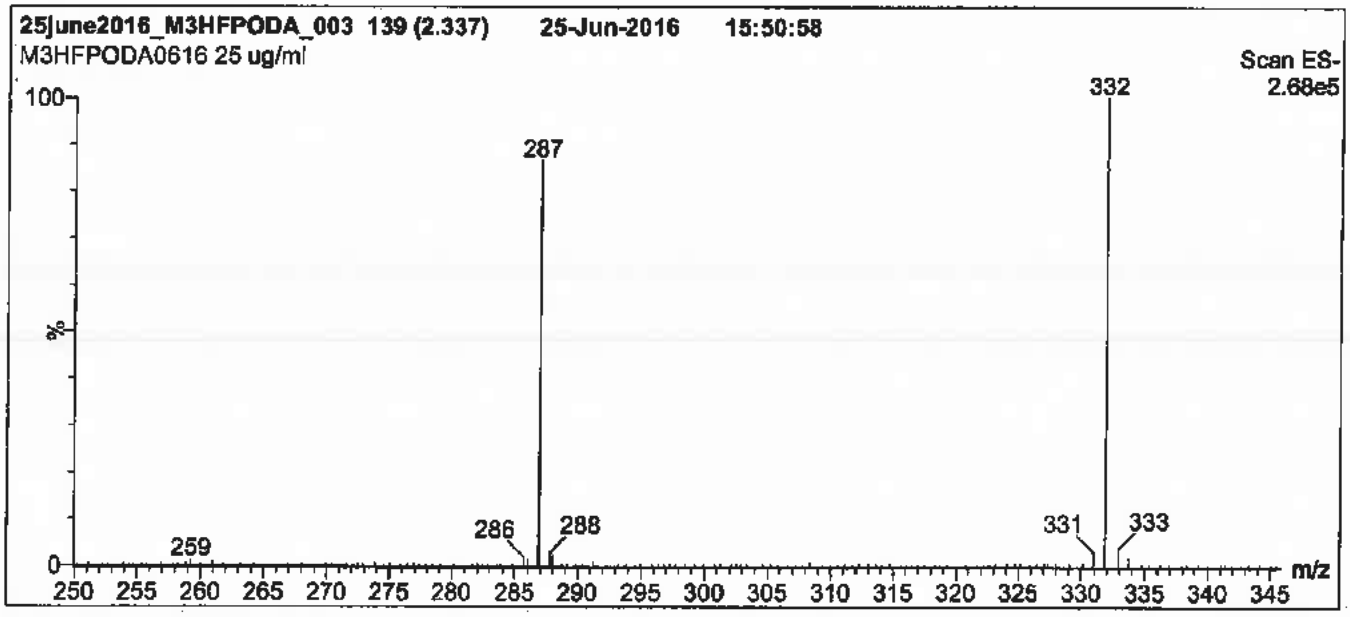




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

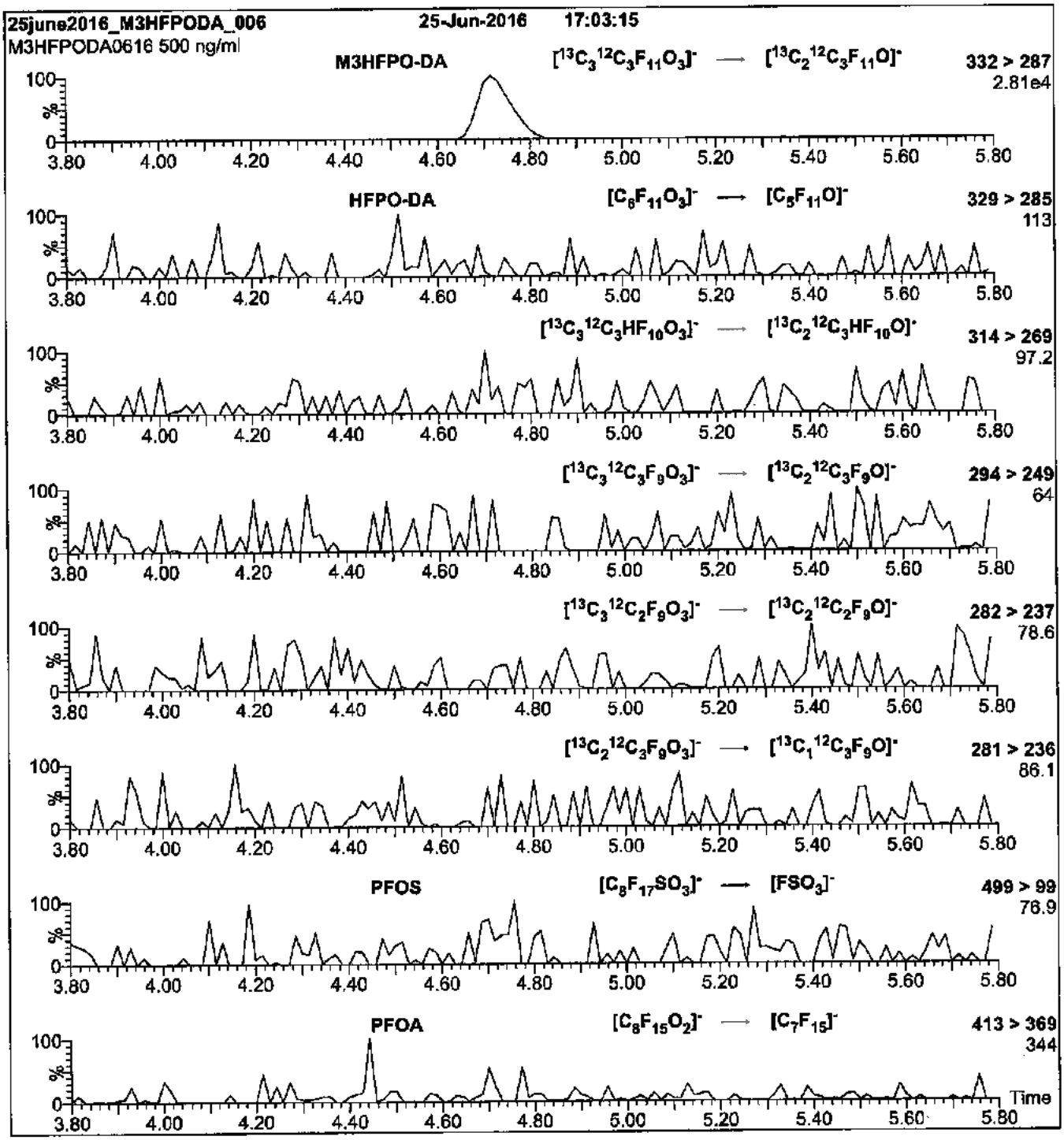
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 9.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M3HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3HFPO-DA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 5

Reagent

LCM4PFHPA_00012

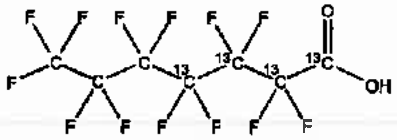
1106316
ID: LCM4PFHPA_00012
Exp: 05/03/22 Prpd: CCL
13C4-Perfluoroheptanoic a

v: 12/4/17 CCL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M4PFHpA	**LOT NUMBER:**	M4PFHpA0517
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_3HF_{13}O_2$	**MOLECULAR WEIGHT:**	368.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/03/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/03/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

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

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Certified By: _____ **Date:** 05/11/2017 (mm/dd/yyyy)
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$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

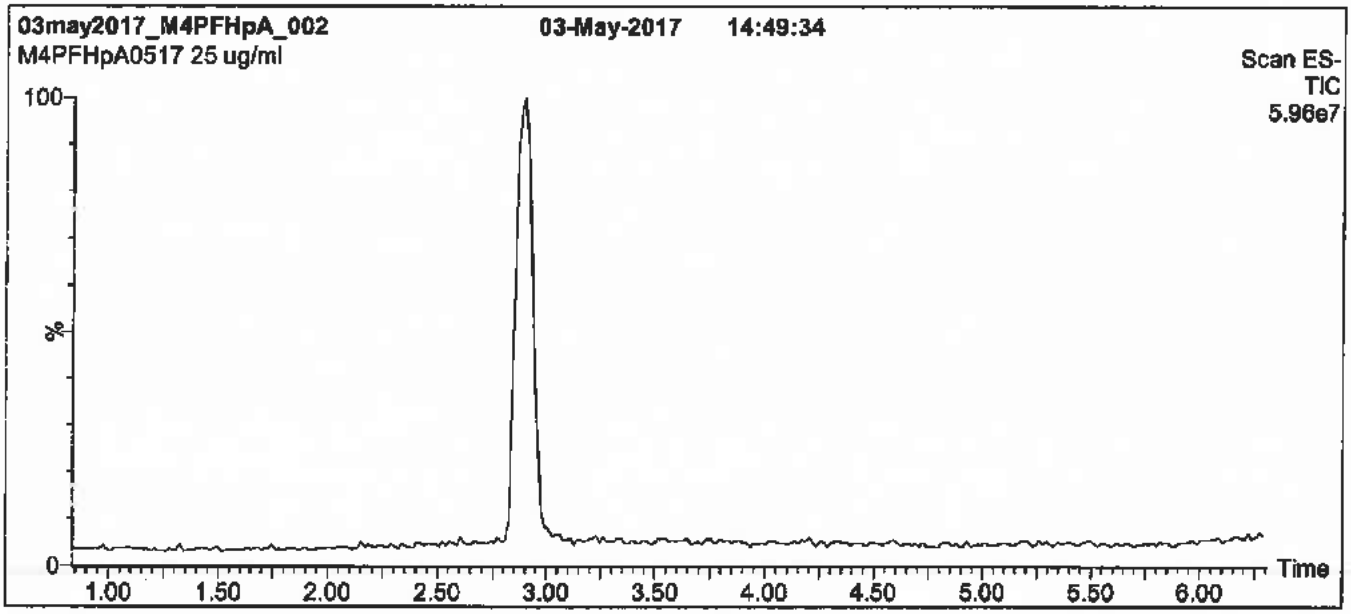
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

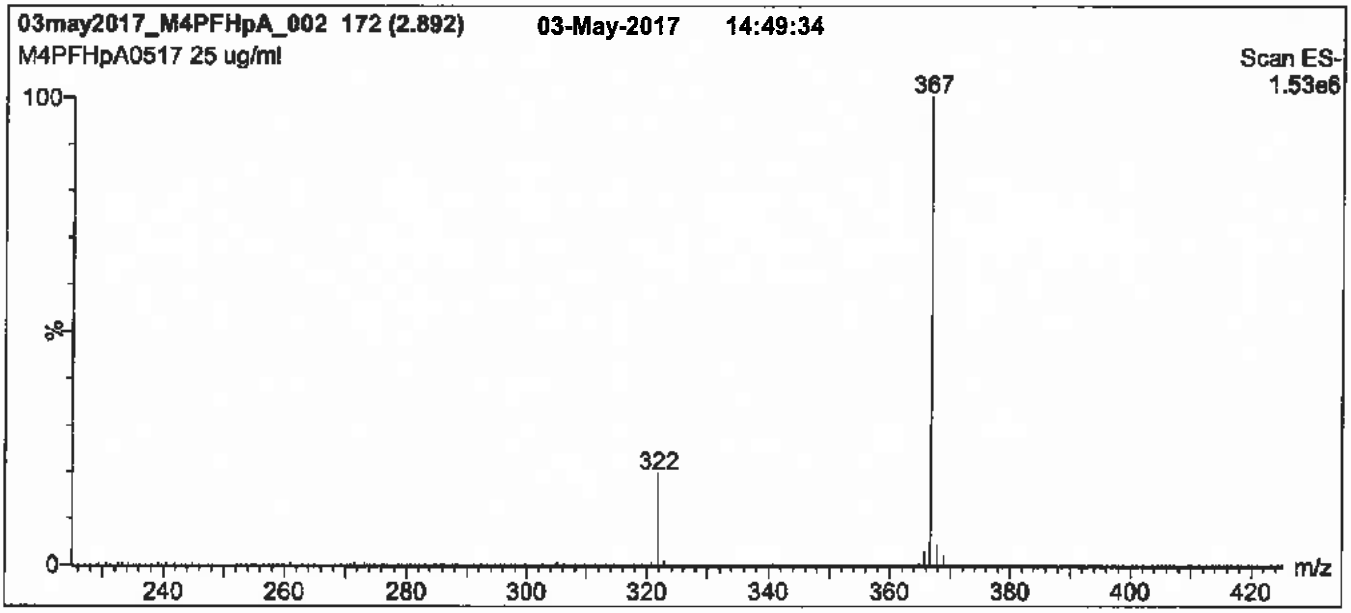
CALA

ANAB ACCREDITED

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

Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

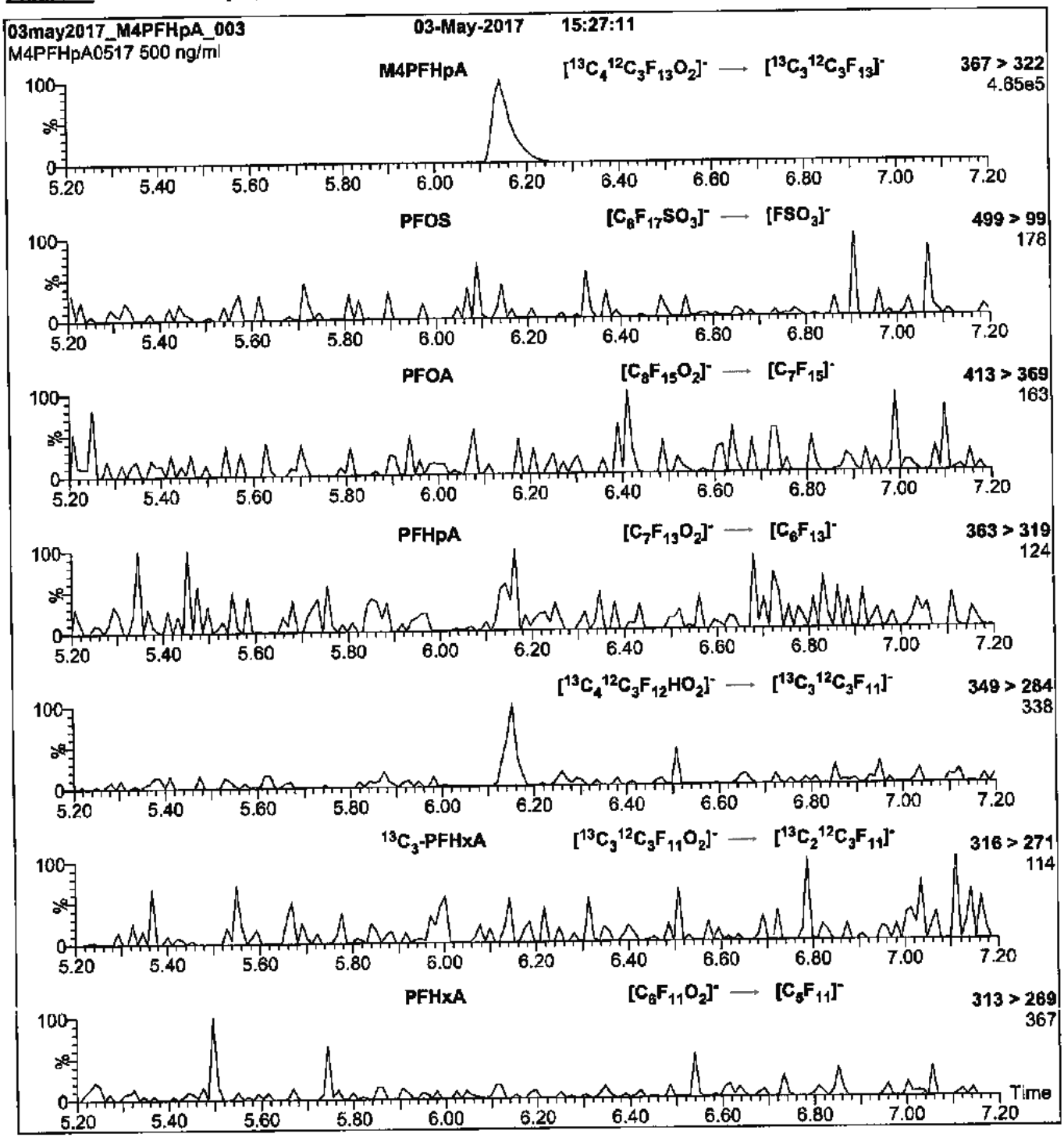
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 650 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M4PFHpA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 9

Reagent

LCM5PFPEA_00013

WELLINGTON LABORATORIES

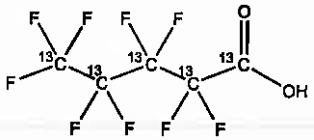
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[$^{13}C_5$]pentanoic acid

LOT NUMBER: M5PFPeA0717

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_5HF_8O_2$	**MOLECULAR WEIGHT:**	269.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	07/20/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/20/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/26/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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HAZARDS:

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CALA

ANAB ACCREDITED

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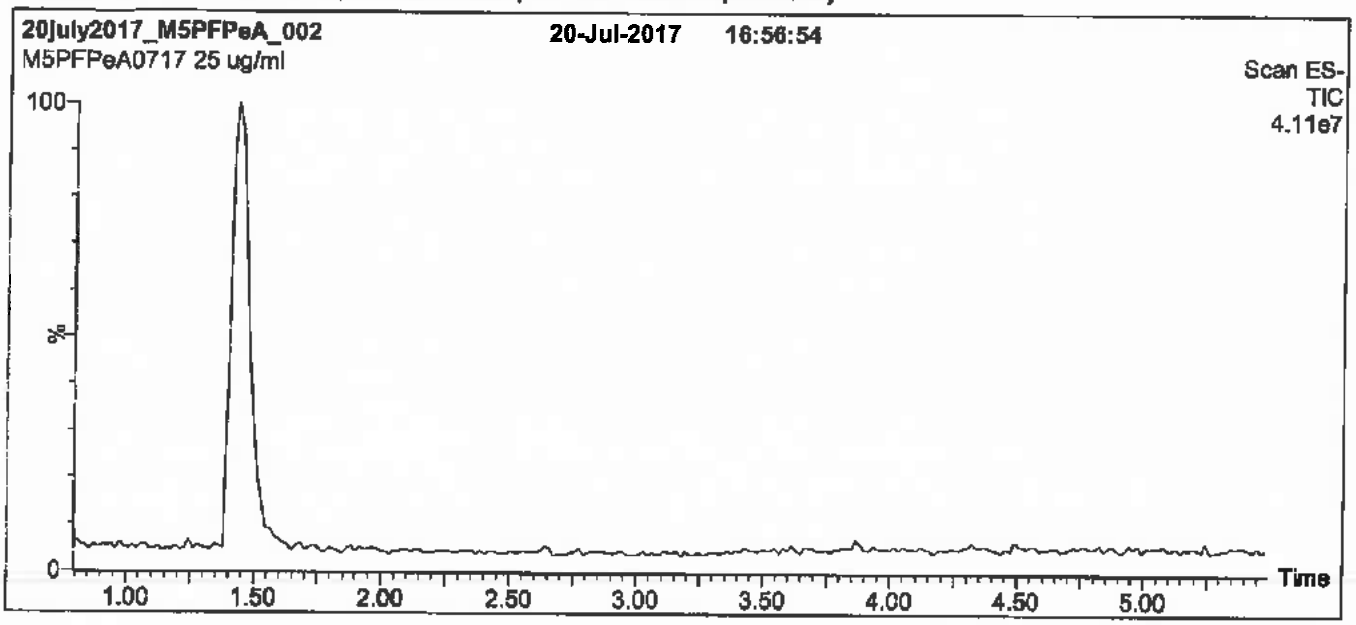
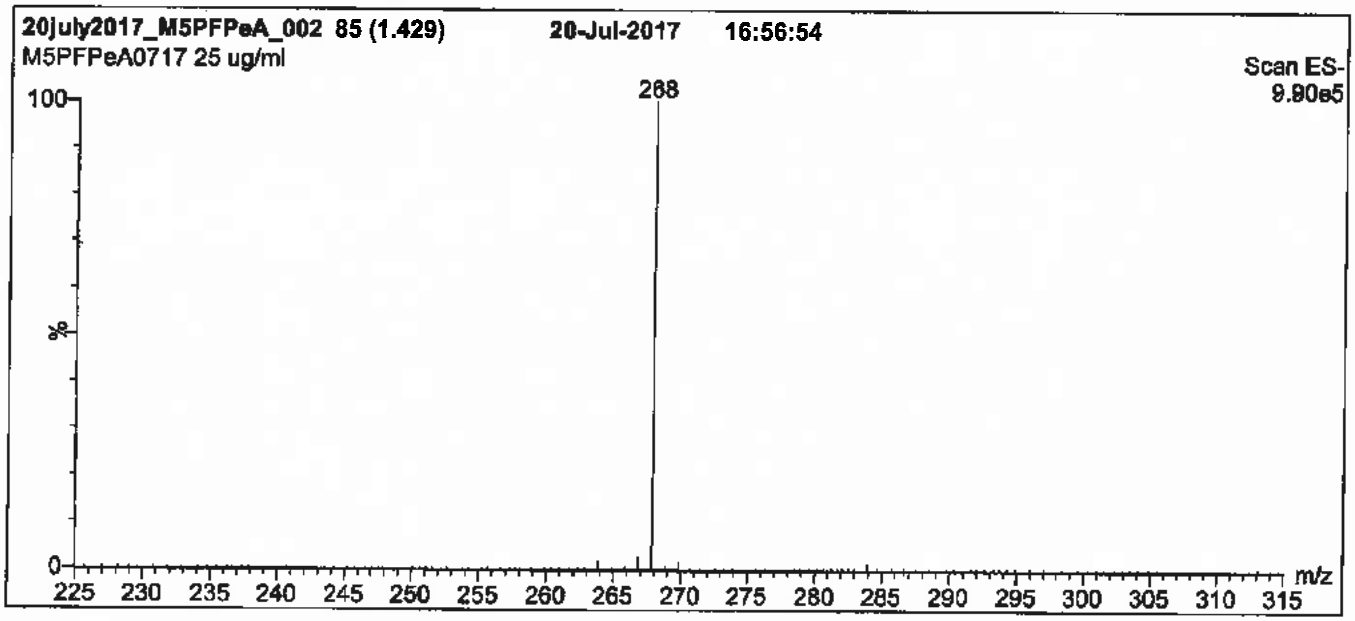
Figure 1: **M5PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

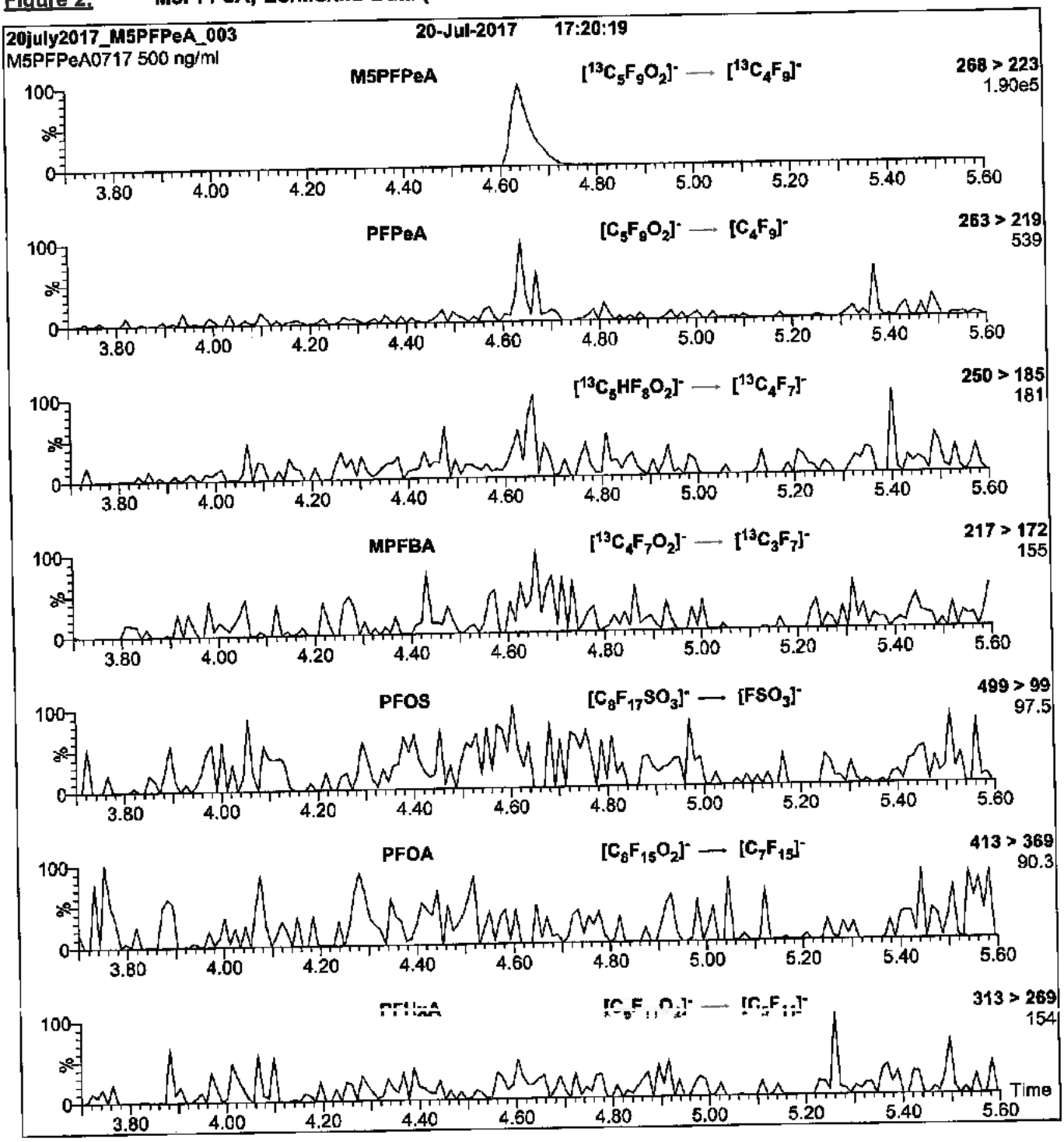
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M5PFPeA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 9

Reagent

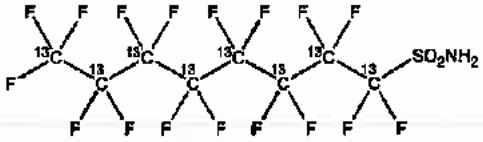
LCM8FOSA_00016

r: 12/4/17
CCL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M8FOSA-I	**LOT NUMBER:**	M8FOSA1017I
COMPOUND:	Perfluoro-1-[$^{13}C_8$]octanesulfonamide		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	10/11/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/11/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.1% of perfluoro-1-[$^{13}C_4$]octanesulfonamide and ~ 0.01% of perfluoro-1-[$^{13}C_7$]heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/20/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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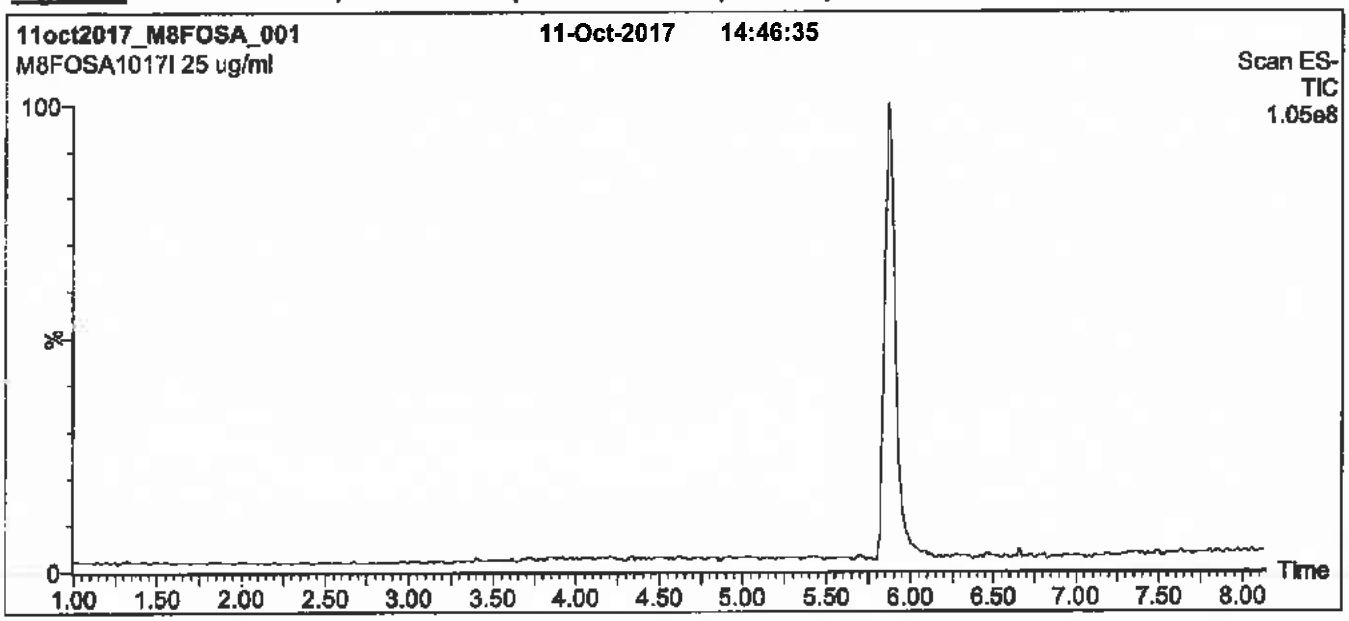
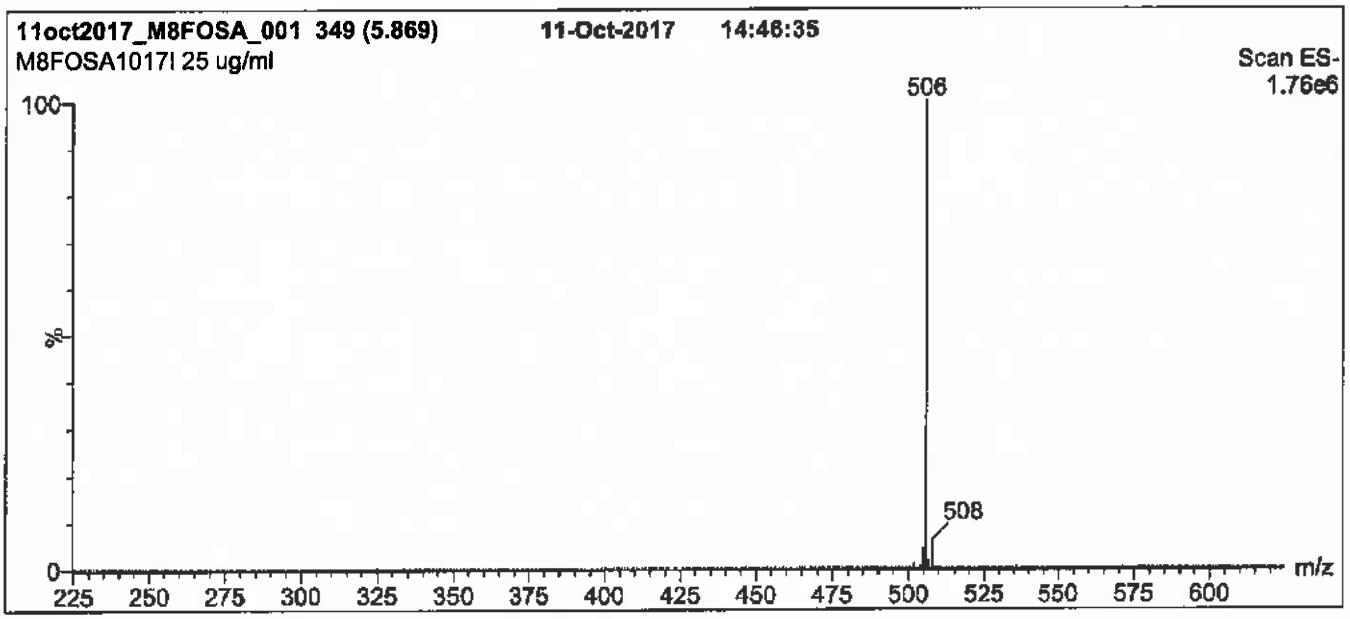
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

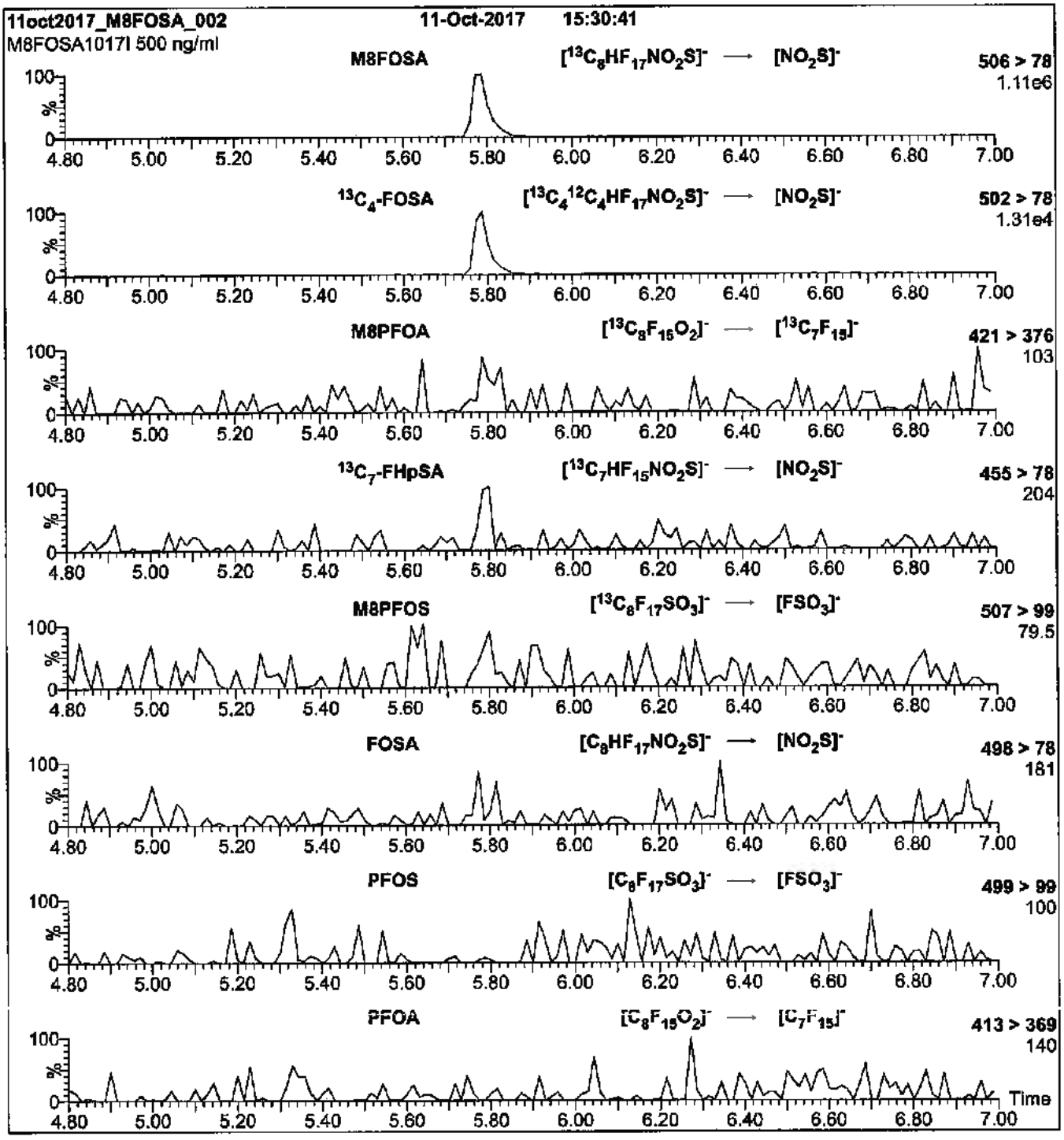
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M8FOSA-I)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00013

r: 12/4/17 ccc

WELLINGTON LABORATORIES

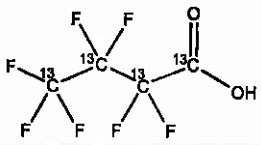
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFBA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid

LOT NUMBER: MPFBA0417

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4HF_7O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 218.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/12/2017
EXPIRY DATE: (mm/dd/yyyy) 04/12/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C (1,2,3,4-$^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/20/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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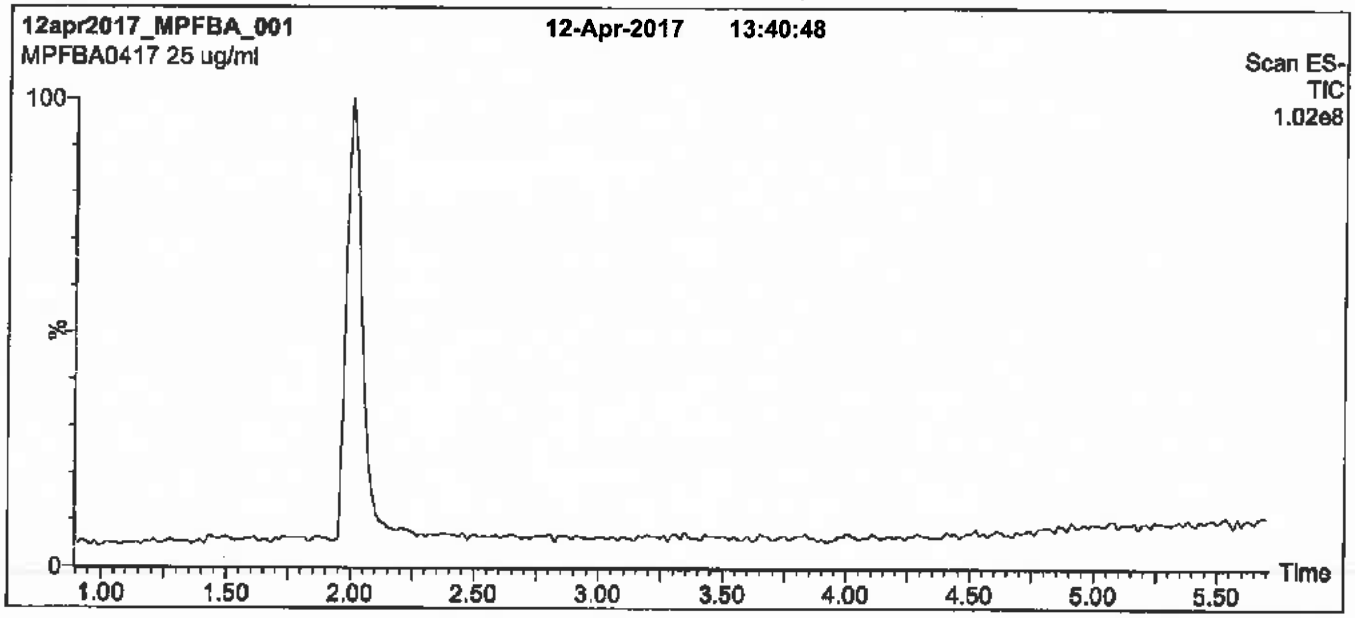
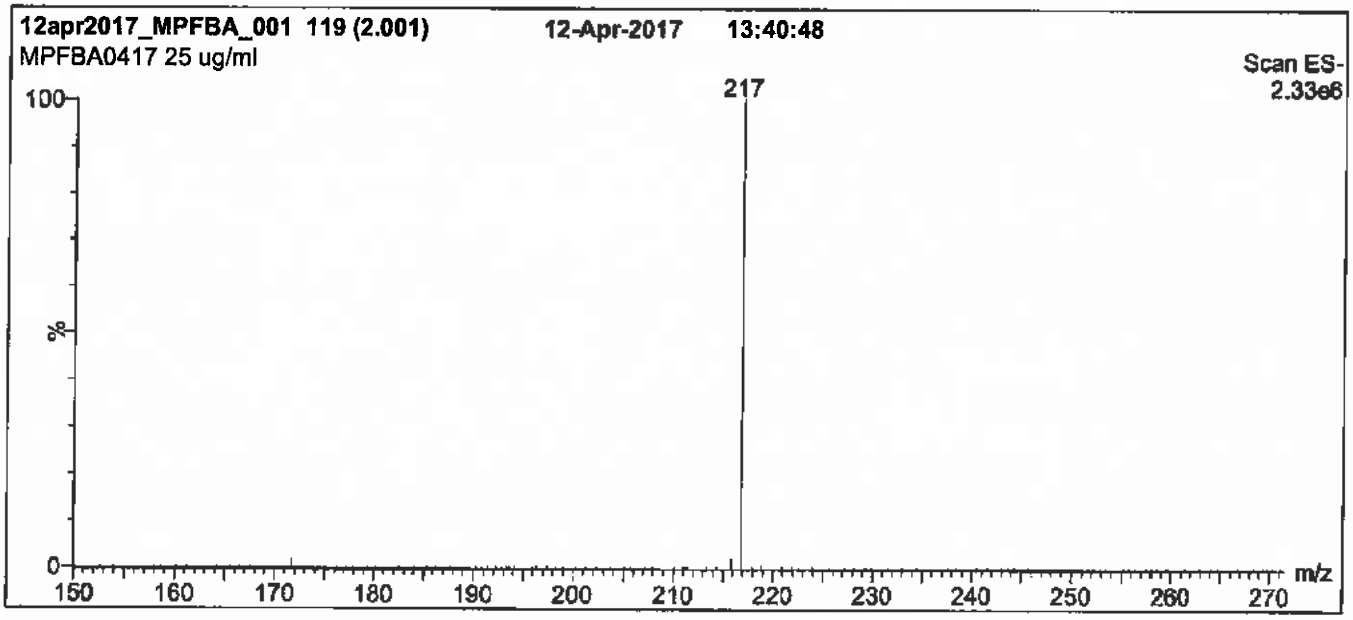
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

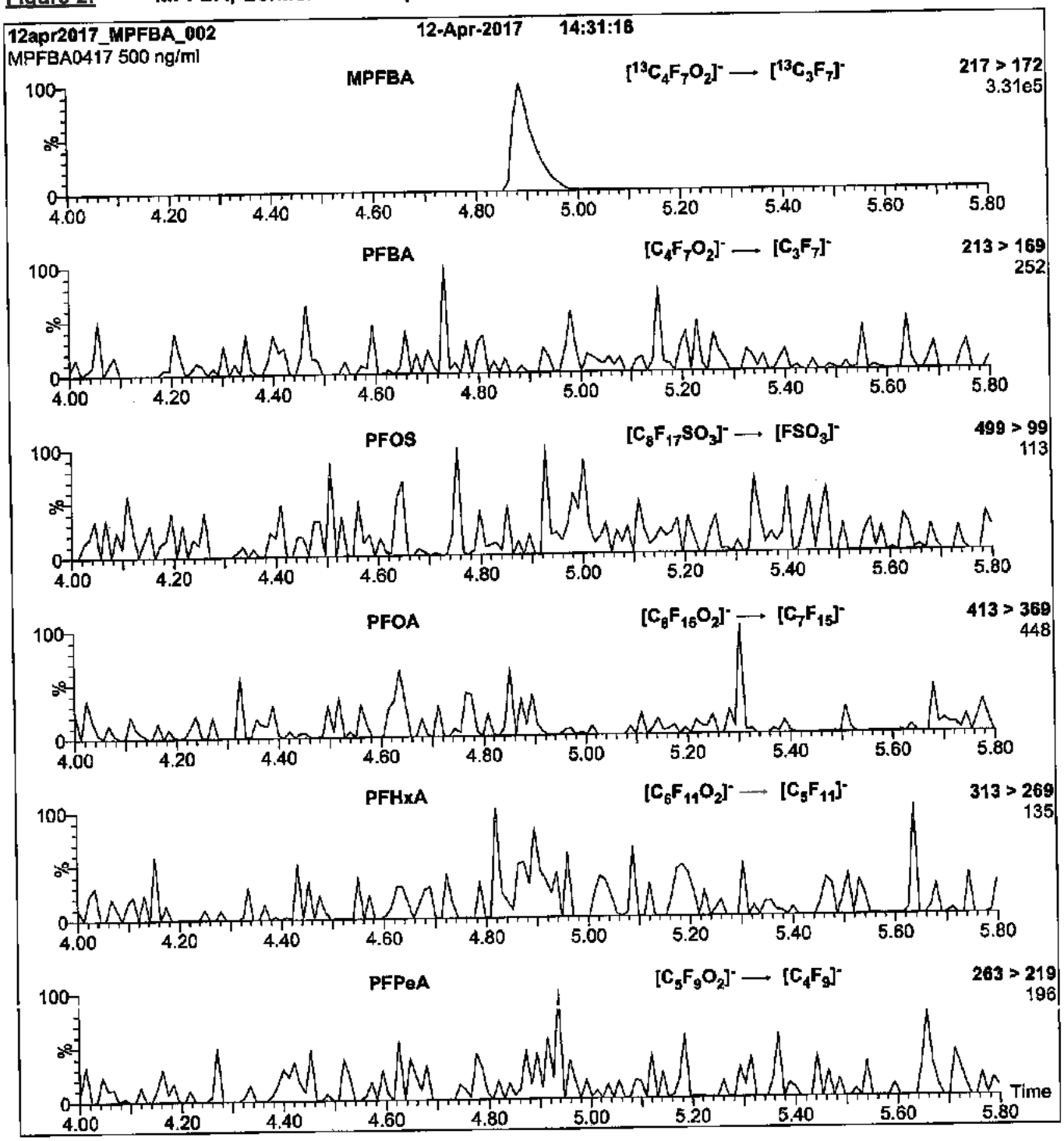
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFBA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 10

Reagent

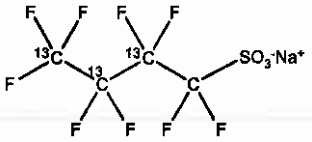
LCMPFBS_00006

r: 12/4/17 CCL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M3PFBS	**LOT NUMBER:**	M3PFBS0815
COMPOUND:	Sodium perfluoro-1-[2,3,4-$^{13}C_3$]butanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}CF_9SO_3Na$	**MOLECULAR WEIGHT:**	325.06
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.5 ± 2.3 µg/ml (M3PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($2,3,4\text{-}^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	05/24/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/25/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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CALA

ANAB ACCREDITED

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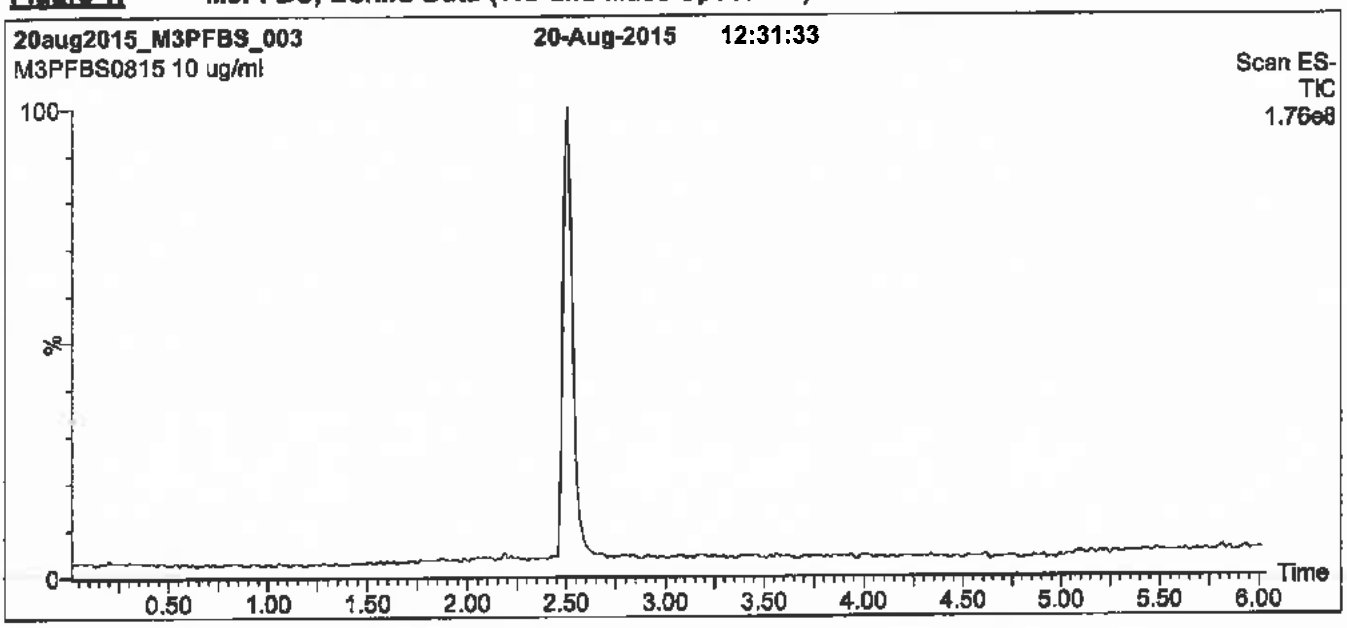
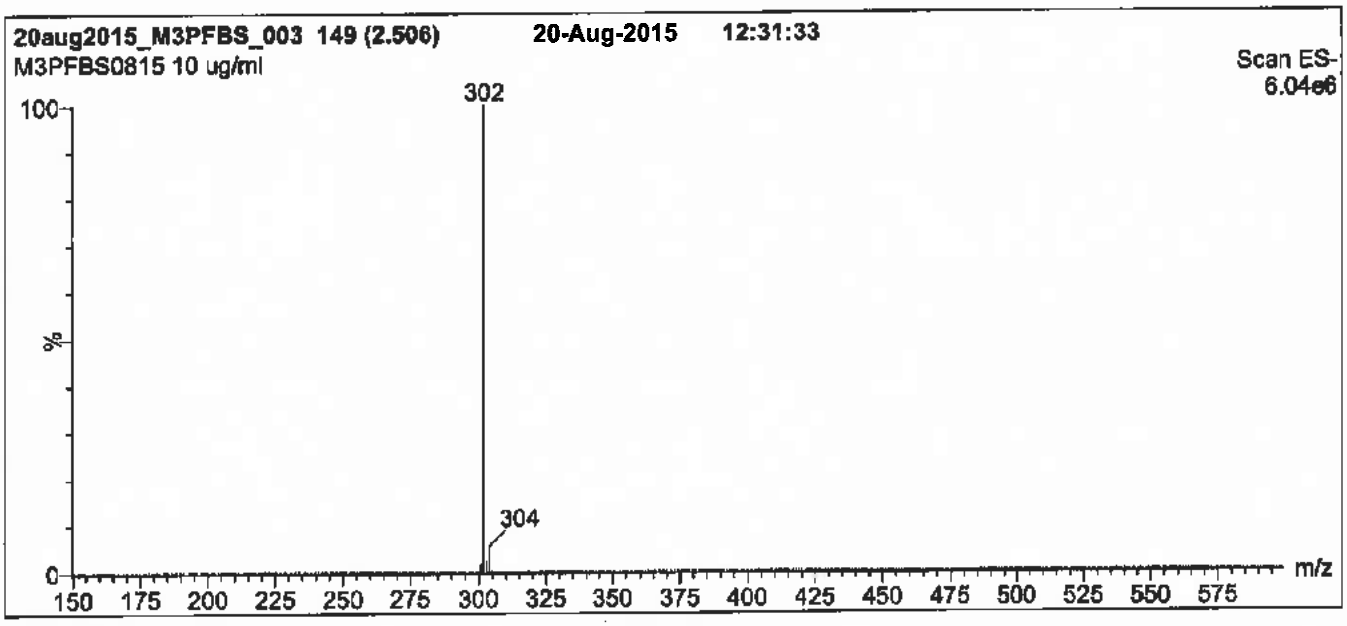




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

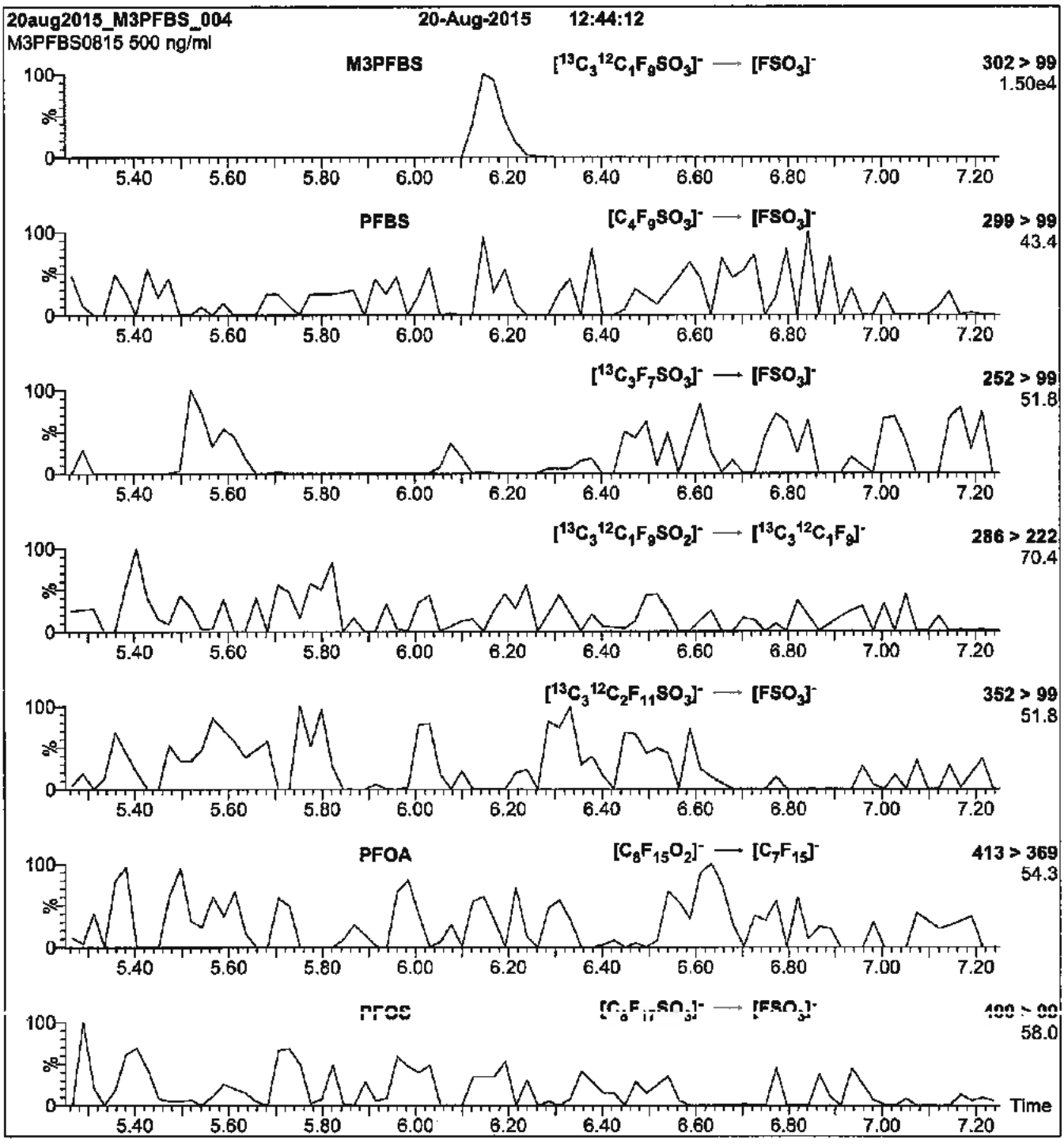
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 650 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M3PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3PFBS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LCMPFDA_00018

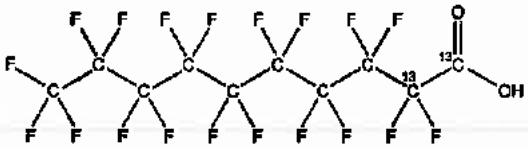
1106159
ID: LCMPFDA_00018
Exp: 07/13/22 Prpd: CCL
13C2-Perfluorodecanoic a

r: 12/4/17 cc

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0717
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/13/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/13/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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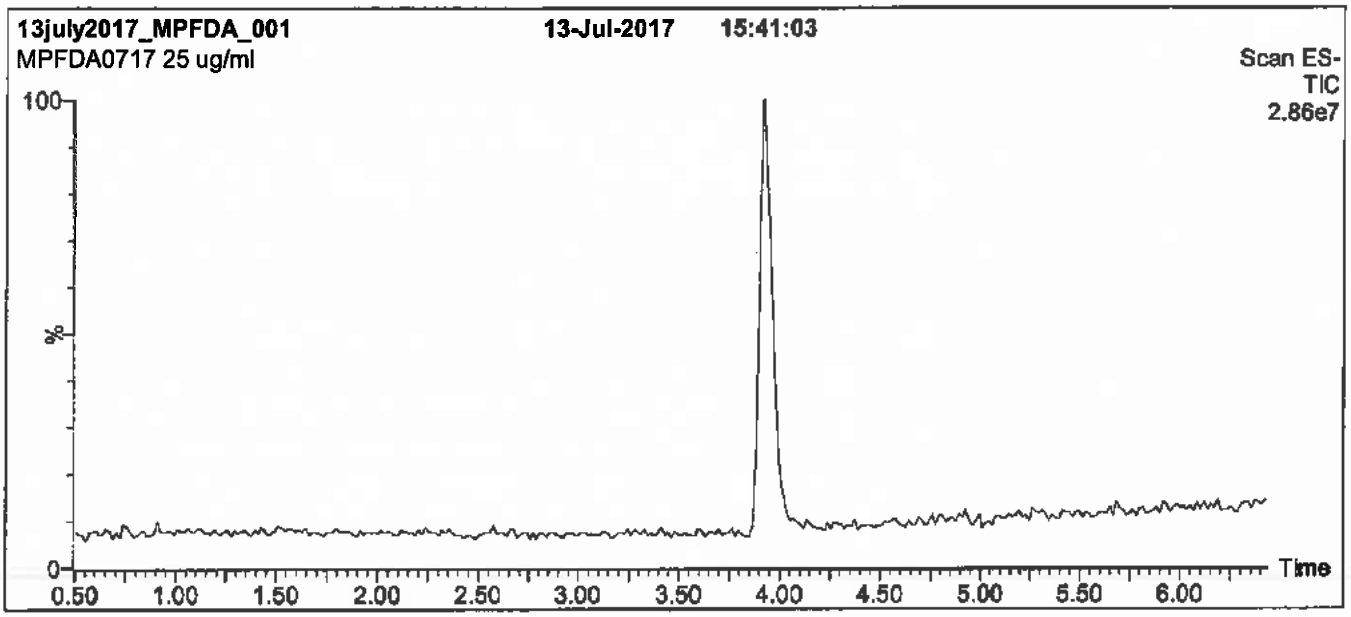

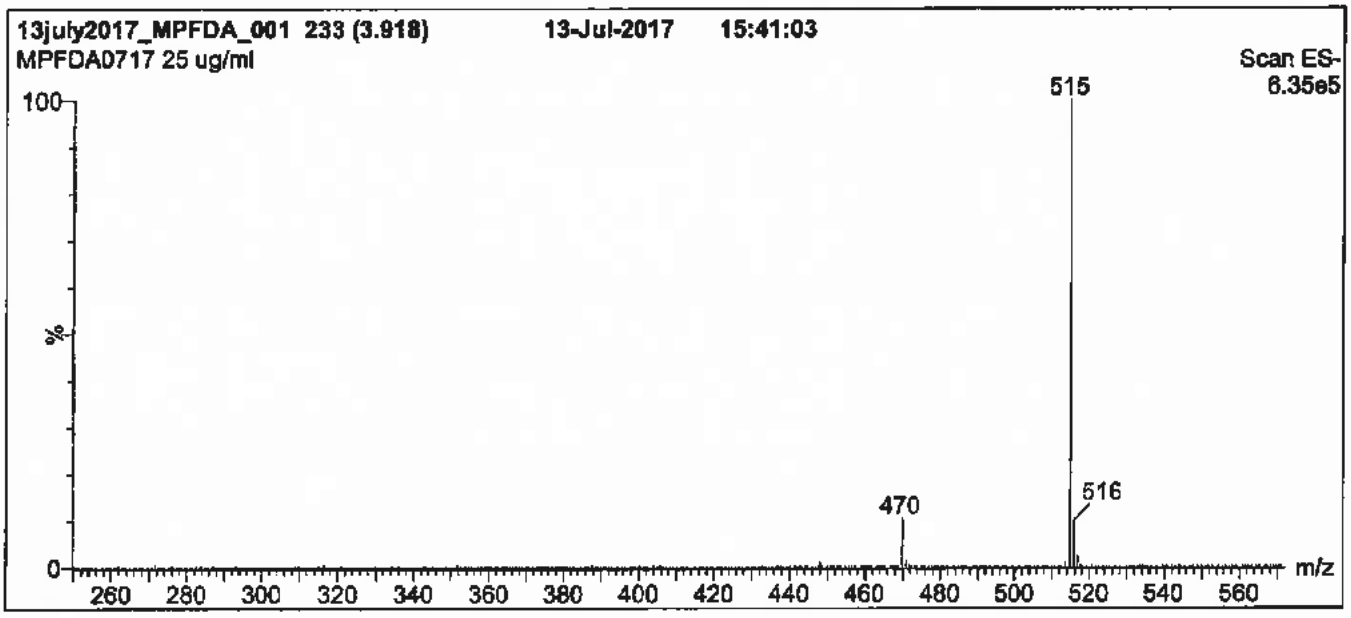

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before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
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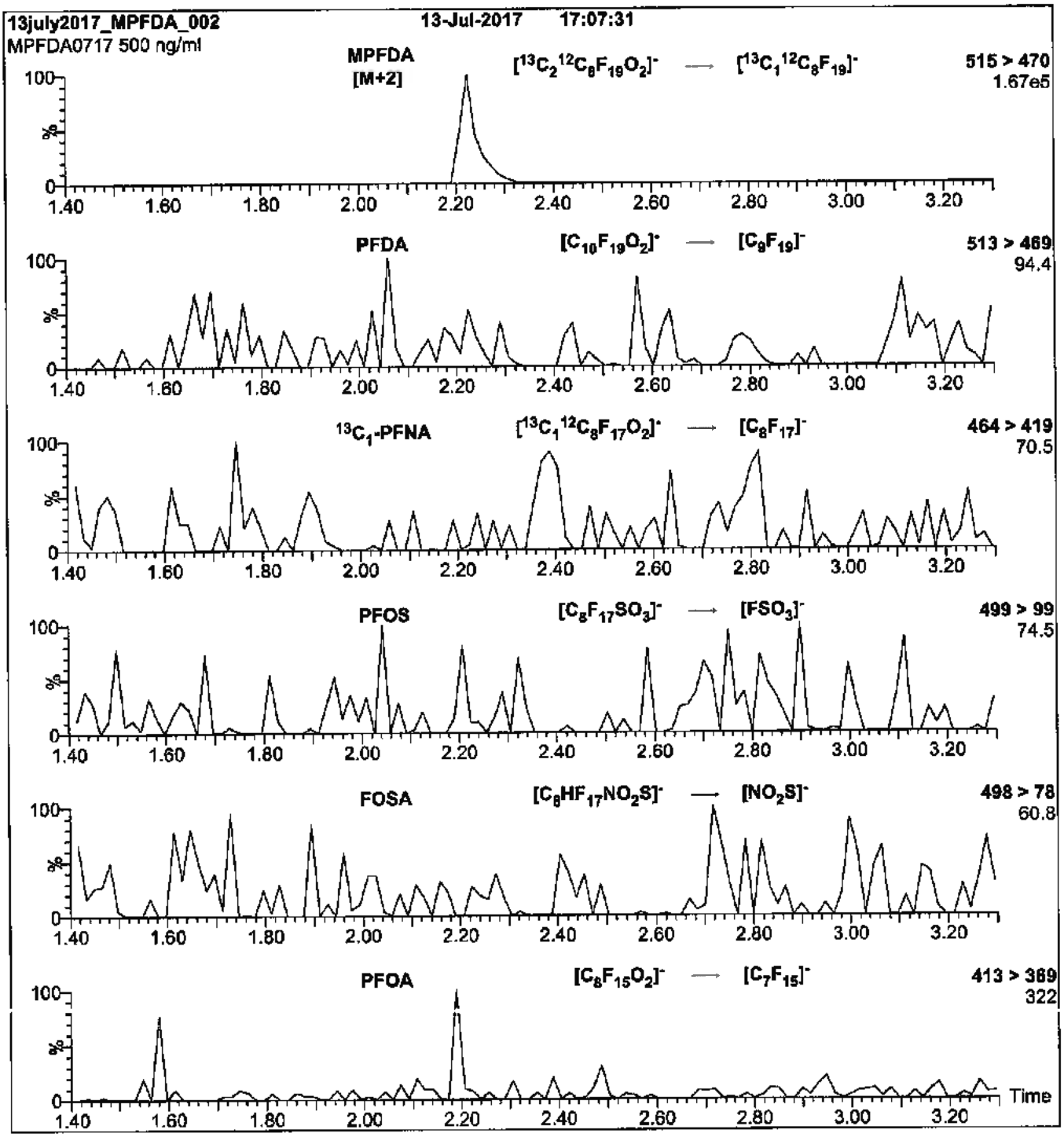
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 13

Reagent

LCMPFDoA_00013

r: 12/4/17 cc

WELLINGTON LABORATORIES

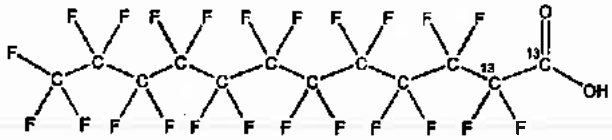
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDoA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid

LOT NUMBER: MPFDoA0517

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	05/23/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/23/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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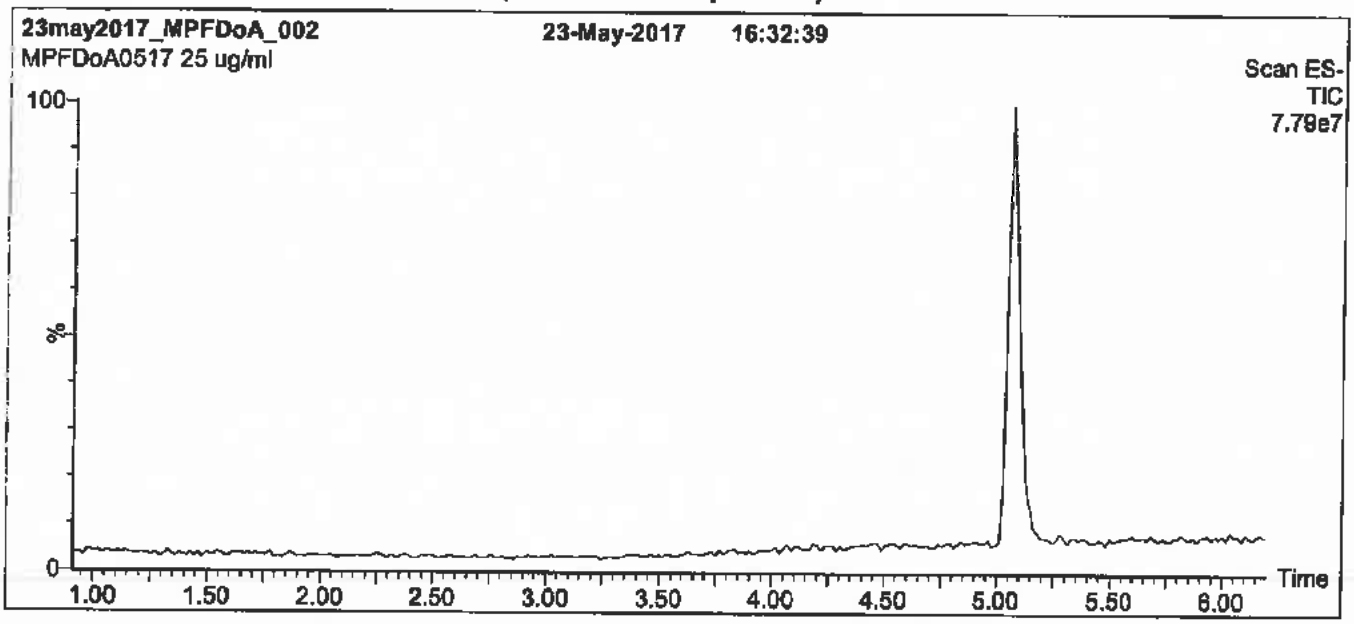
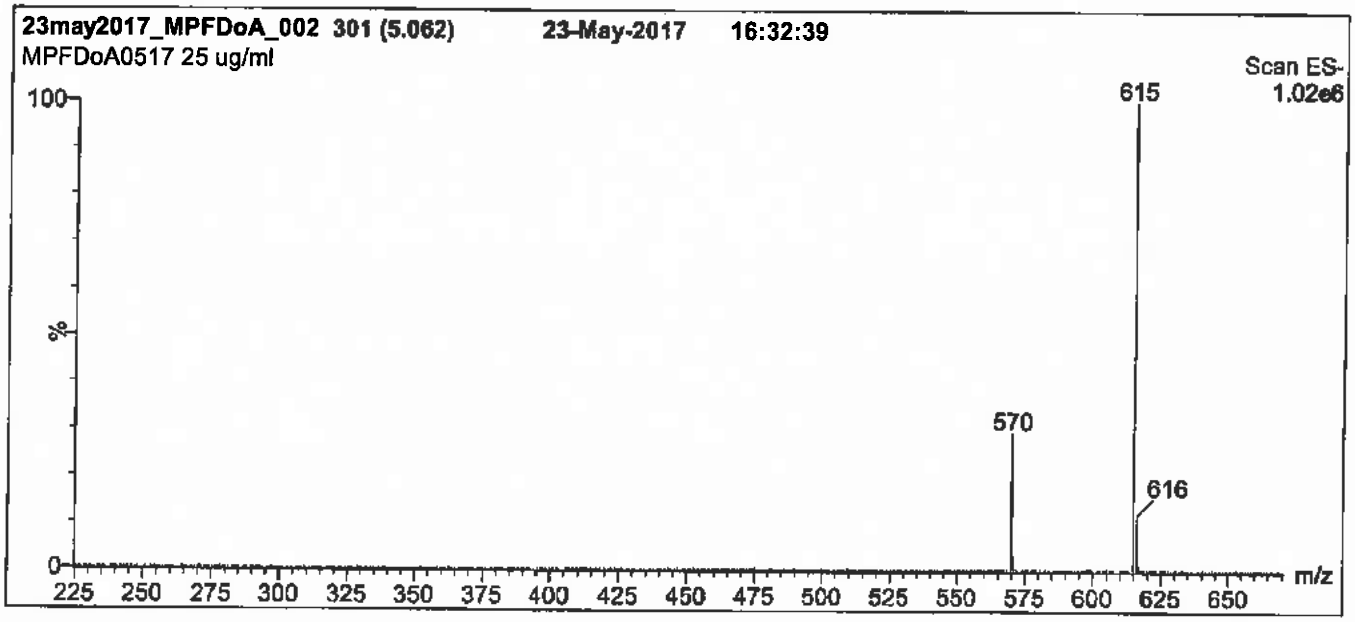
Figure 1: **MPFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.6 min
before returning to initial conditions in 0.5 min.
Time: 10 min

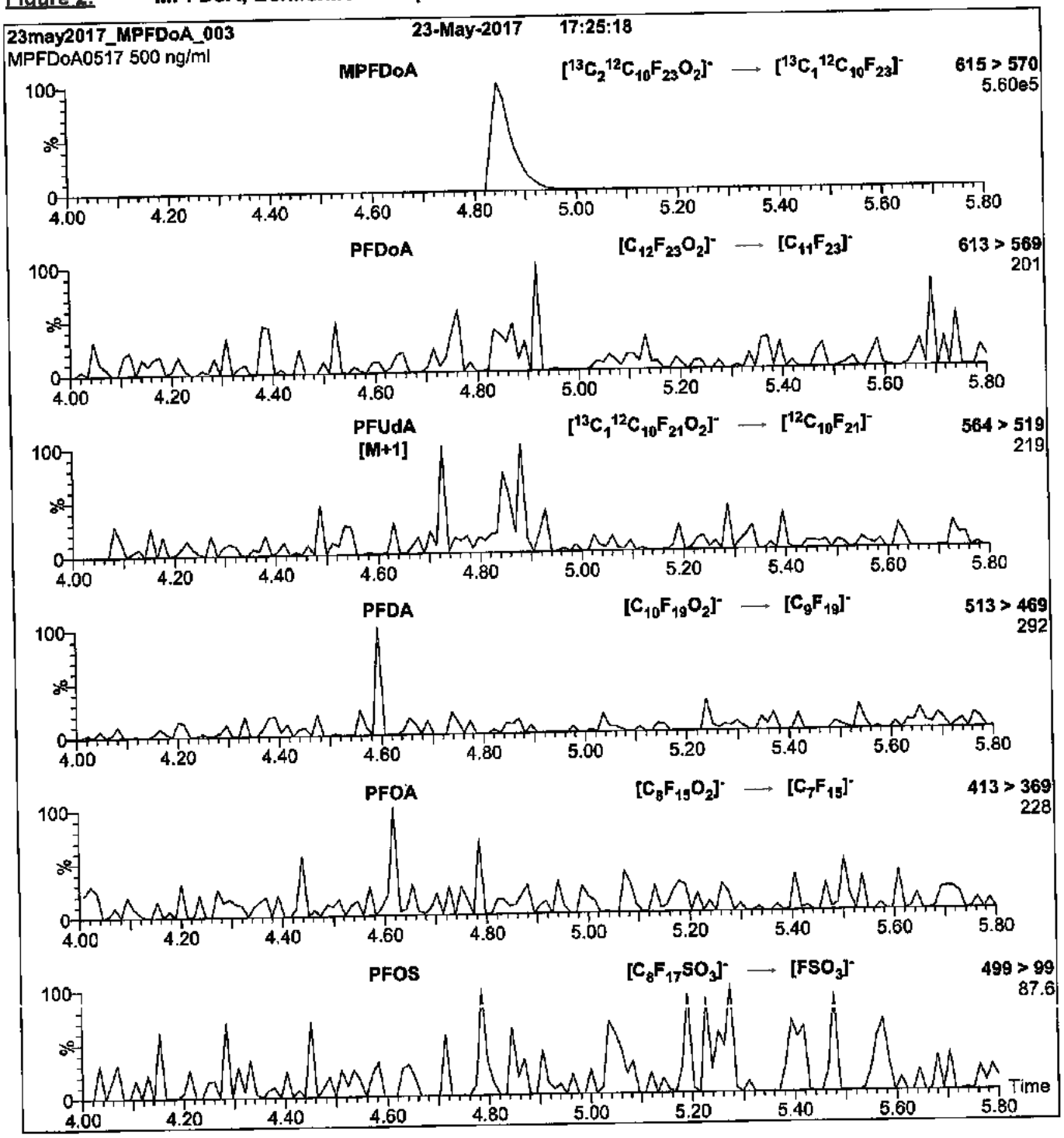
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFDoA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00019

r: 12/14/17 ccc

WELLINGTON LABORATORIES

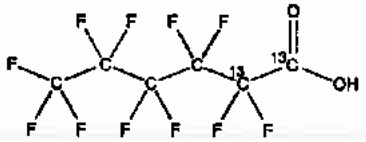
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFHxA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid

LOT NUMBER: MPFHxA1017

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/27/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/27/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and < 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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HAZARDS:

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UNCERTAINTY:

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

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

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

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

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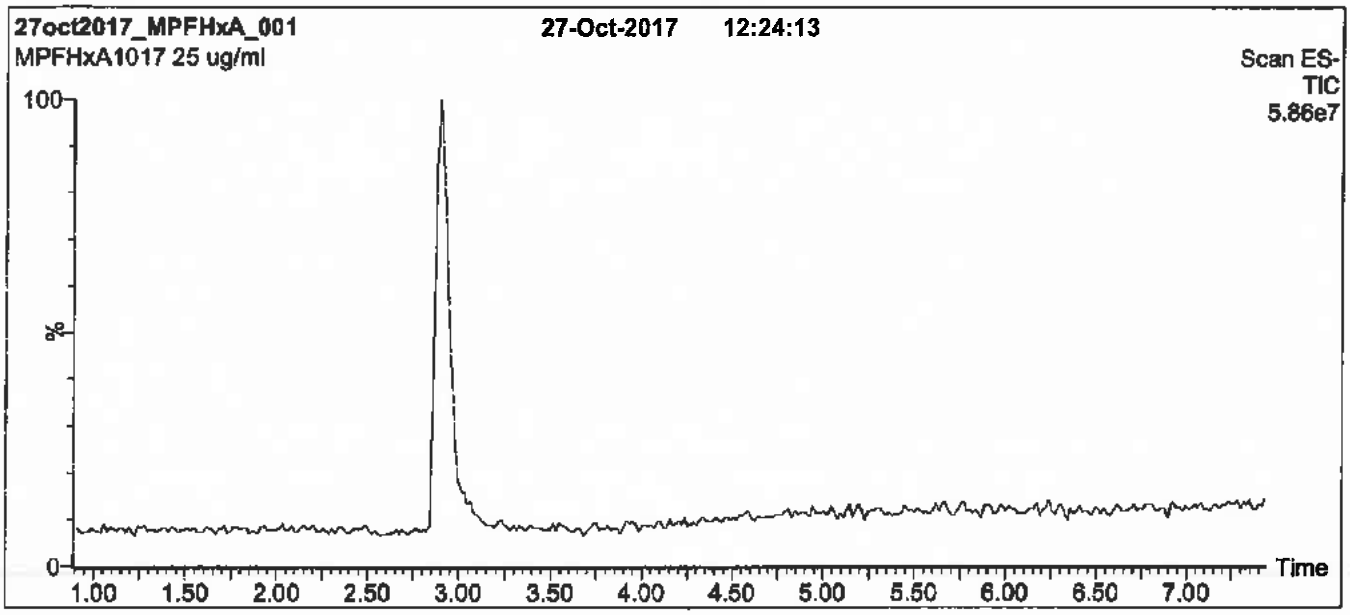

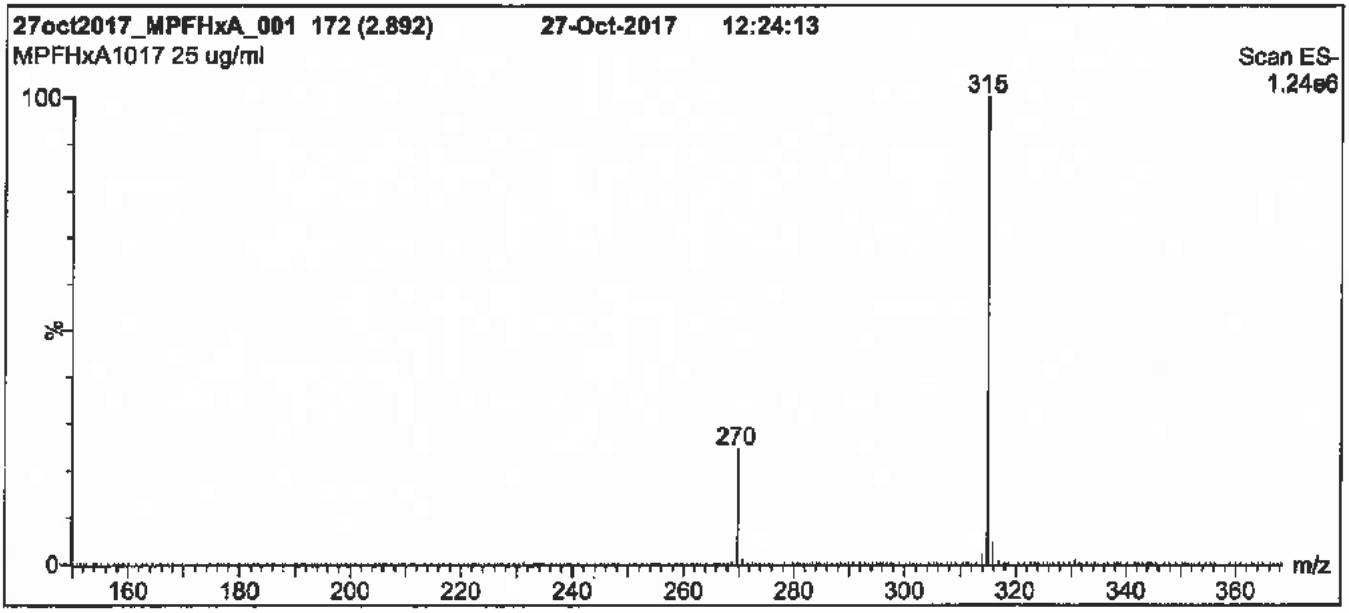

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Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
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Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
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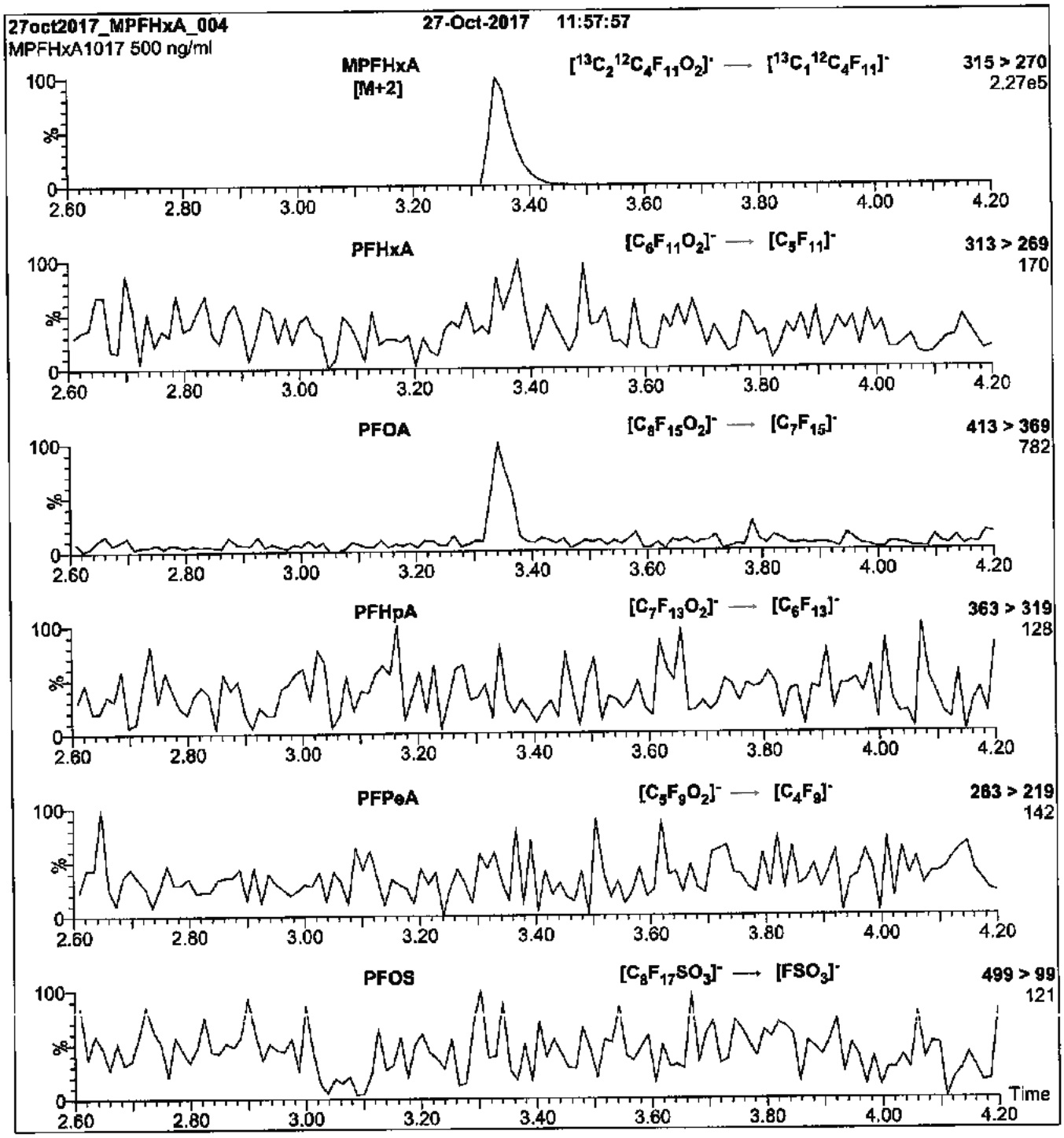
Figure 2: **MPFHxA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFHxA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxS_00013

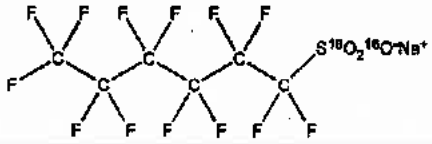
1106238
ID: LCMPFHxS_00013
Exp: 02/17/22 Prpd: CCL
18O2-Perfluorohexanesulfo

r: 12/4/17 ccl

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFHxS	**LOT NUMBER:**	MPFHxS0217
COMPOUND:	Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_6F_{13}S^{18}O_2{}^{16}ONa$	**MOLECULAR WEIGHT:**	426.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (MPFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>94% ($^{18}O_2$)
LAST TESTED: (mm/dd/yyyy)	02/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	02/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{18}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 1.0% of sodium perfluoro-1-octane[$^{18}O_2$]sulfonate ($^{18}O_2$-PFOS).
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

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Certified By: B.G. Chittim **Date:** 03/02/2017 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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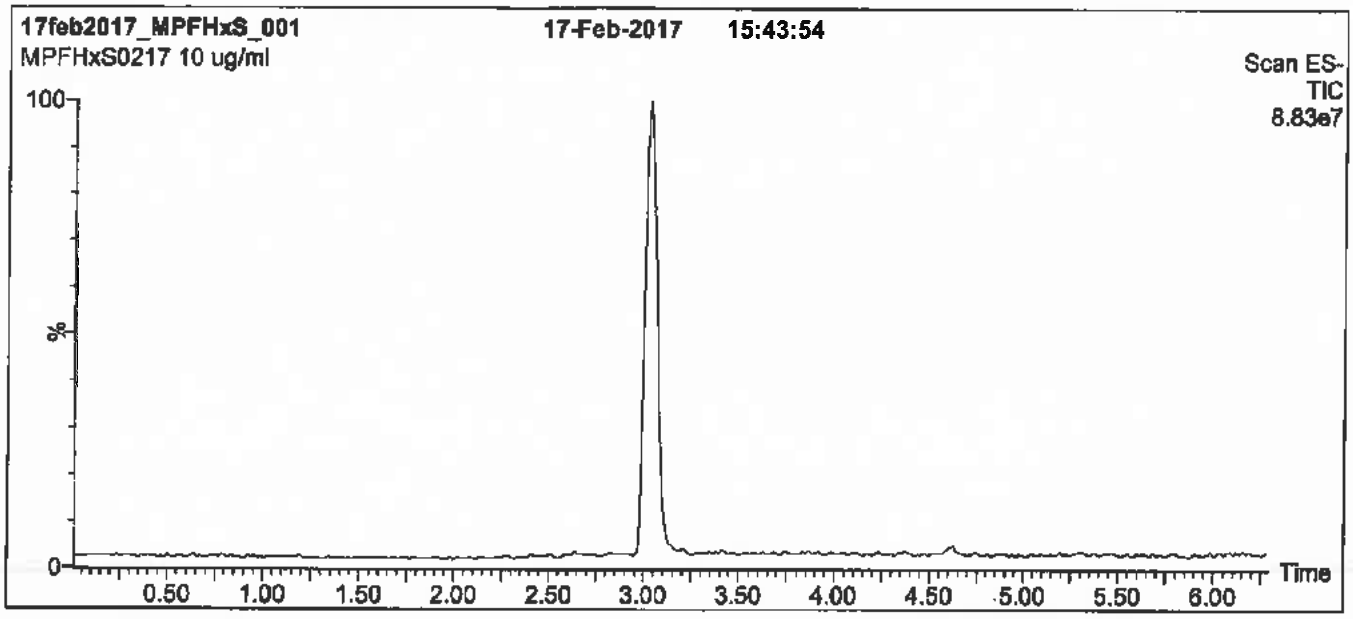
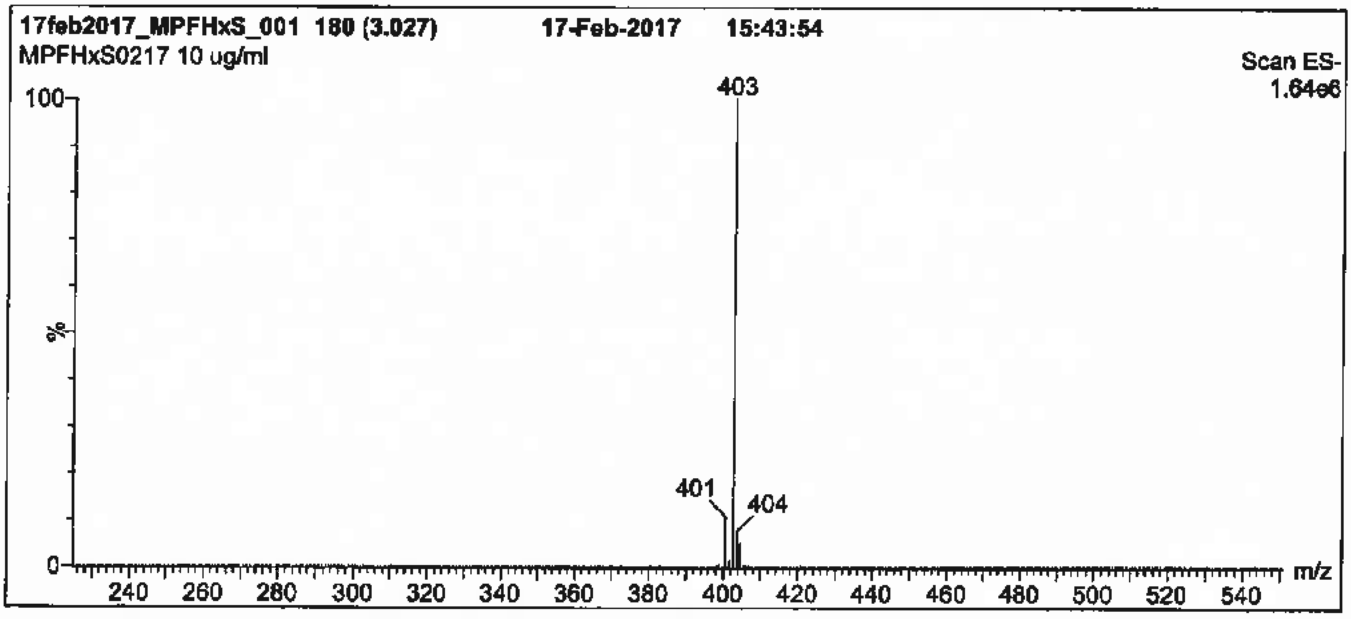




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

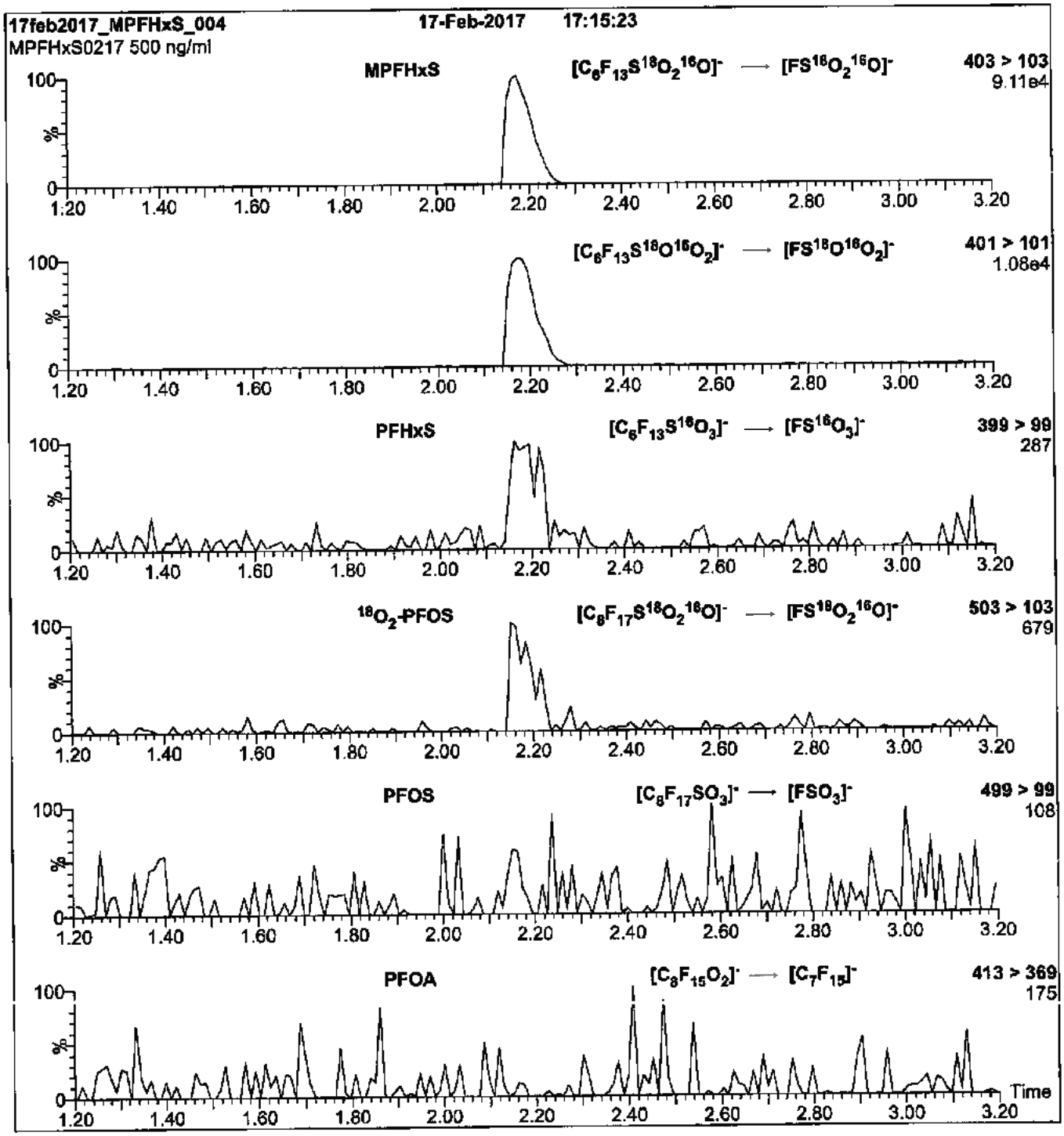
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFHxS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

Reagent

LCMPFNA_00013

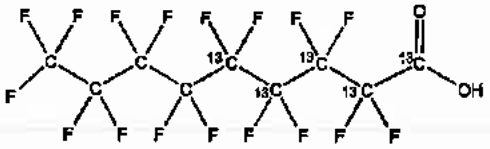
1106307
ID: LCMPFNA_00013
Exp: 09/30/21 Prpd: CCL
13C5-Perfluorononanoic acid

r: 11/4/11 ccc

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFNA	**LOT NUMBER:**	MPFNA0916
COMPOUND:	Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_4HF_{17}O_2$	**MOLECULAR WEIGHT:**	469.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5-$^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
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ADDITIONAL INFORMATION:

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

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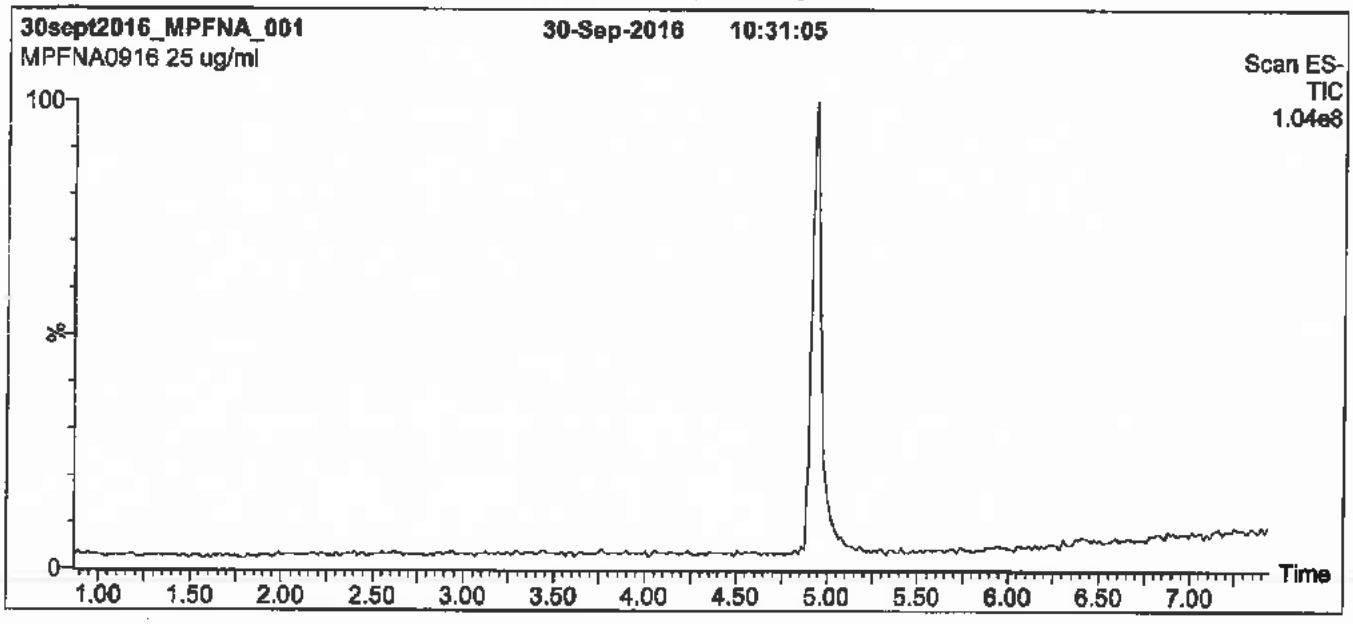
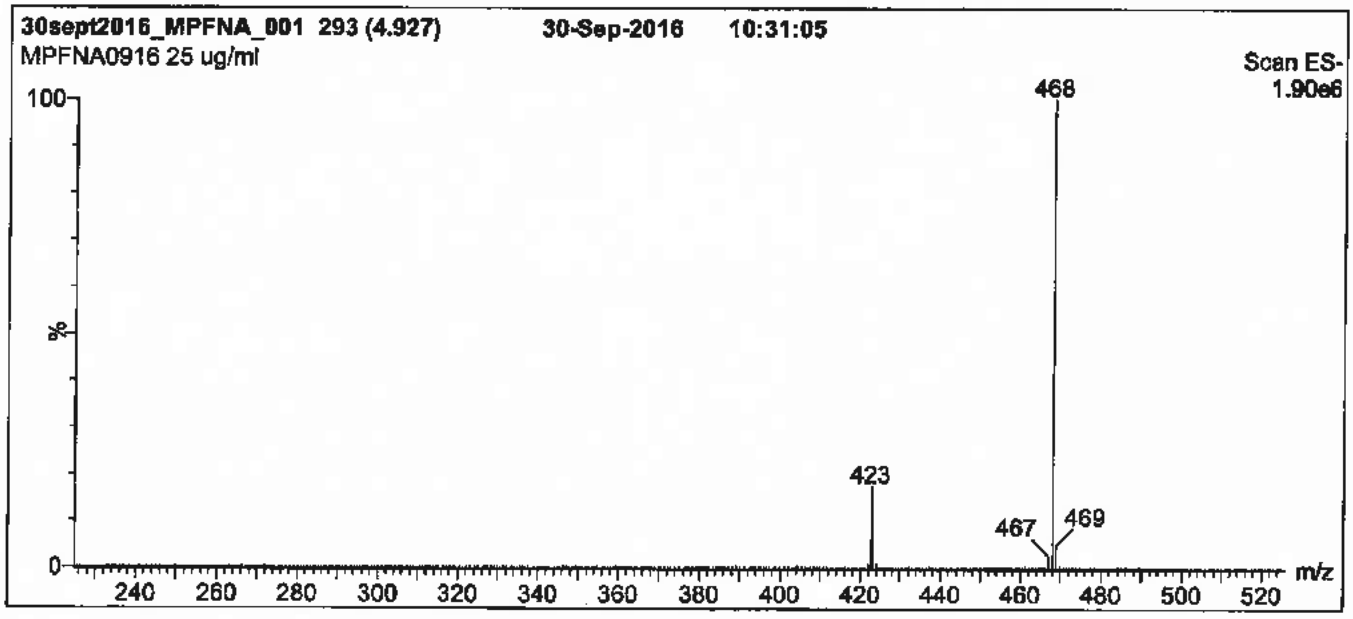
Figure 1: **MPFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

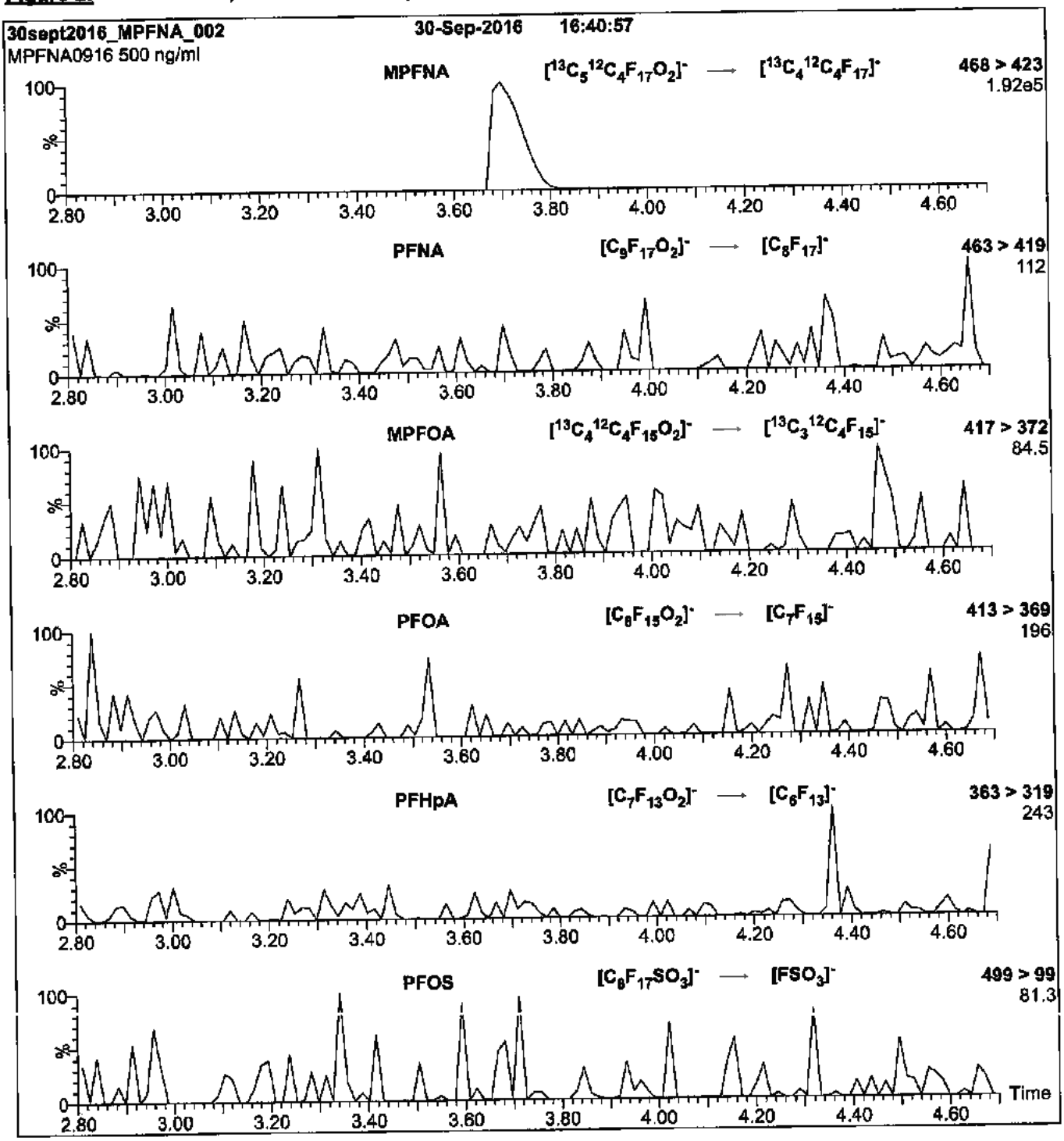
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00017

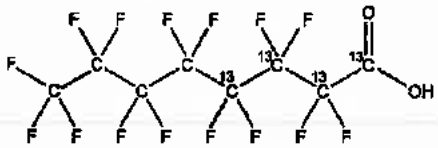
1106032
ID: LCMPFOA_00017
Exp: 10/17/22 Prod: SKV
13C4-Perfluorooctanoic ac

R: 12/4/19 cc

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFOA	**LOT NUMBER:**	MPFOA1017
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4HF_{16}O_2$	**MOLECULAR WEIGHT:**	418.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	10/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/19/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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CALA

ANAB ACCREDITED

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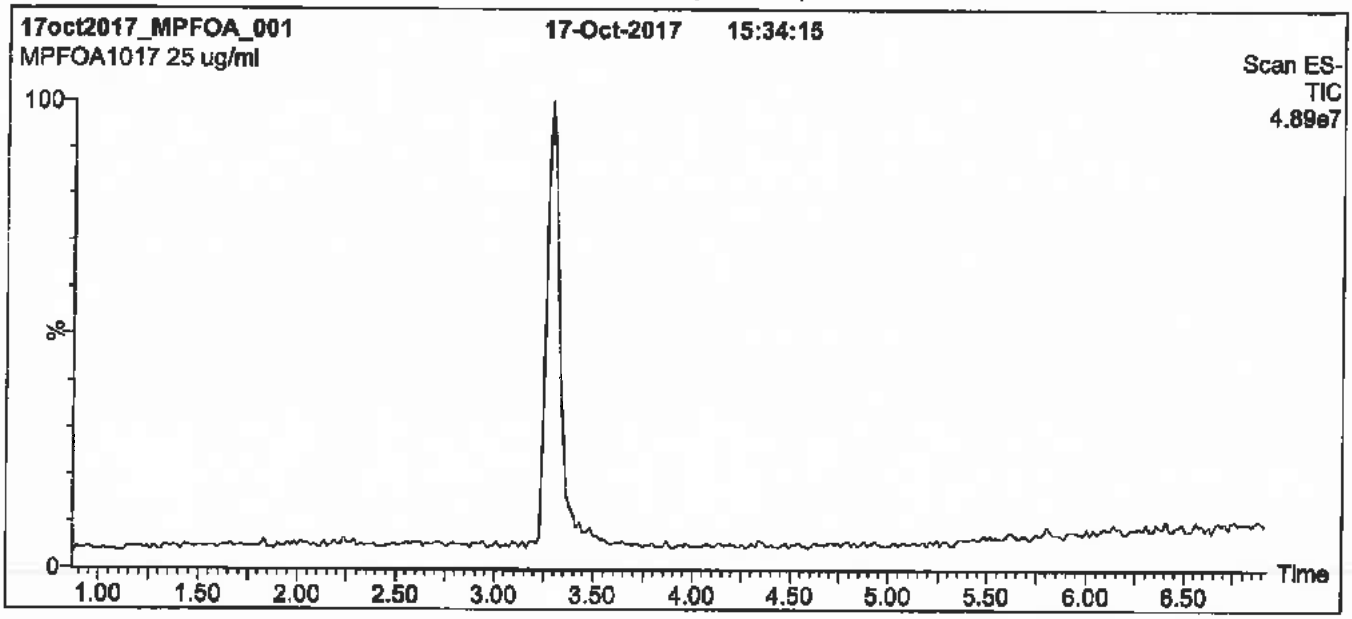
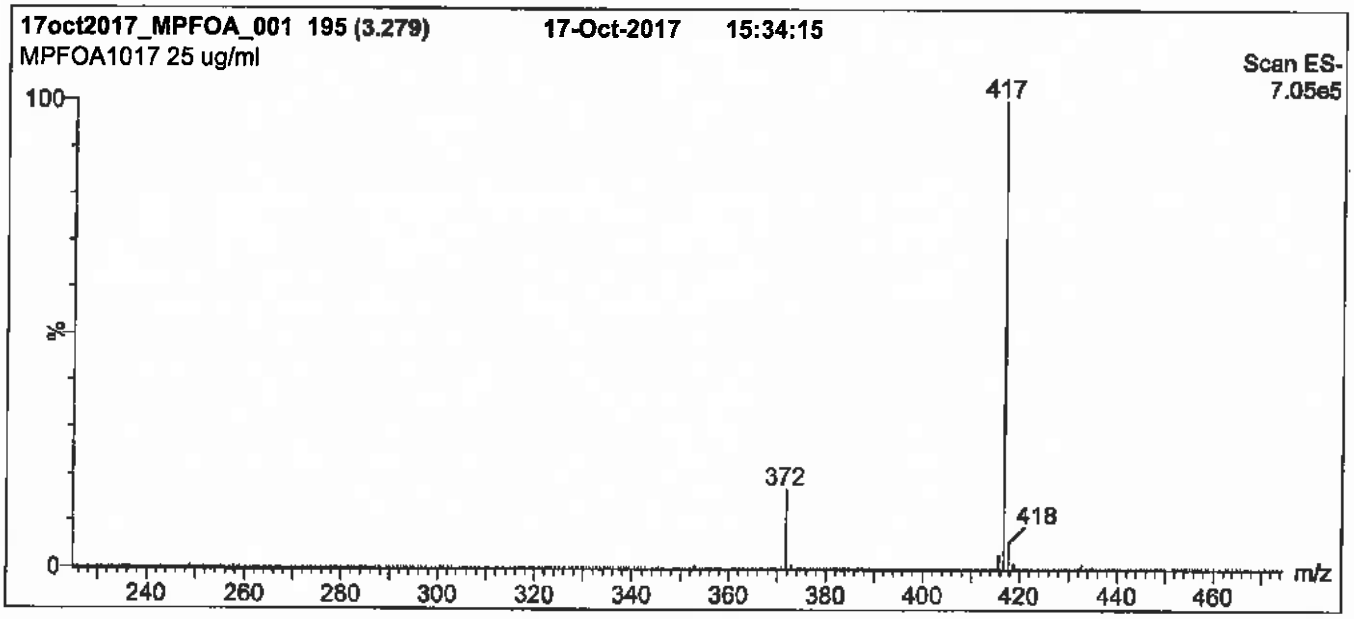
Figure 1: **MPFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

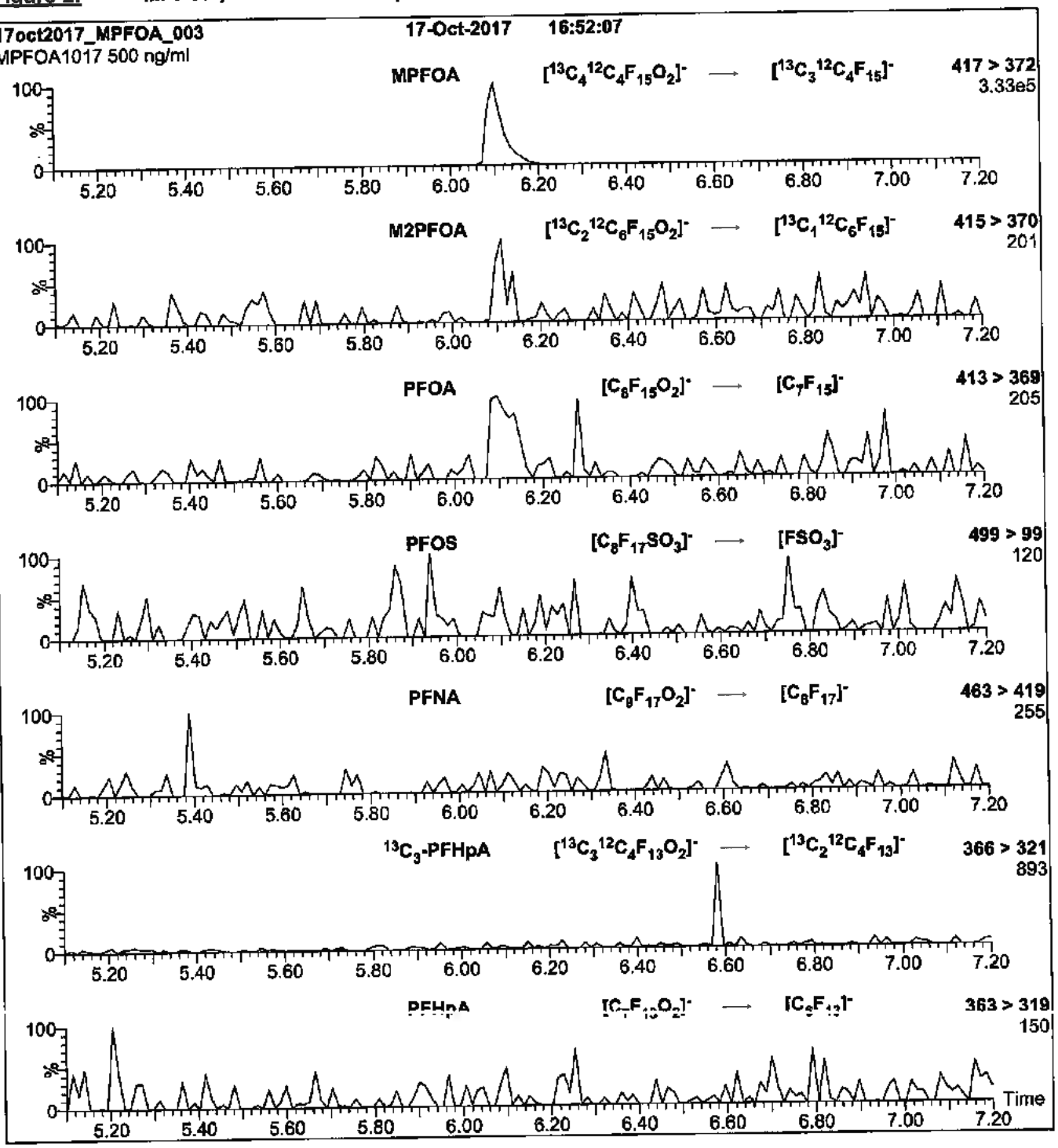
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFOA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

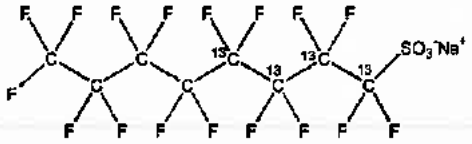
LCMPFOS_00025

P: 12/4/17 CCL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFOS	**LOT NUMBER:**	MPFOS1017
COMPOUND:	Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	10/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.4% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/18/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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SYNTHESIS / CHARACTERIZATION:

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

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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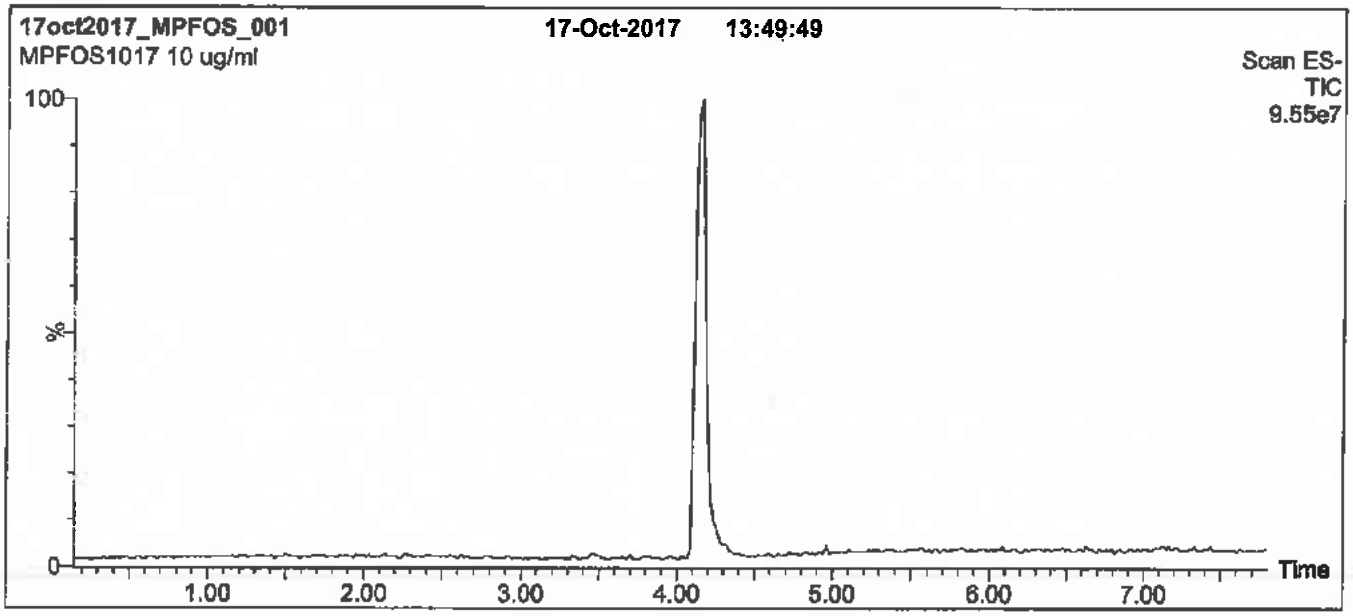
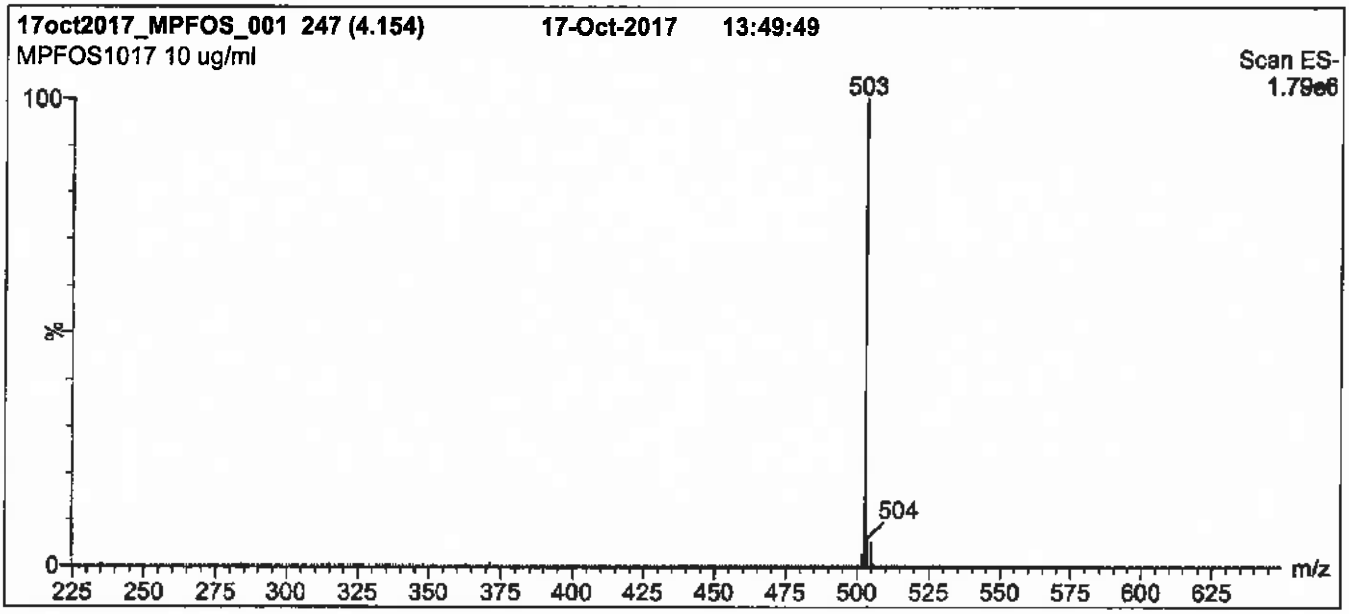




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

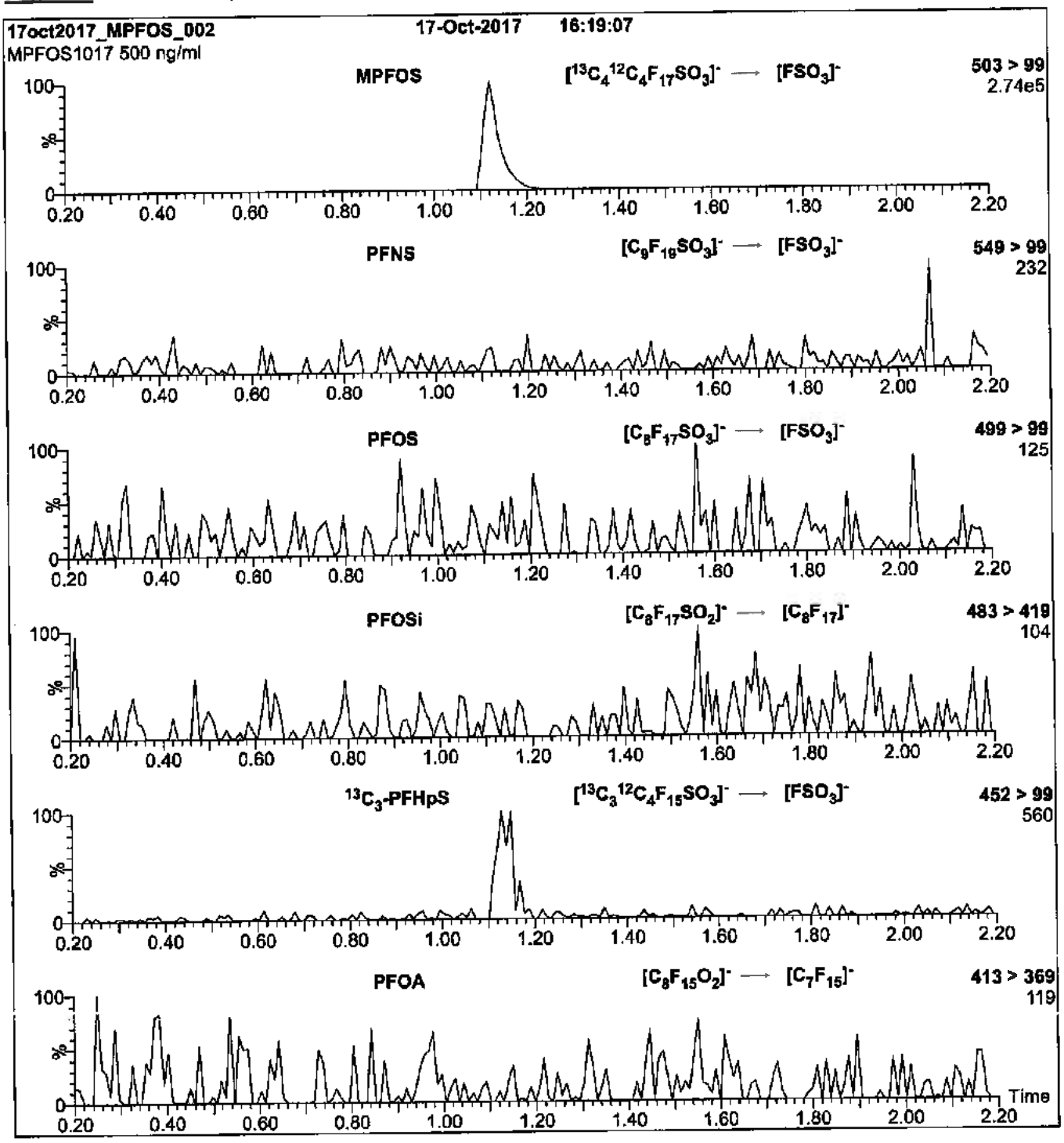
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFOS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00014

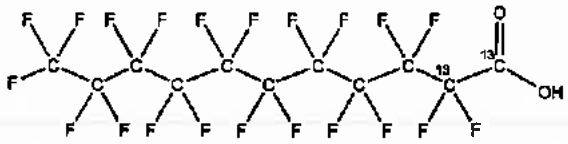
1106187
ID: LCMPFUdA_00014
Exp: 11/22/21; Pipe: CCL
13C2-Perfluoroundecanoic

R: 12/4/17 cc

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFUdA	**LOT NUMBER:**	MPFUdA1116
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	**MOLECULAR WEIGHT:**	566.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	11/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	11/22/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-$^{13}C_1$-PFUdA (~1%; see Figure 2), 2-$^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/07/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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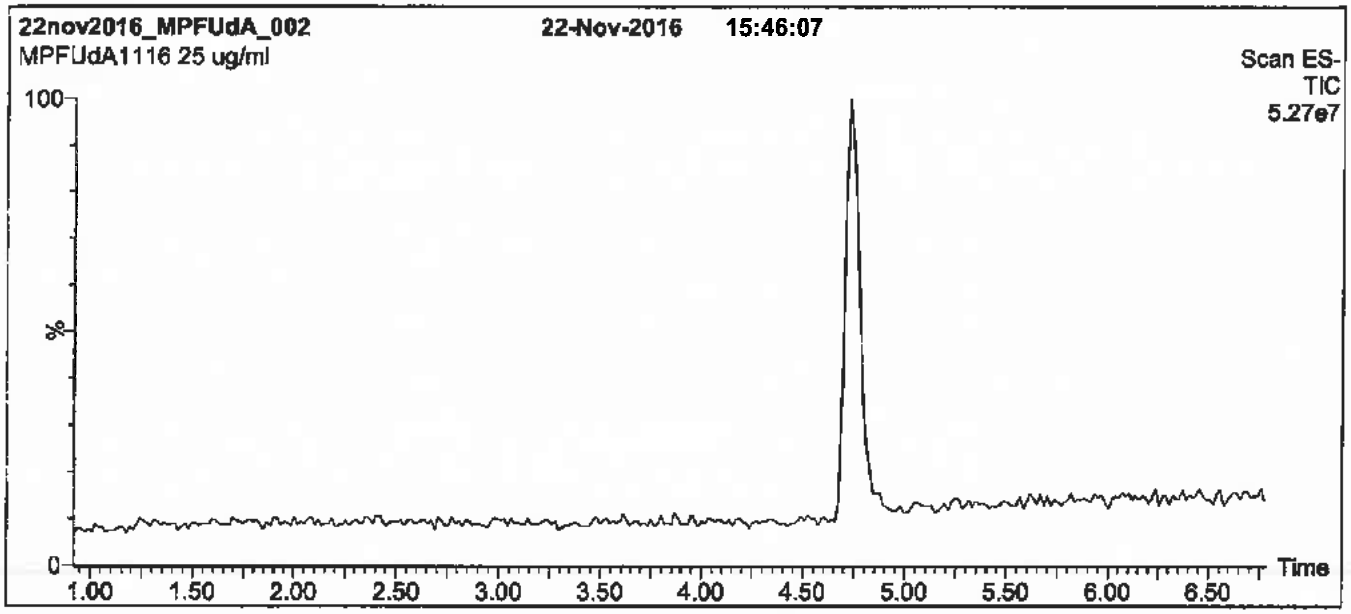
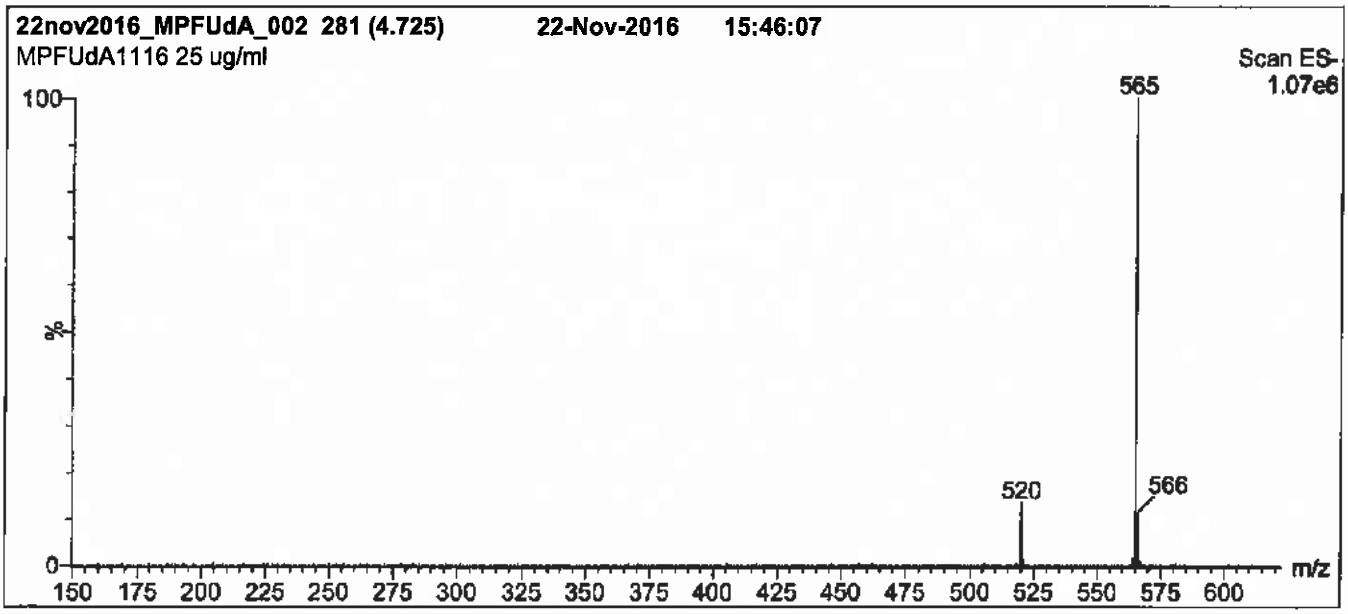
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

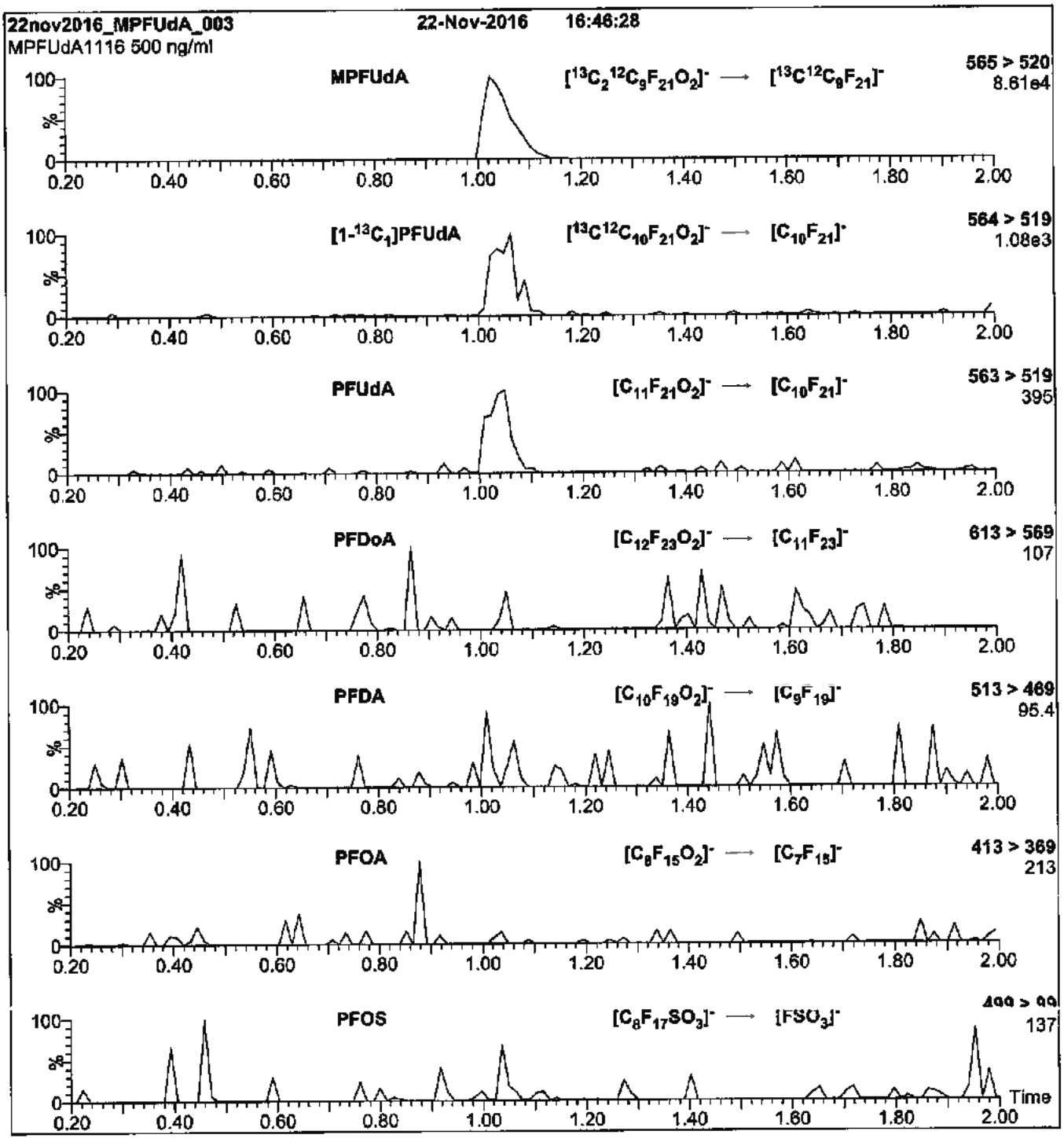
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFUdA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

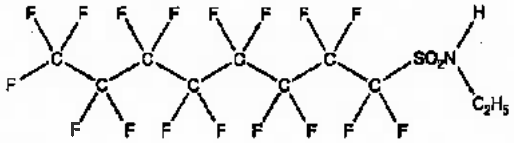
LCN-EtFOSA-M_00005

R: 12/20/16 SK✓

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	N-EtFOSA-M	**LOT NUMBER:**	NEtFOSA0516M
COMPOUND:	N-ethylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	4151-50-2



MOLECULAR FORMULA:	$C_{10}H_5F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

CALA ACCREDITED

ANAB ACCREDITED

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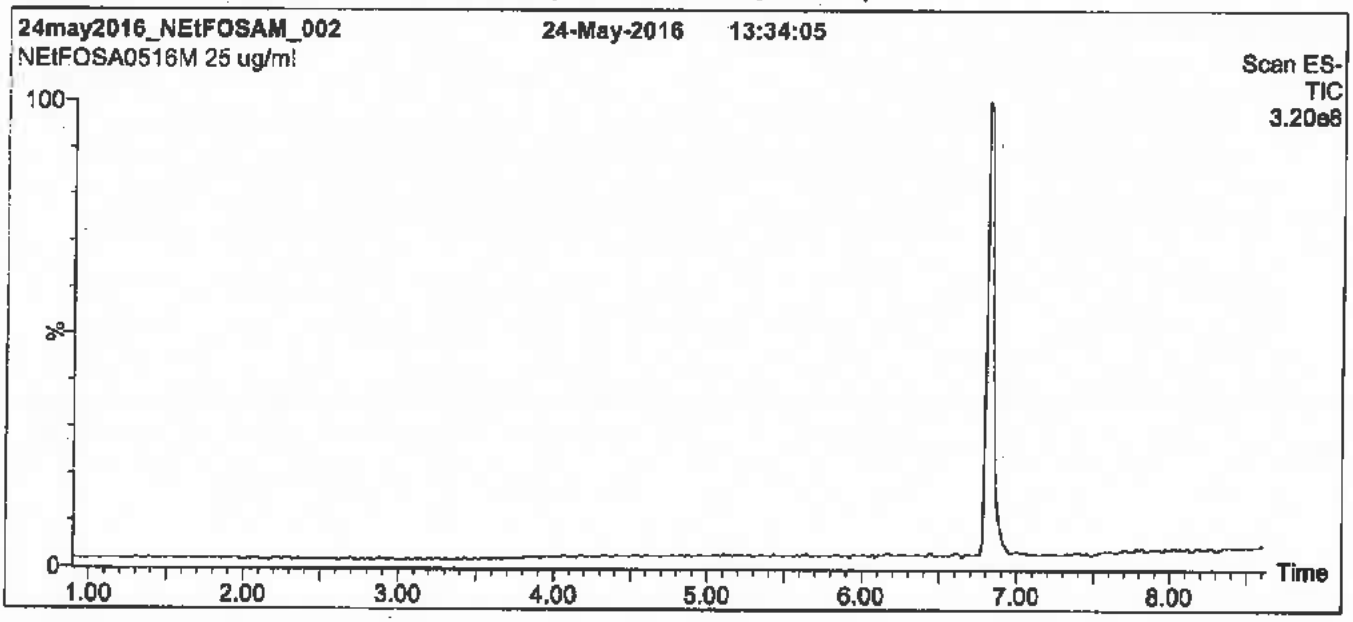
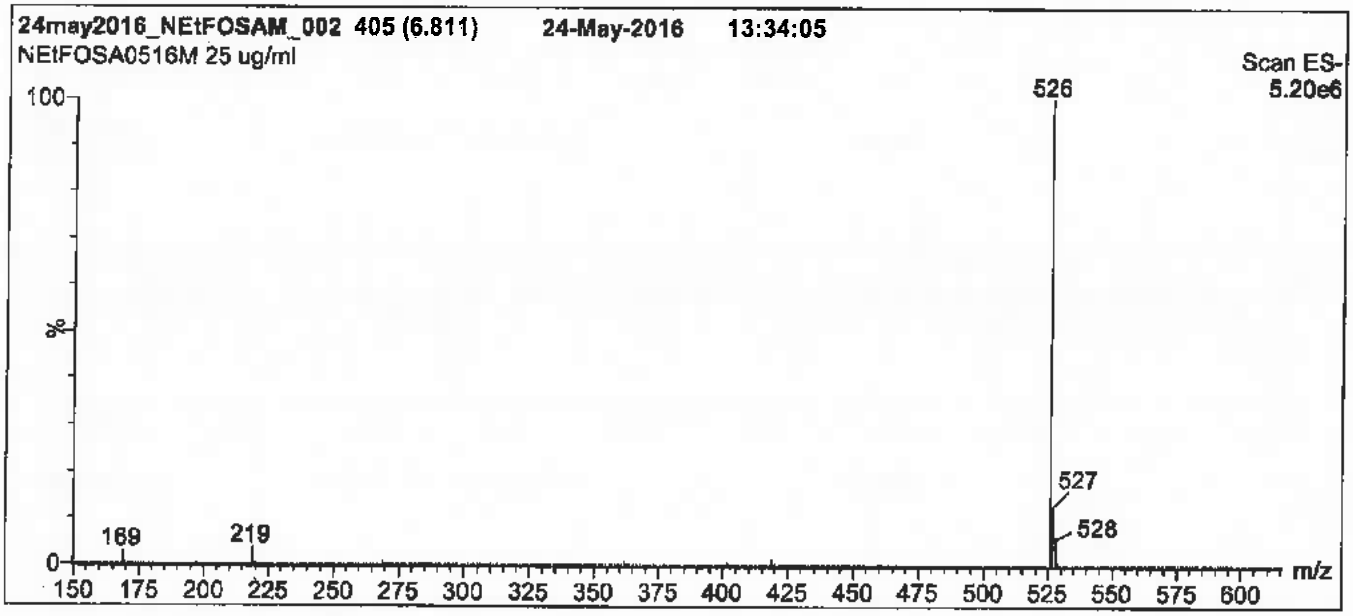
Figure 1: **N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

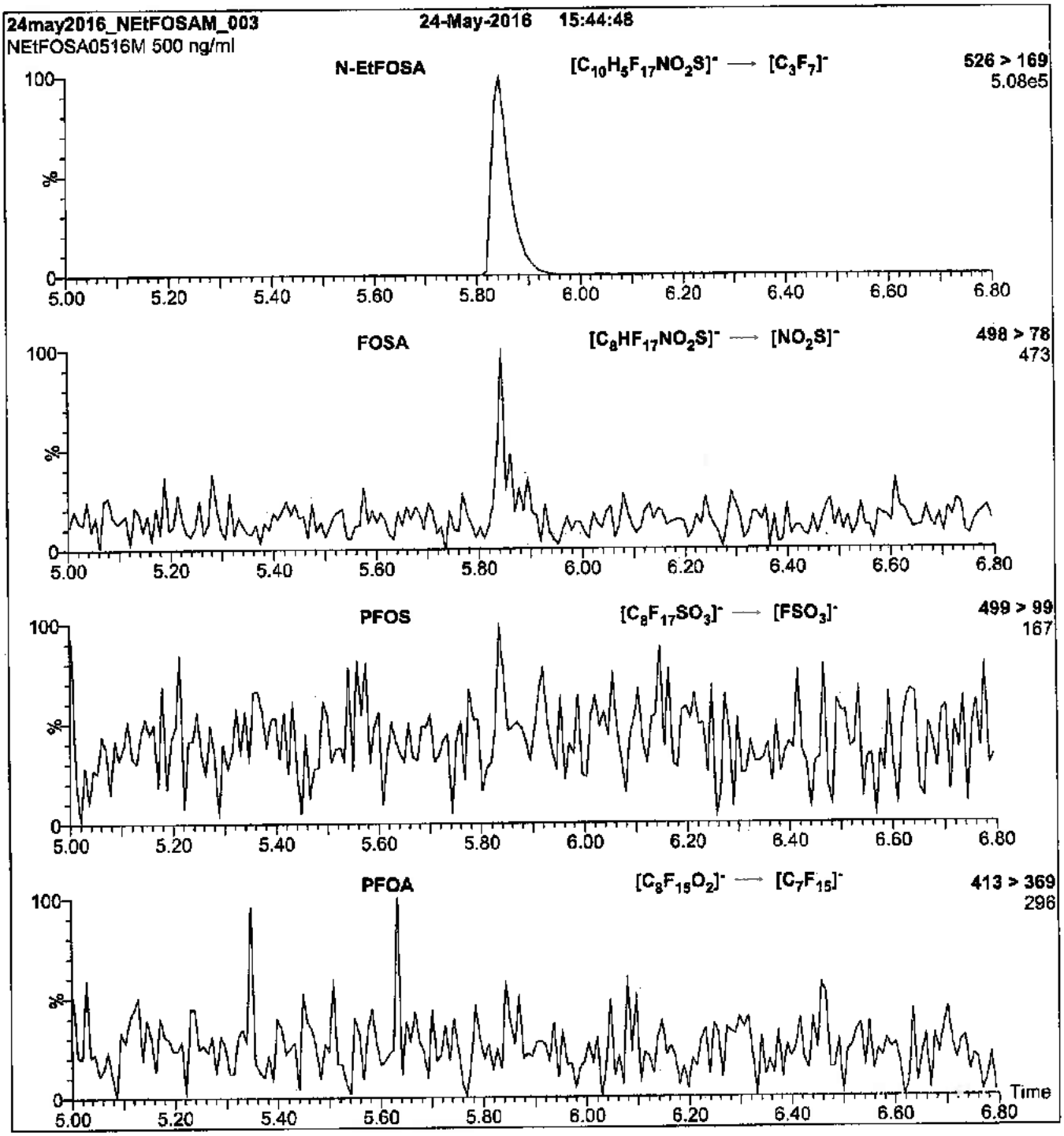
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-EtFOSA-M)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

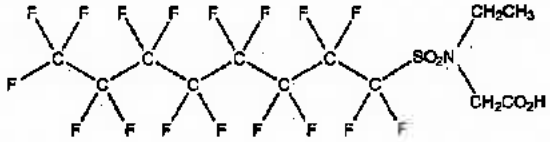
LCN-EtFOSAA_00004

P: 12/29/16 SFV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	N-EtFOSAA	**LOT NUMBER:**	NEtFOSAA0916
COMPOUND:	N-ethylperfluoro-1-octanesulfonamidoacetic acid		
STRUCTURE:		**CAS #:**	2991-50-6



MOLECULAR FORMULA:	$C_{12}H_8F_{17}NO_4S$	**MOLECULAR WEIGHT:**	585.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/07/2016 (mm/dd/yyyy)

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

INTENDED USE:

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HOMOGENEITY:

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

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CALA

ANAB ACCREDITED

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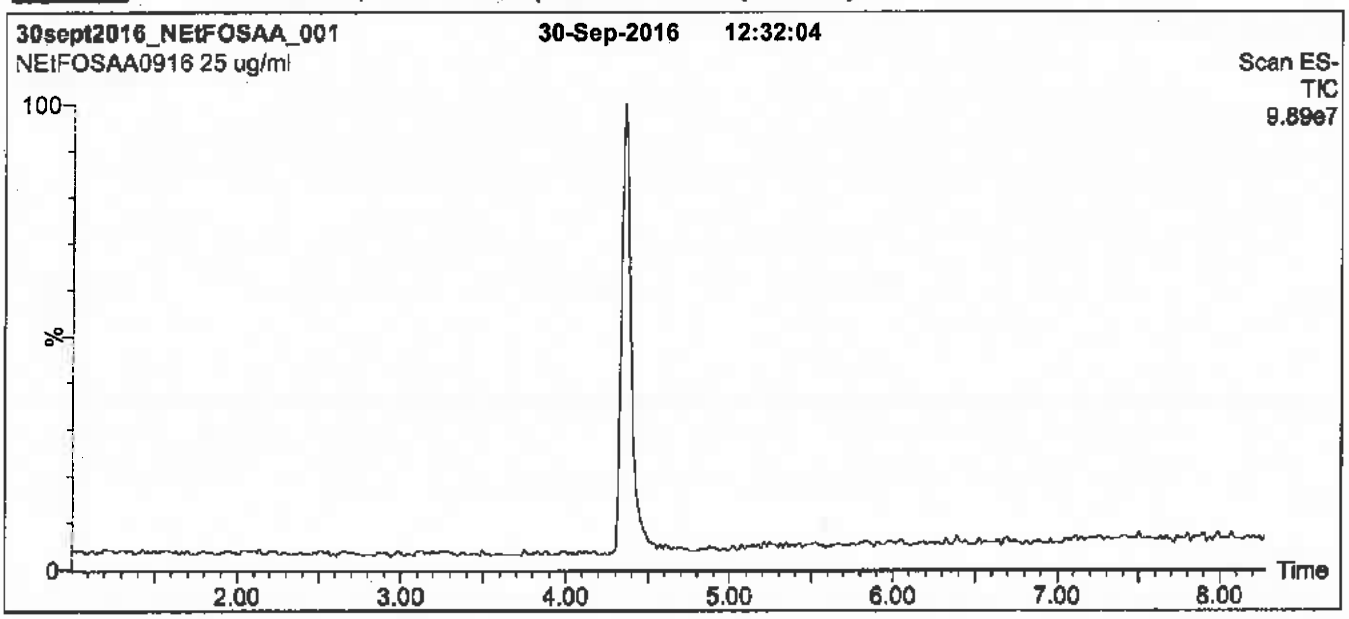
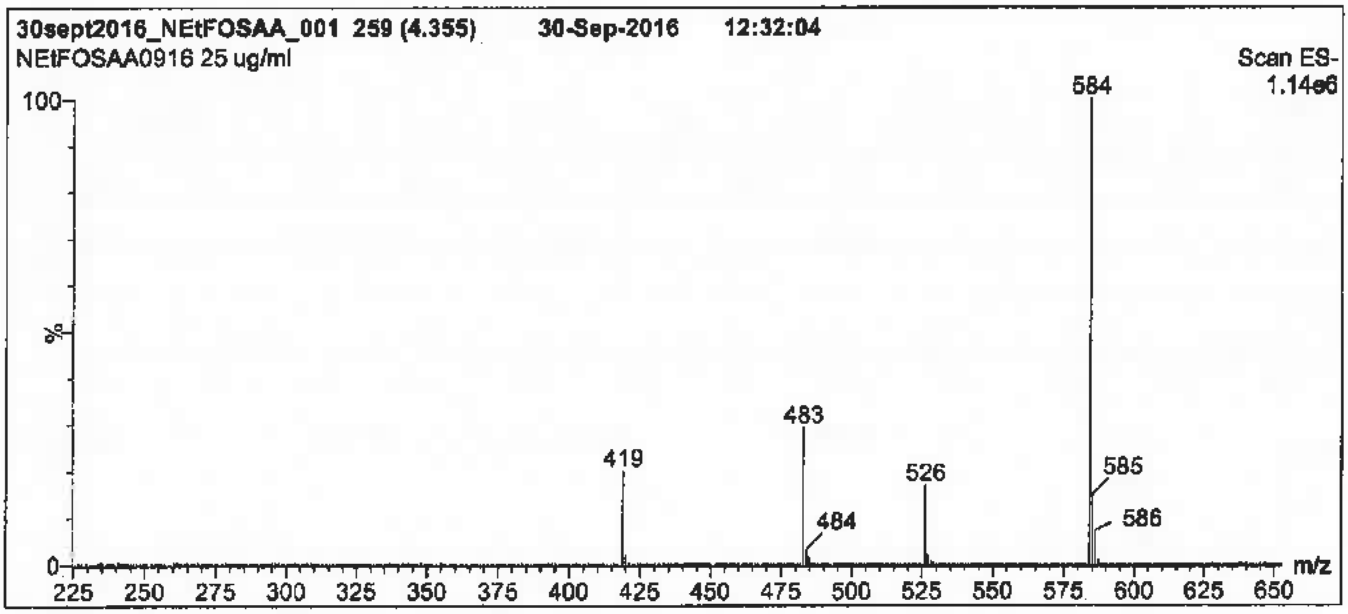
Figure 1: **N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

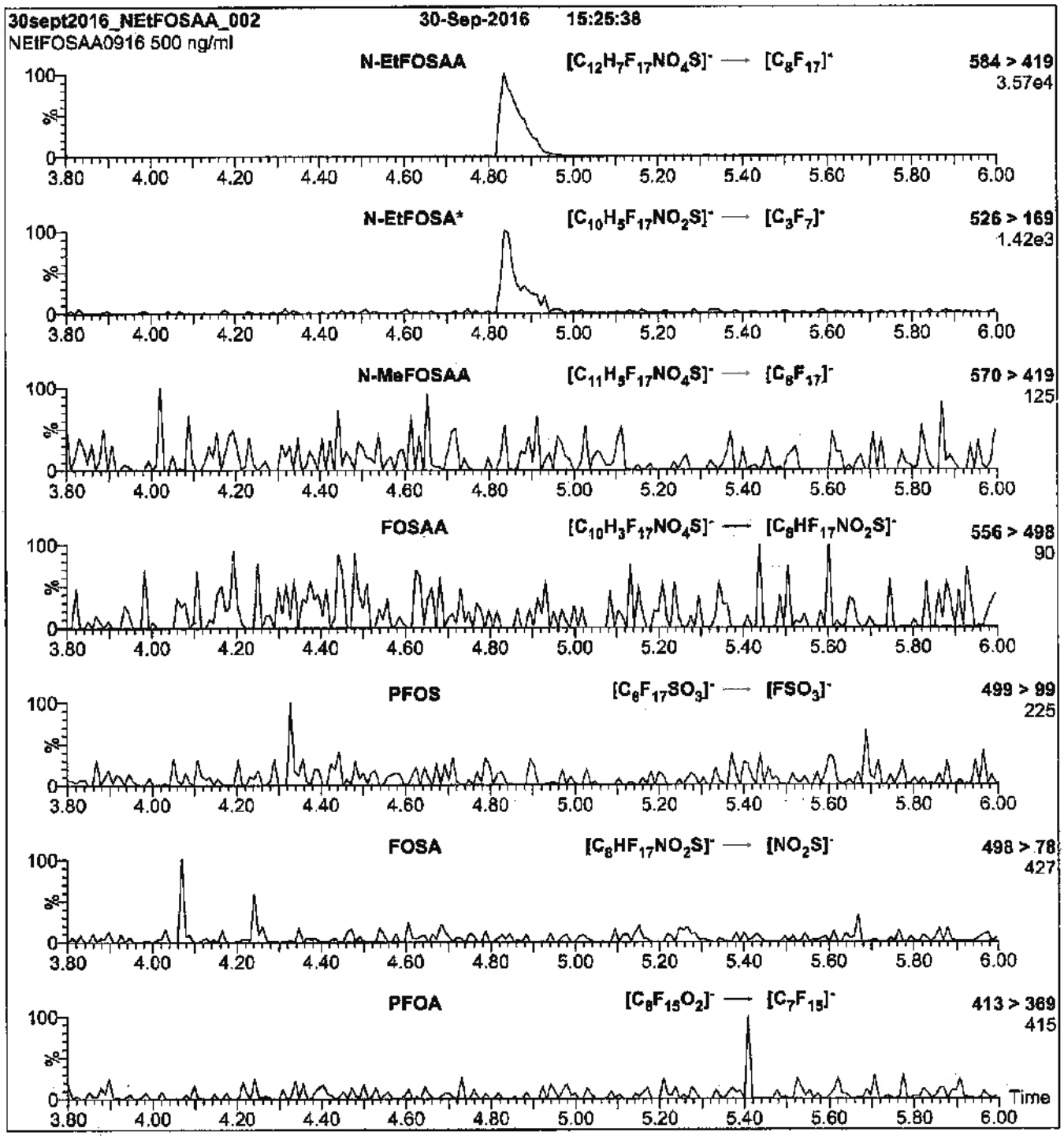
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

Reagent

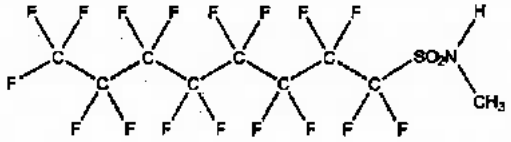
LCN-MeFOSA-M_00004

P: 12/20/16 SRV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	N-MeFOSA-M	**LOT NUMBER:**	NMeFOSA0516M
COMPOUND:	N-methylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	31506-32-8



MOLECULAR FORMULA:	$C_8H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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CALA

ANAB ACCREDITED

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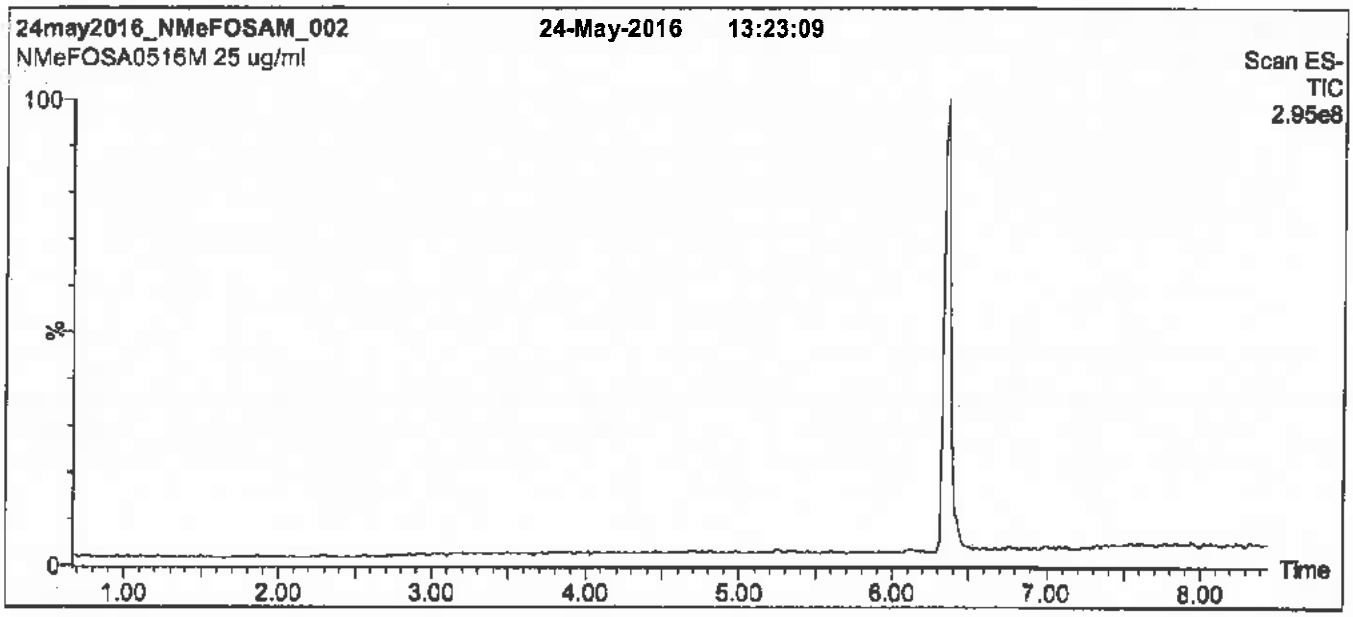
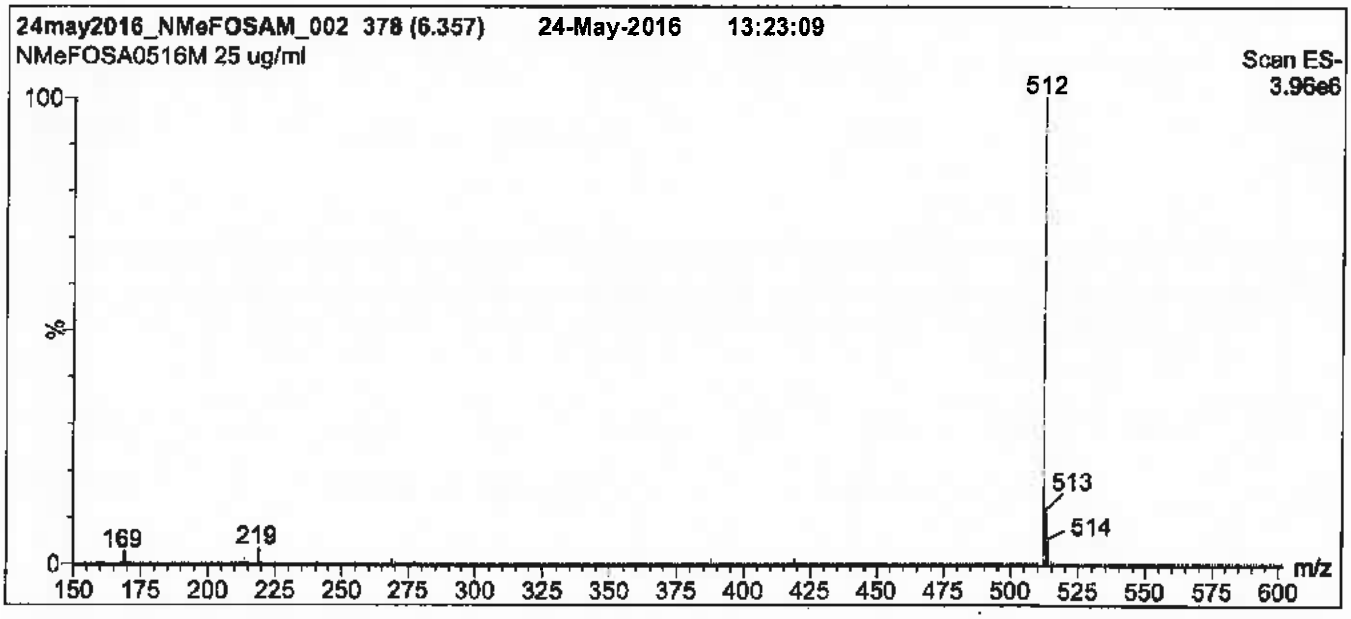
Figure 1: **N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

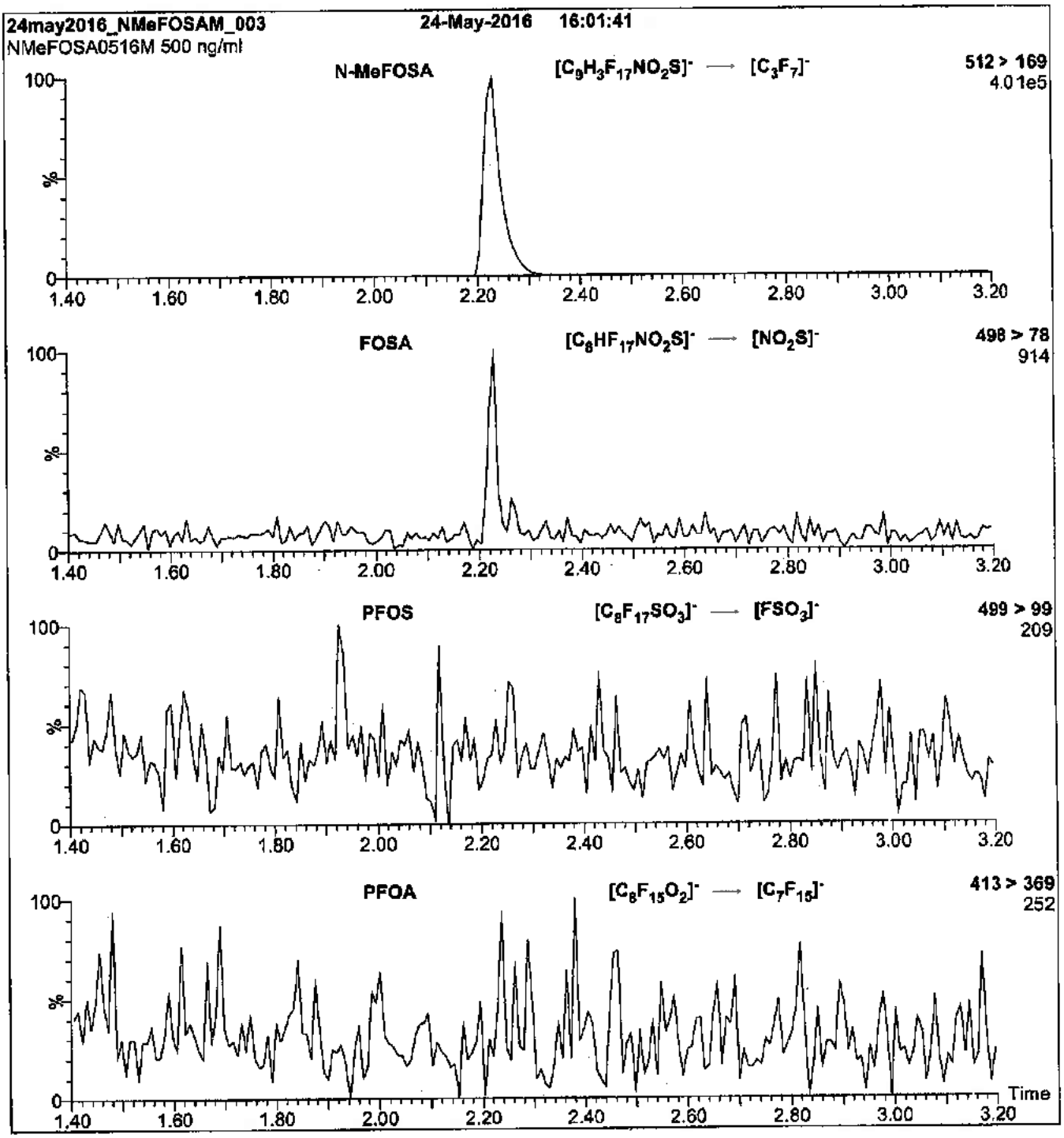
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-MeFOSA-M)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-MeFOSAA_00004

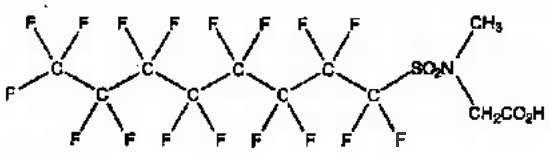
P: R/28/16 SRV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSAA
LOT NUMBER: NMeFOSAA0916
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:
CAS #: 2355-31-9



MOLECULAR FORMULA: $C_{11}H_8F_{17}NO_4S$
MOLECULAR WEIGHT: 571.21
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/12/2016
EXPIRY DATE: (mm/dd/yyyy) 10/12/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/25/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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LIMITED WARRANTY:

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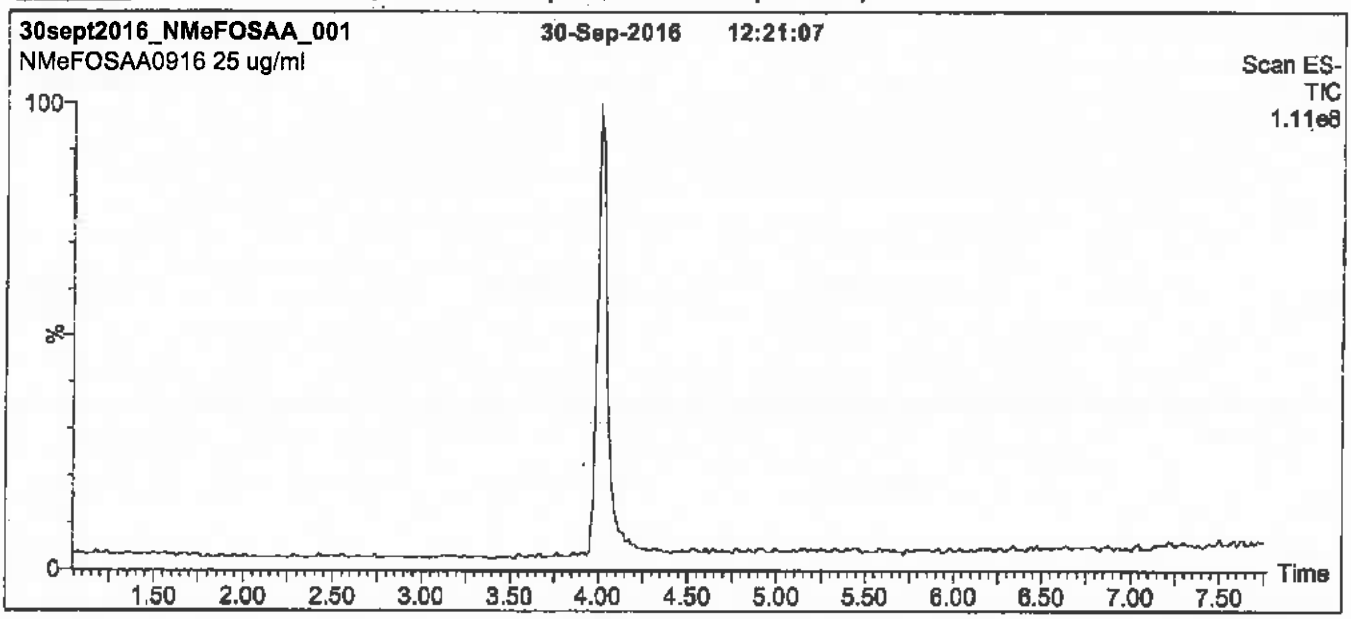
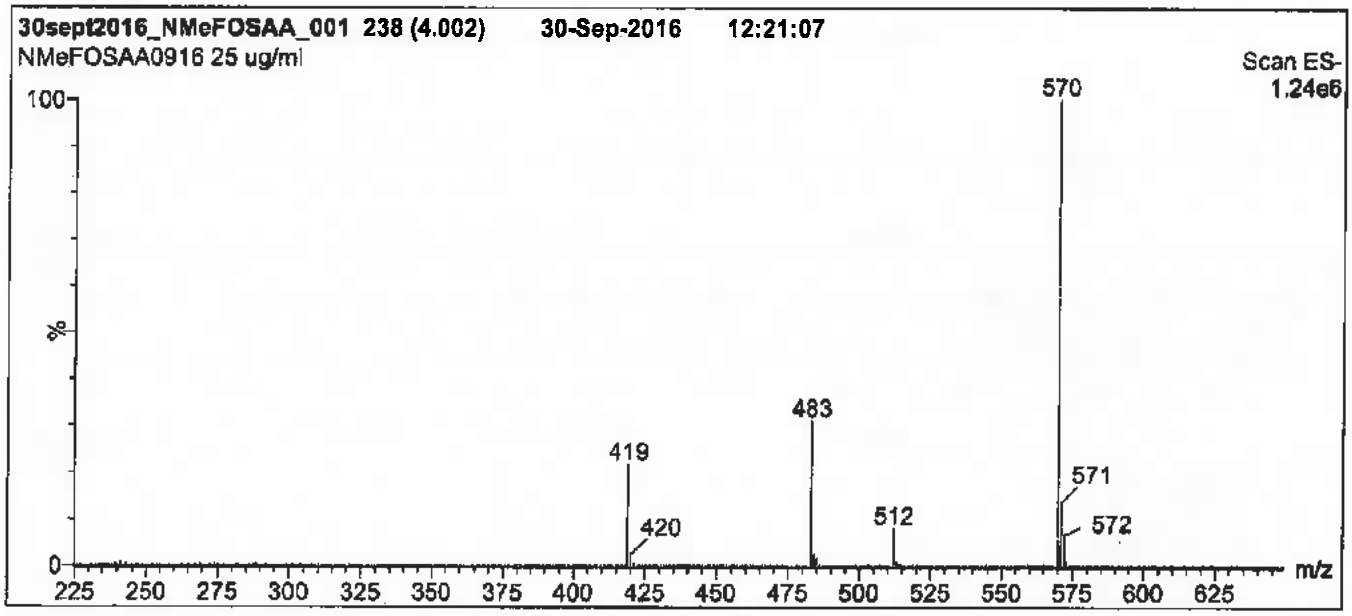
Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

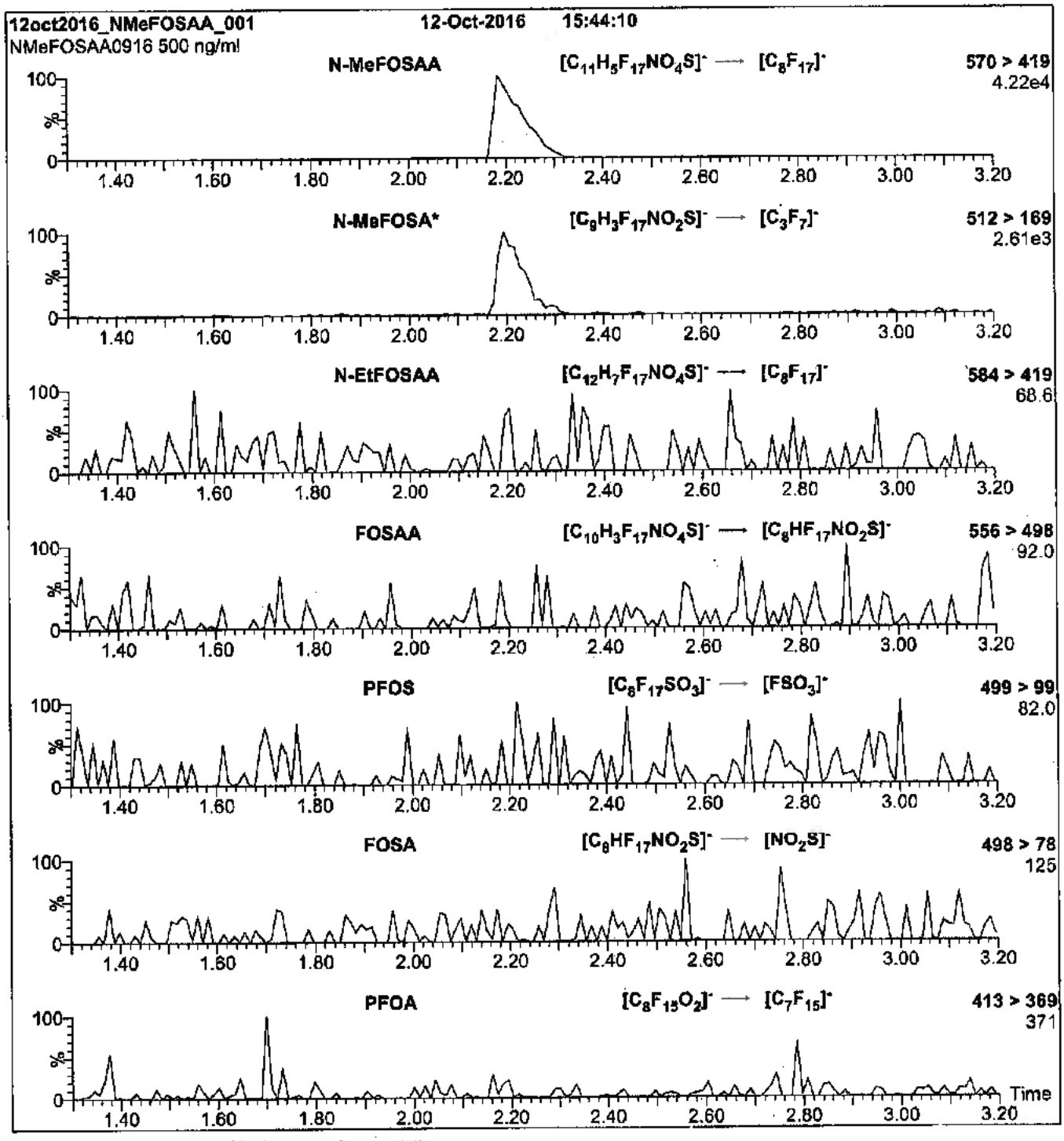
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



***Note**: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 20

Reagent

LCN-MeFOSAA_00005

P: R/28/16 SRV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSAA
LOT NUMBER: NMeFOSAA0916
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:
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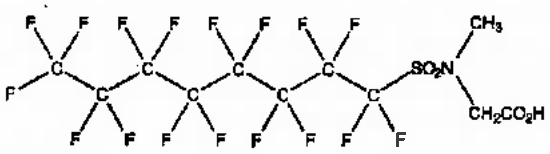

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LAST TESTED: (mm/dd/yyyy) 10/12/2016
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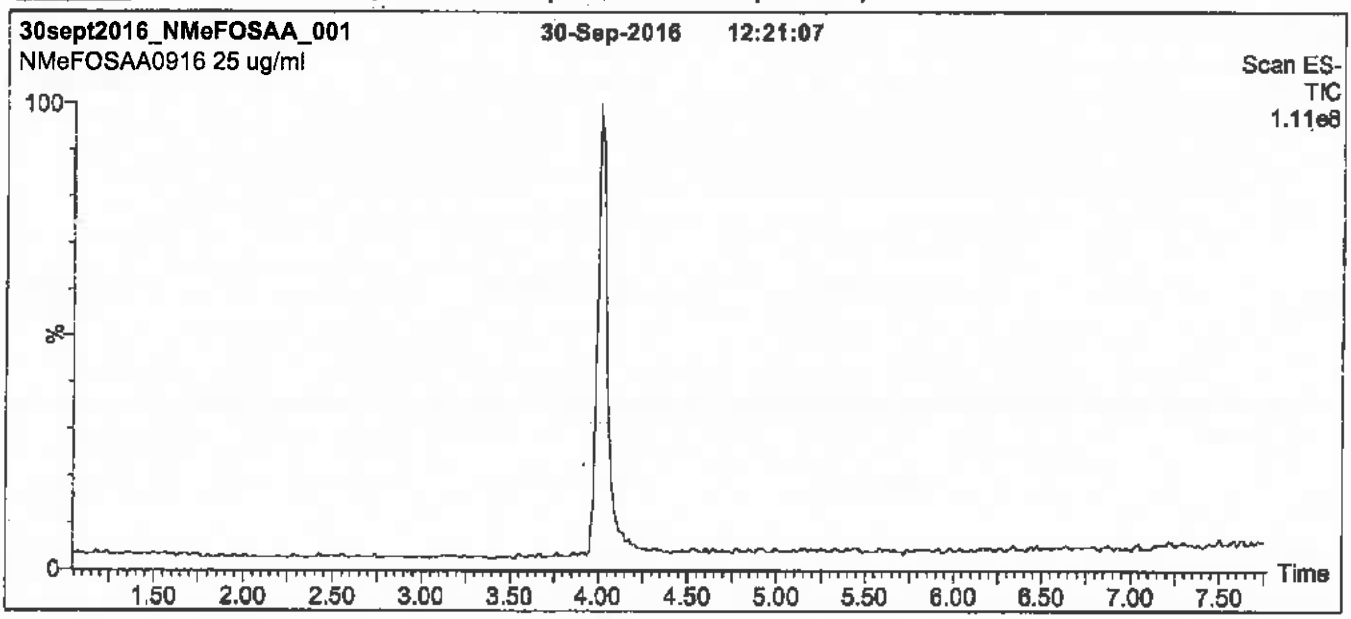

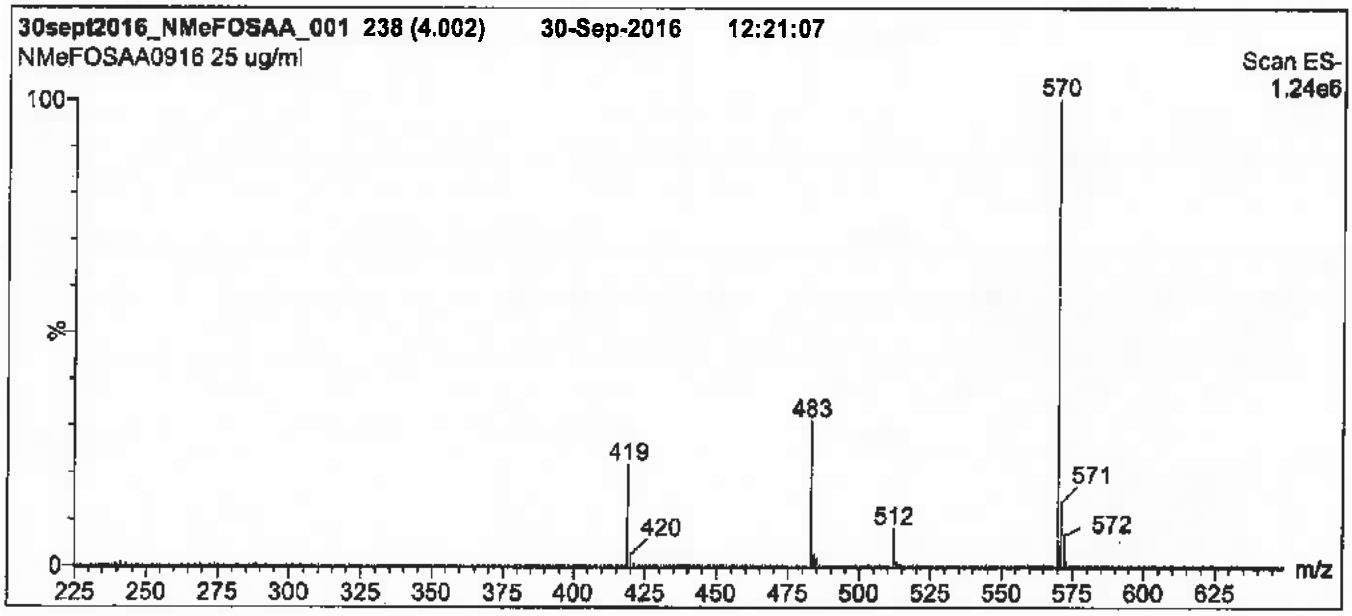

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LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

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1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

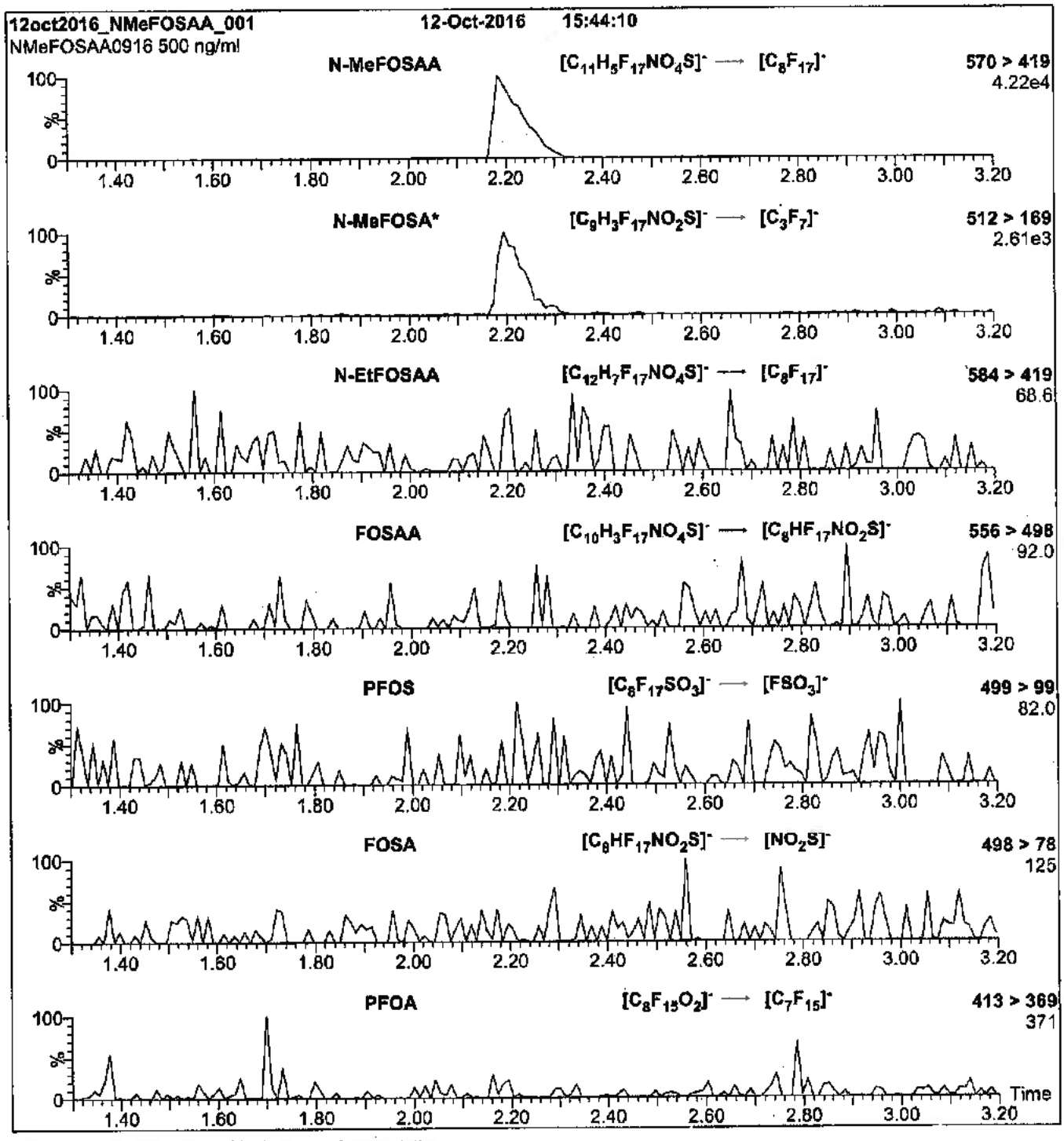
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



*Note: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 20

Reagent

LCPFAC-24PAR_00001

P: 11/B/17SW SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-24PAR

Native Per- and Poly-fluoroalkyl Substance
Precision and Recovery Standard Solution

PRODUCT CODE:	PFAC-24PAR
LOT NUMBER:	PFAC24PAR0917
SOLVENT(S):	Methanol / Isopropanol (4%) / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	09/13/2017
LAST TESTED: (mm/dd/yyyy)	09/15/2017
EXPIRY DATE: (mm/dd/yyyy)	09/15/2022
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

PFAC-24PAR is a solution/mixture of eleven native linear perfluoroalkylcarboxylic acids (C_4-C_{14}), seven native perfluoroalkylsulfonates (C_4, C_6, C_7, C_8, and C_{10} linear; C_8 and C_8 linear and branched), three native telomer sulfonates (4:2, 6:2, and 8:2), two native perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual native perfluoroalkylcarboxylic acids, native perfluoroalkylsulfonates, native telomer sulfonates, native perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Table B: Isomeric Components and Percent Composition of PFHxSK
Table C: Isomeric Components and Percent Composition of PFOSK
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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UNCERTAINTY:

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Table A: **PFAC-24PAR; Components and Concentrations (ng/ml, ± 5% in Methanol / Isopropanol (4%) / Water (<1%))**

Compound	Abbreviation	Concentration (ng/ml)	Peak Assignment in Figure 1
Perfluoro-n-butanoic acid	PFBA	2000	A
Perfluoro-n-pentanoic acid	PFPeA	2000	B
Perfluoro-n-hexanoic acid	PFHxA	2000	E
Perfluoro-n-heptanoic acid	PFHpA	2000	G
Perfluoro-n-octanoic acid	PFOA	2000	K
Perfluoro-n-nonanoic acid	PFNA	2000	M
Perfluoro-n-decanoic acid	PFDA	2000	Q
Perfluoro-n-undecanoic acid	PFUdA	2000	V
Perfluoro-n-dodecanoic acid	PFDoA	2000	X
Perfluoro-n-tridecanoic acid	PFTrDA	2000	Y
Perfluoro-n-tetradecanoic acid	PFTeDA	2000	Z
Perfluoro-1-octanesulfonamide	FOSA	2000	T
N-methylperfluoro-1-octanesulfonamidoacetic acid	N-MeFOSAA	2000	S
N-ethylperfluoro-1-octanesulfonamidoacetic acid	N-EtFOSAA	2000	U

Compound	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanesulfonate	L-PFBS	2000	1770	C
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	2000	1880	F
Potassium perfluorohexanesulfonate*	PFHxSK: linear isomer	1620	1480	I
	PFHxSK: ∑ branched isomers	378	344	H
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	2000	1900	L
Potassium perfluorooctanesulfonate**	PFOSK: linear isomer	1580	1460	O
	PFOSK: ∑ branched isomers	422	391	N
Sodium perfluoro-1-nonanesulfonate	L-PFNS	2000	1920	R
Sodium perfluoro-1-decanesulfonate	L-PFDS	2000	1930	W
Sodium 1H,1H,2H,2H-perfluoro-1-hexanesulfonate	4:2FTS	2000	1870	D
Sodium 1H,1H,2H,2H-perfluoro-1-octanesulfonate	6:2FTS	2000	1900	J
Sodium 1H,1H,2H,2H-perfluoro-1-decanesulfonate	8:2FTS	2000	1920	P

* See Table B for percent composition of linear and branched PFHxSK isomers.
** See Table C for percent composition of linear and branched PFOSK isomers.

Table B: **PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9	18.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4	
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0	
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9	
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.2	
7	Other Unidentified Isomers		0.5	

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

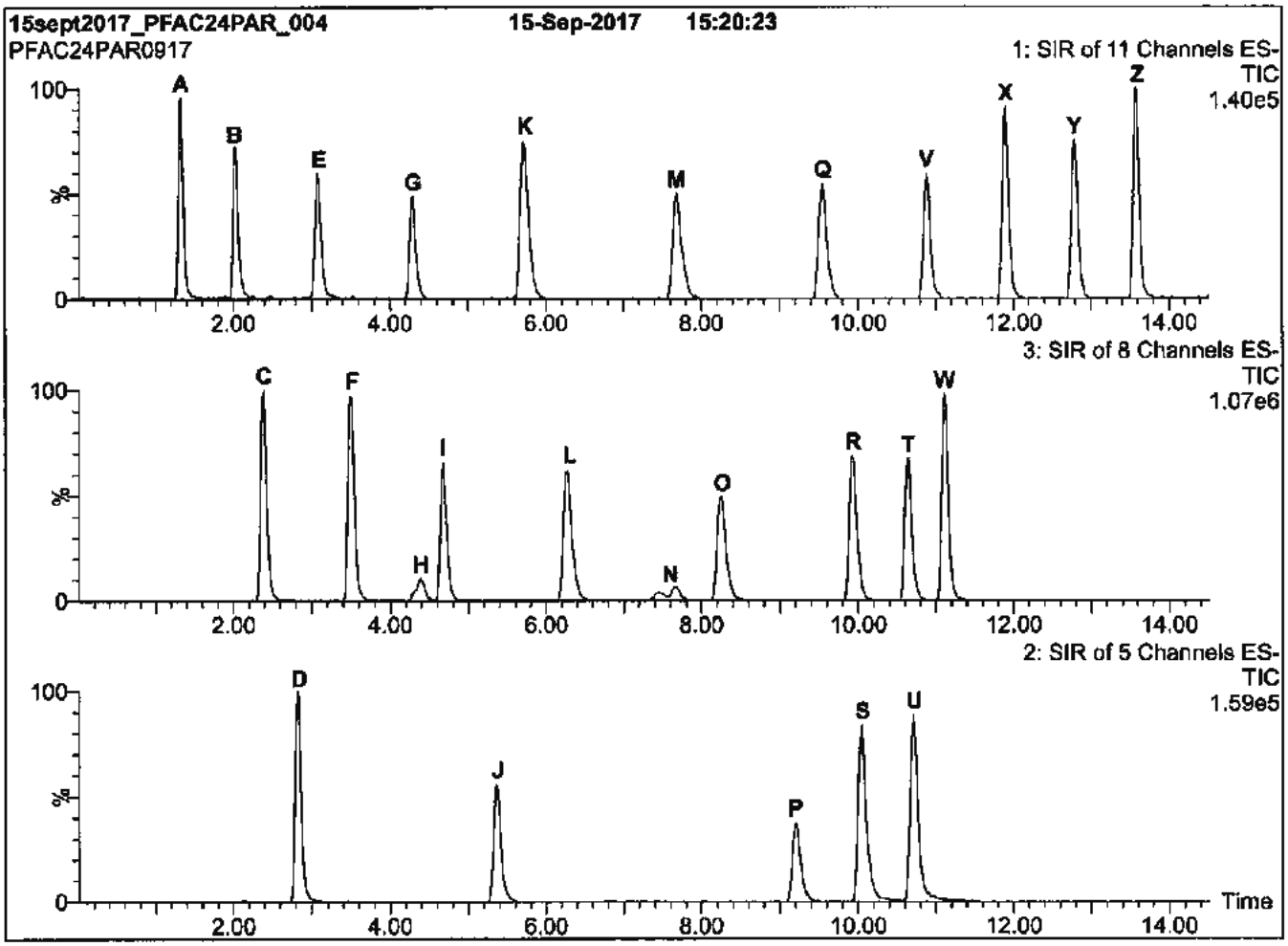
Table C: **PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2	21.1
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6	
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9	
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2	
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5	
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0	
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2	
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.03	
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.4	
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2SO_3^-K^+$	0.07	

* Percent of total perfluorooctanesulfonate isomers only.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: _____ **Date:** 09/19/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: **PFAC-24PAR; LC/MS Data (Total Ion Current Chromatogram; SIR)**



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 55% organic over 3.5 min.
Ramp to 70% organic over 6.5 min.
Ramp to 85% organic over 5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 17 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)**

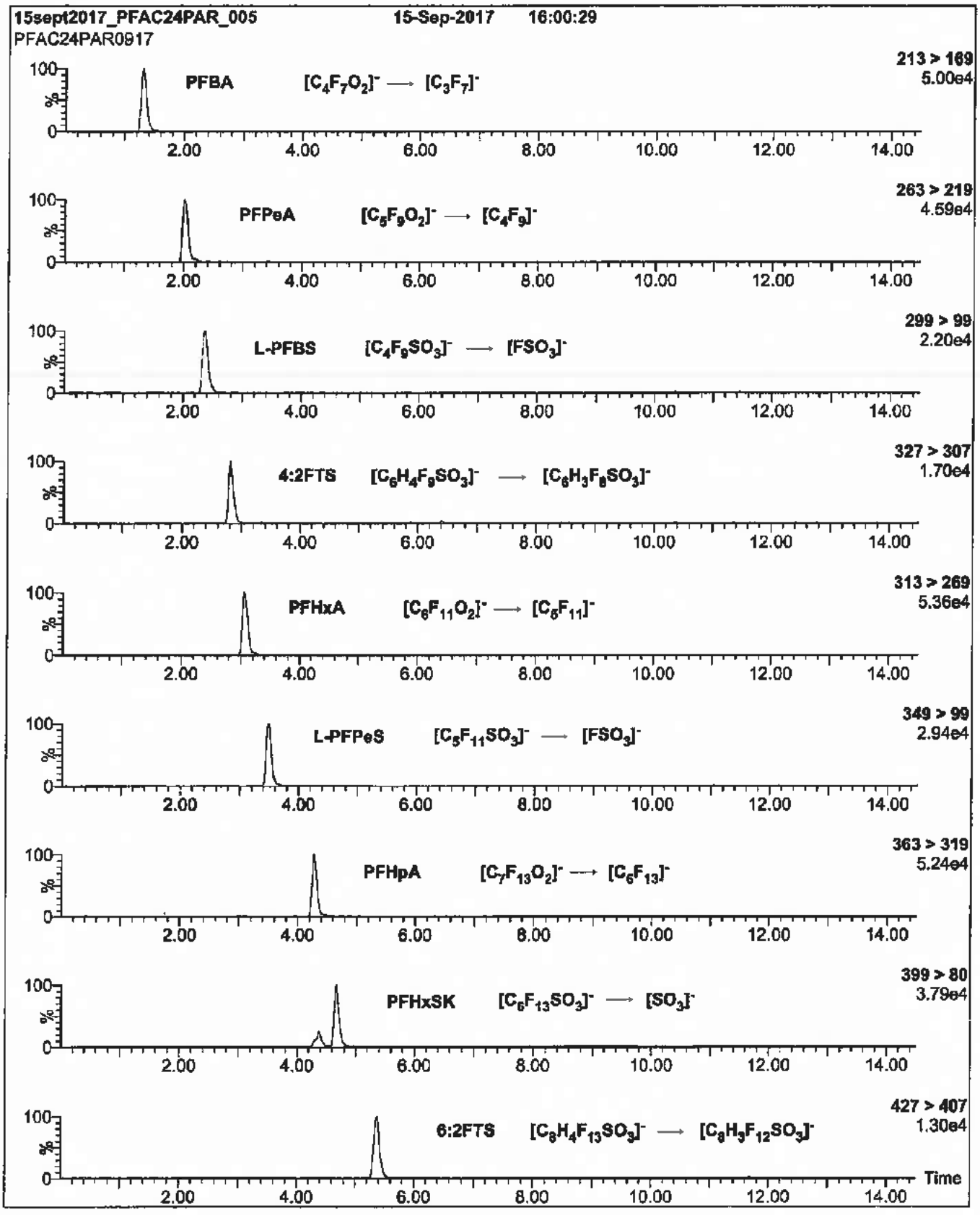


Figure 2: **PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)**

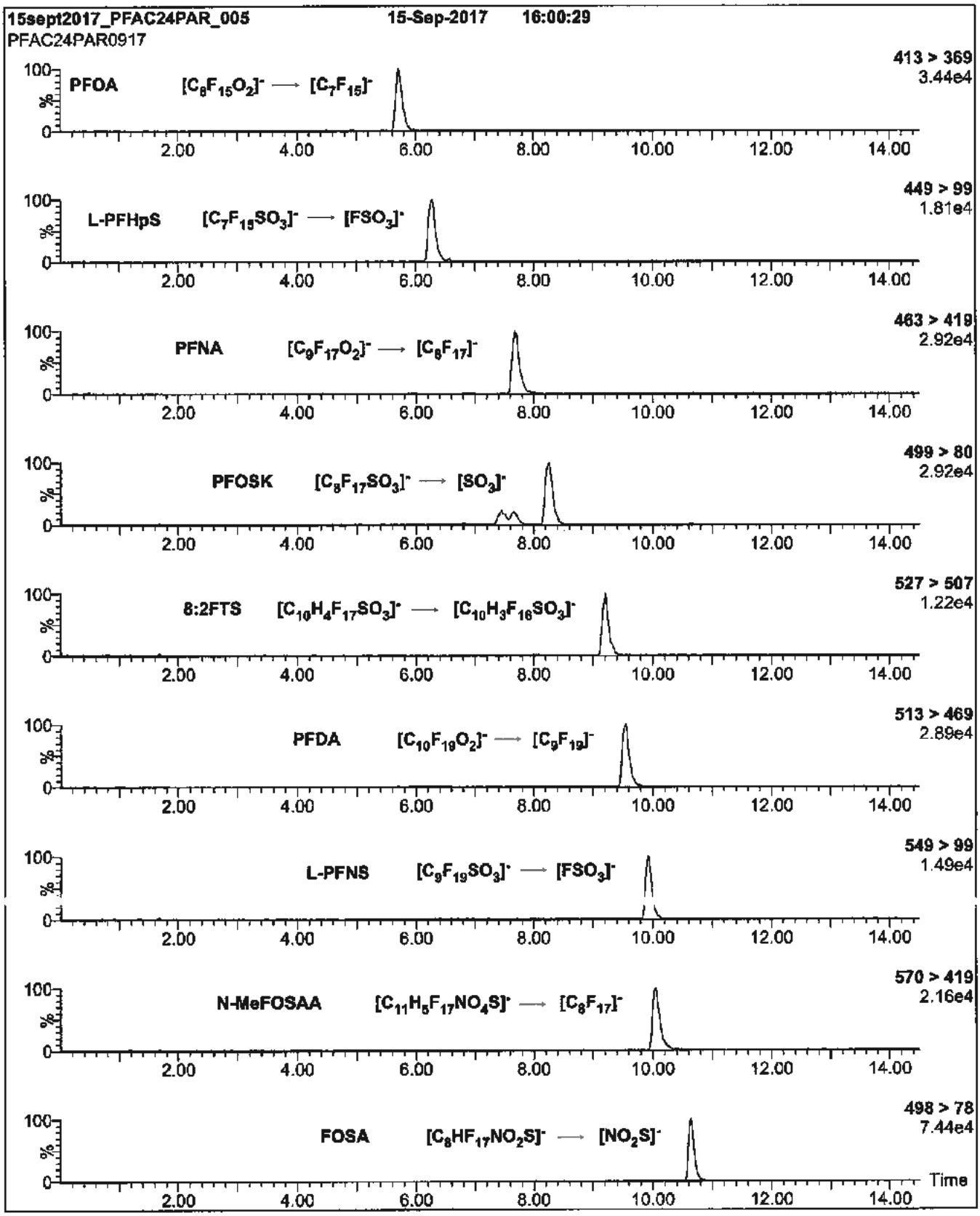
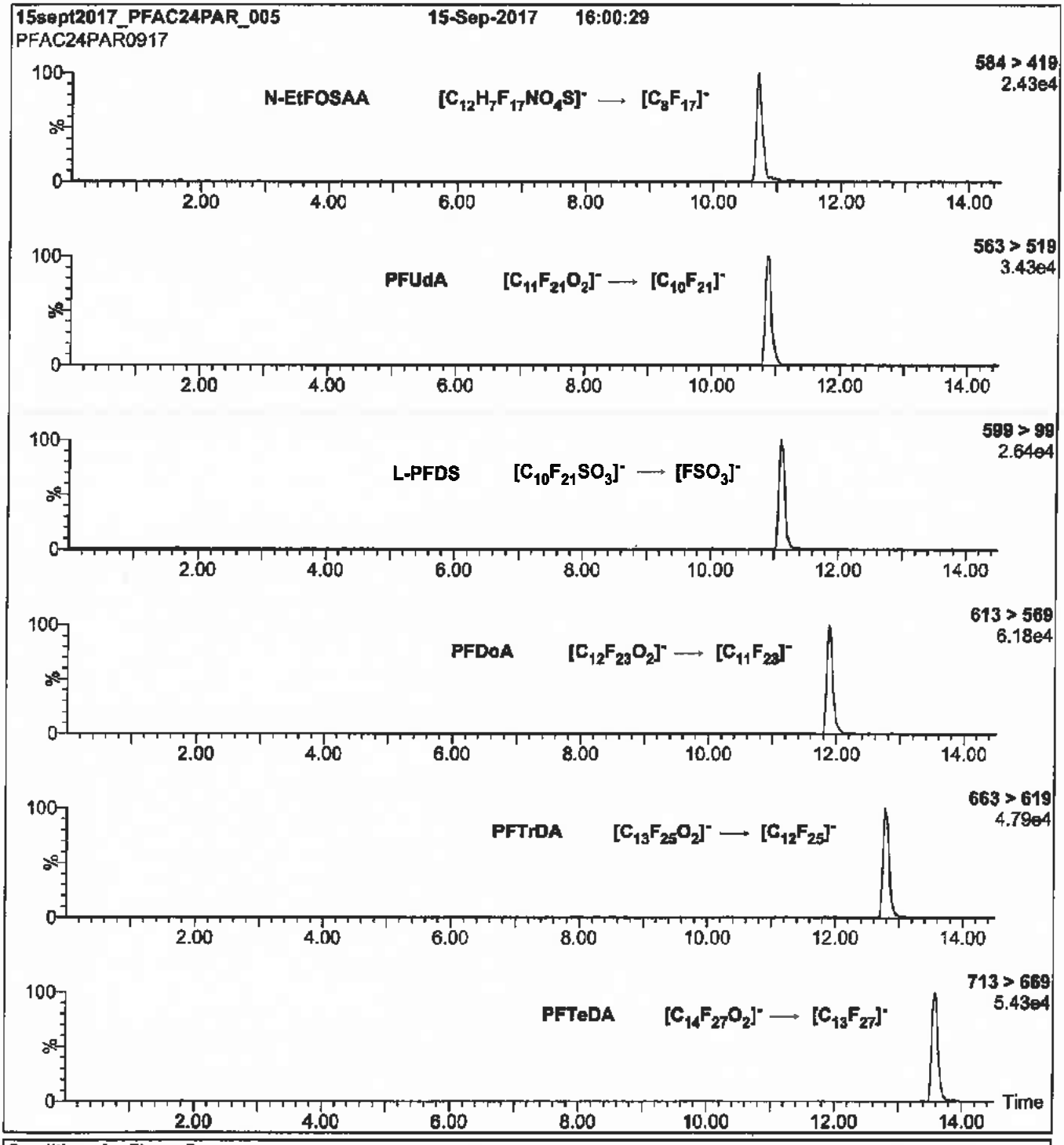


Figure 2: **PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFAC-24PAR)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3

Collision Energy (eV) = 8-50 (variable)

Reagent

LCPFBA_00007

R: 12/20/16 SN
S

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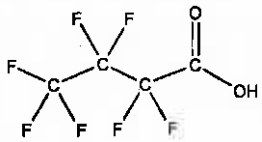
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFBA	**LOT NUMBER:**	PFBA0516
COMPOUND:	Perfluoro-n-butanoic acid		
STRUCTURE:		**CAS #:**	375-22-4



MOLECULAR FORMULA:	$C_4HF_7O_2$	**MOLECULAR WEIGHT:**	214.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/31/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

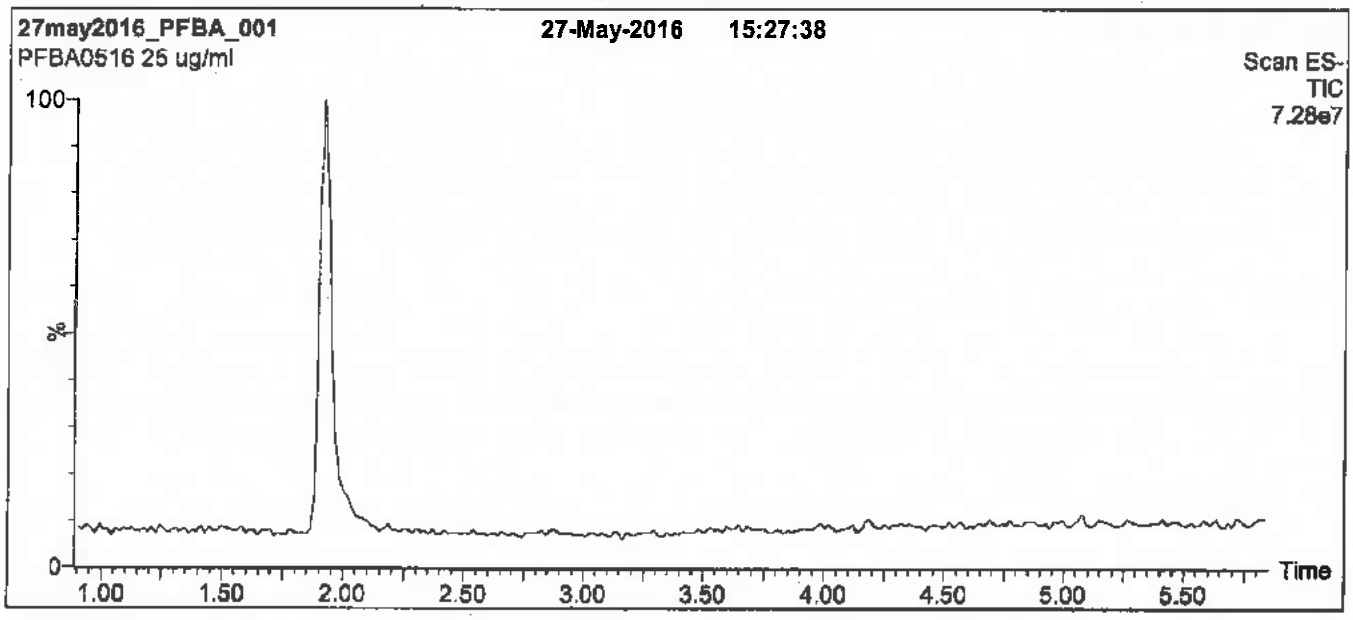
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

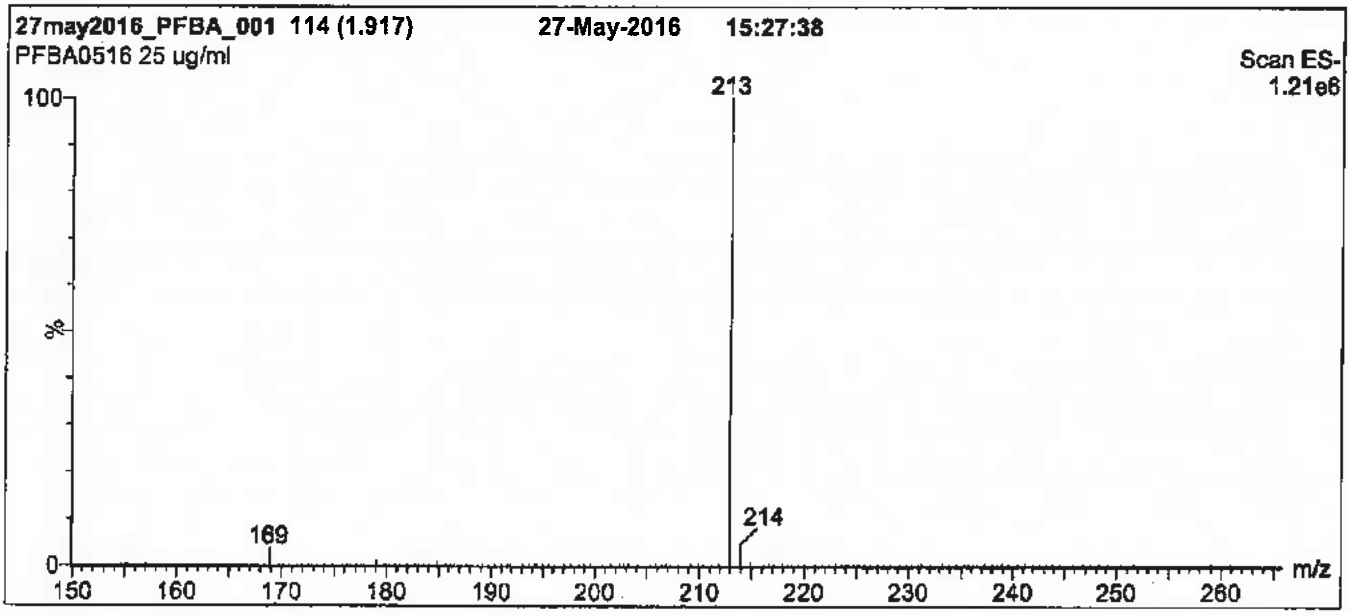
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

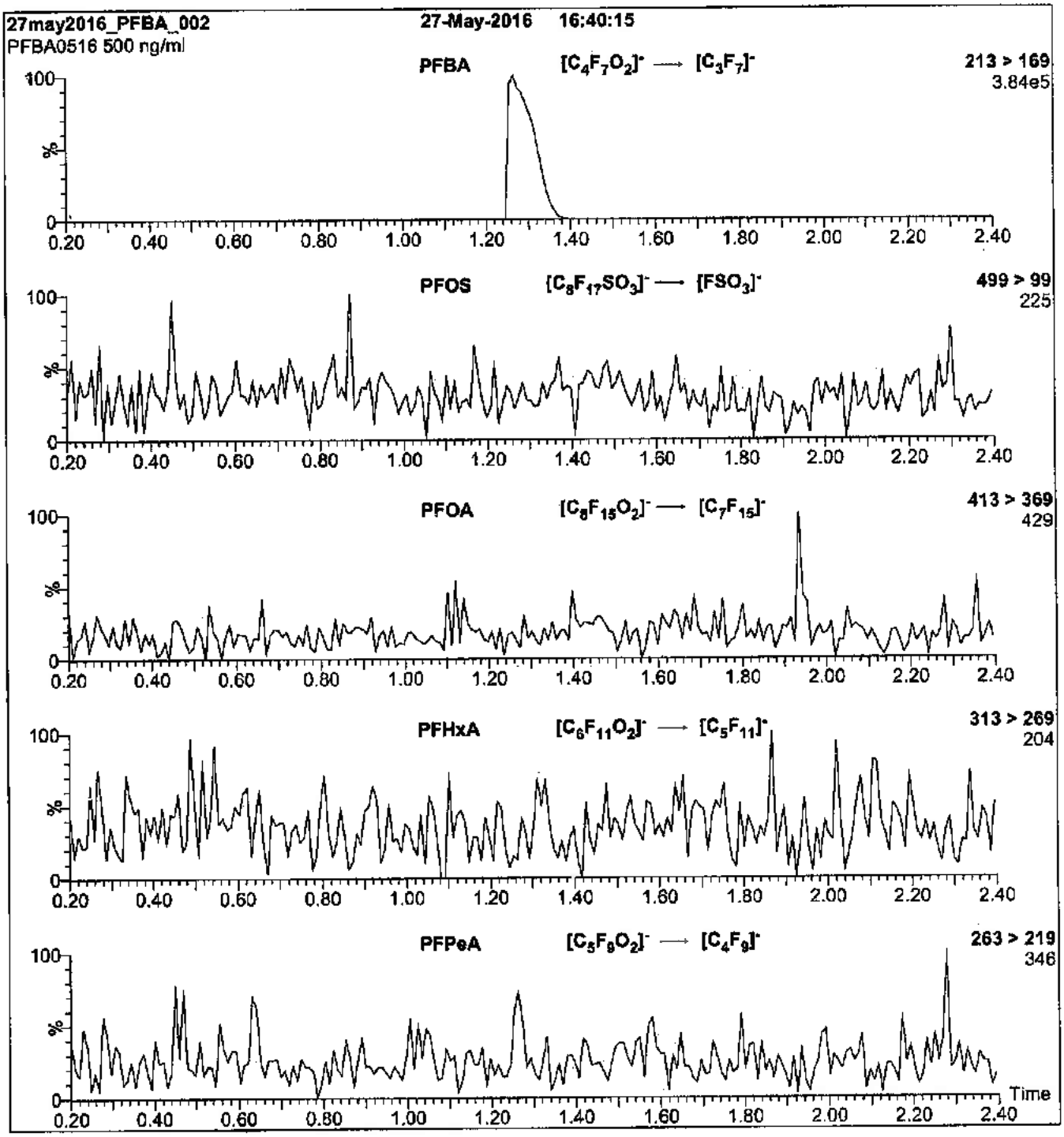
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFBA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00008

R: SBC 9/13/16

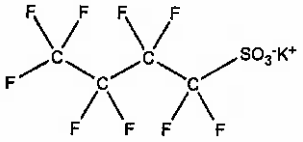
730724
ID: LCPFBS_00007
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

730725
ID: LCPFBS_00008
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS0316
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE:
CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$
MOLECULAR WEIGHT: 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/15/2016
EXPIRY DATE: (mm/dd/yyyy) 03/15/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/21/2016 (mm/dd/yyyy)

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

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

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

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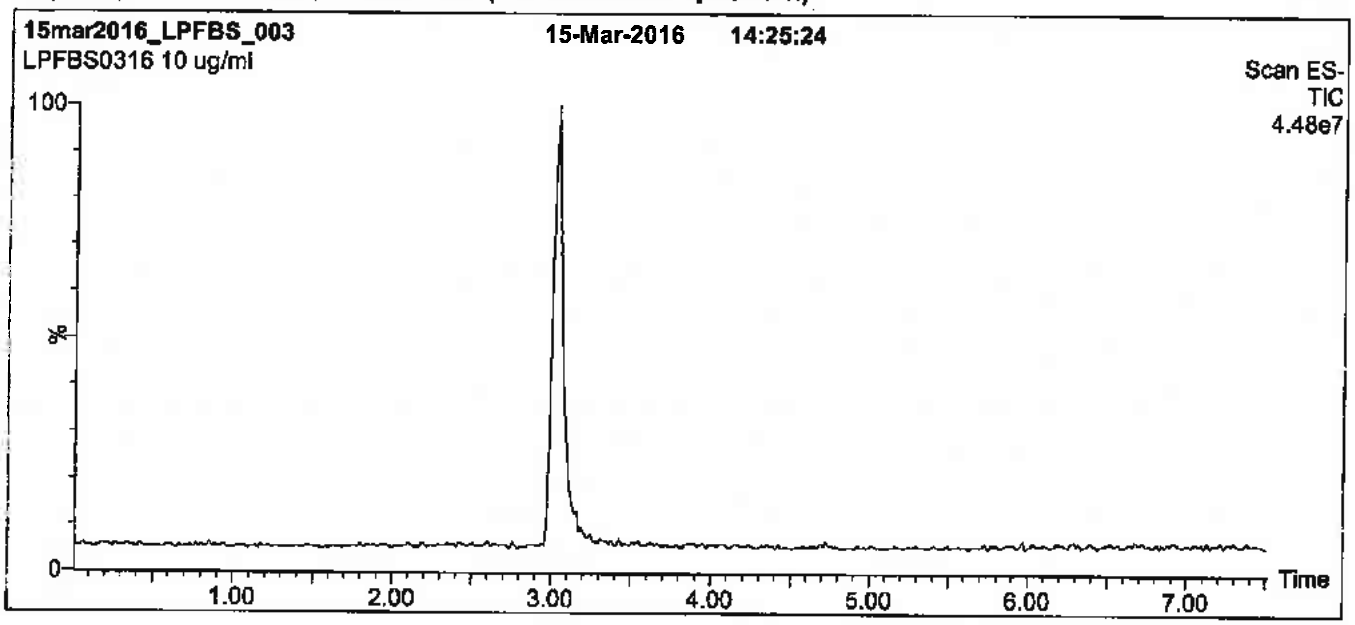
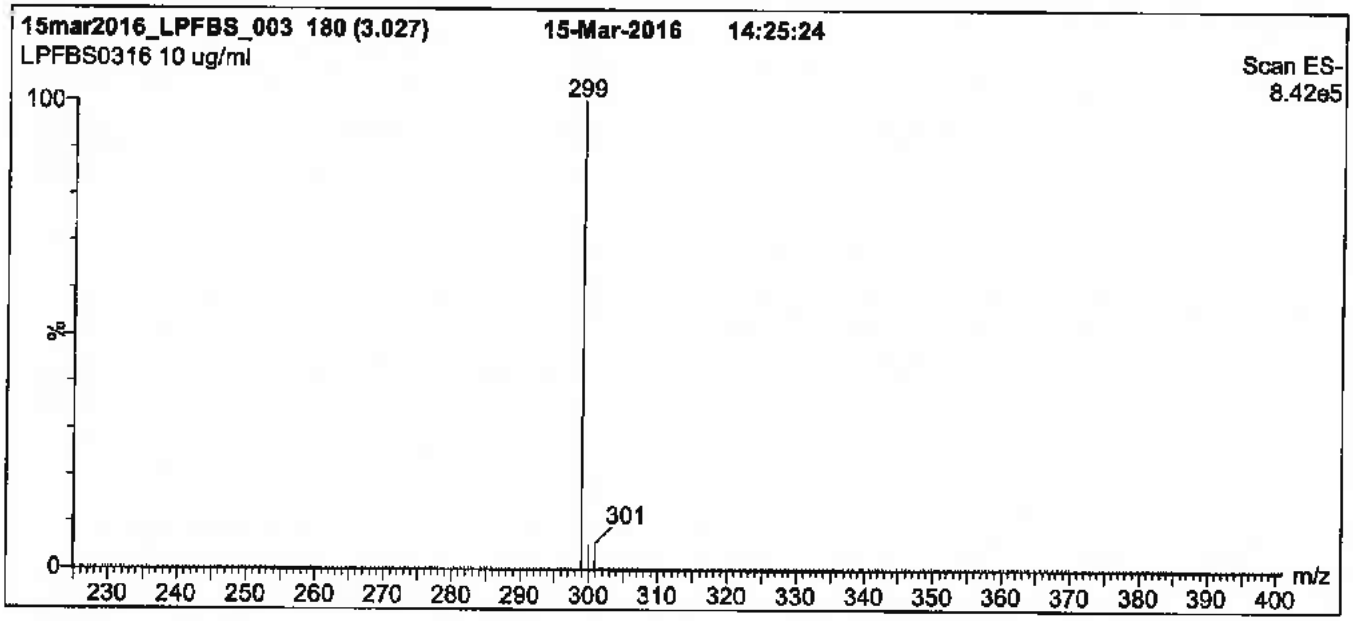
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

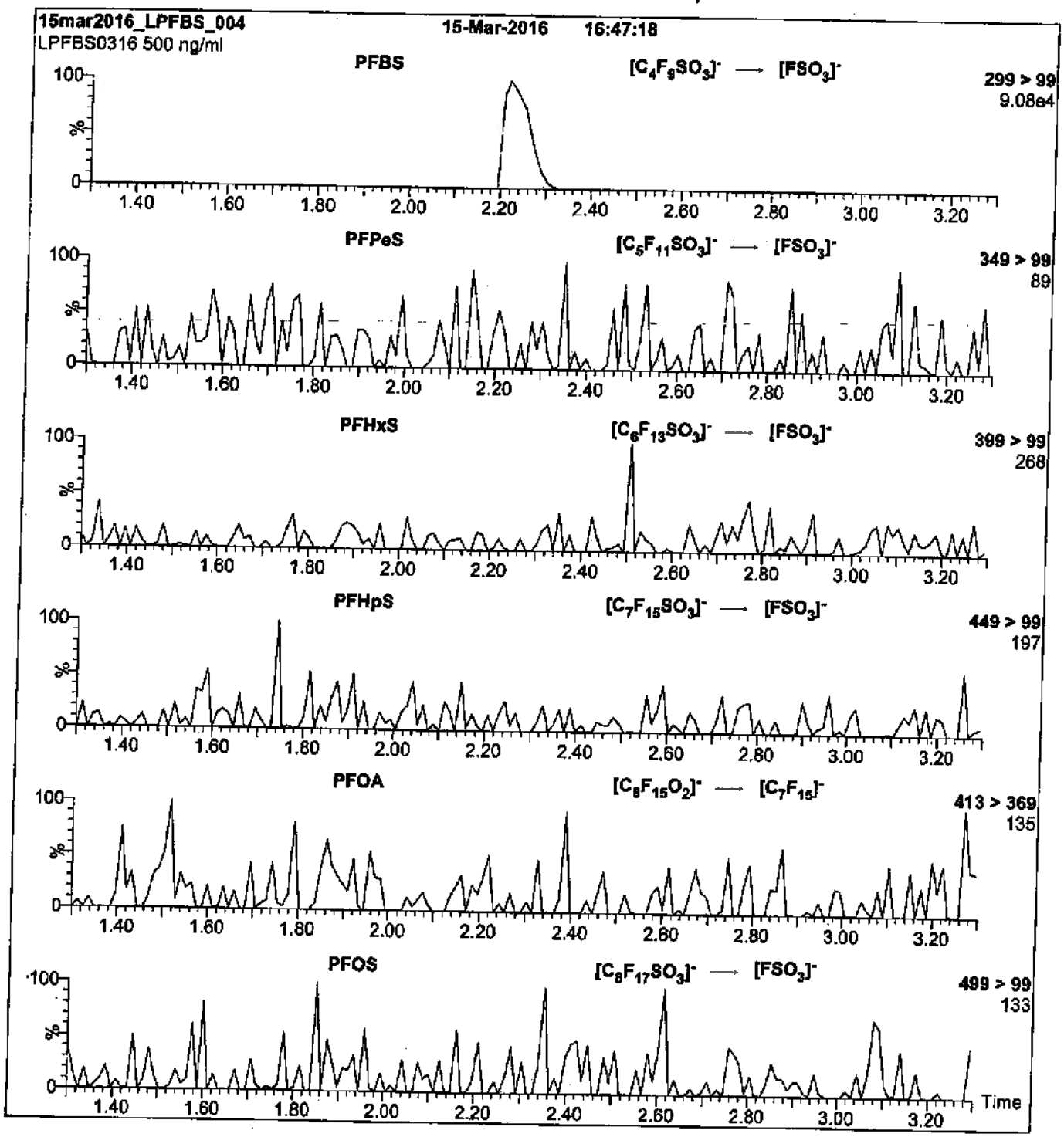
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFBS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00007

R: SBC 9/13/16
scanned 10/4/16 SR

730620
ID: LCPFDA_00006
Exp: 05/31/21 Prpd: SBC
PF-n-decanoic acid

730621
ID: LCPFDA_00007
Exp: 05/31/21 Prpd: SBC
PF-n-decanoic acid

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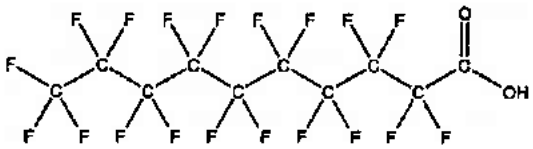
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDA	**LOT NUMBER:**	PFDA0516
COMPOUND:	Perfluoro-n-decanoic acid		
STRUCTURE:		**CAS #:**	335-76-2



MOLECULAR FORMULA:	$C_{10}HF_{19}O_2$	**MOLECULAR WEIGHT:**	514.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/13/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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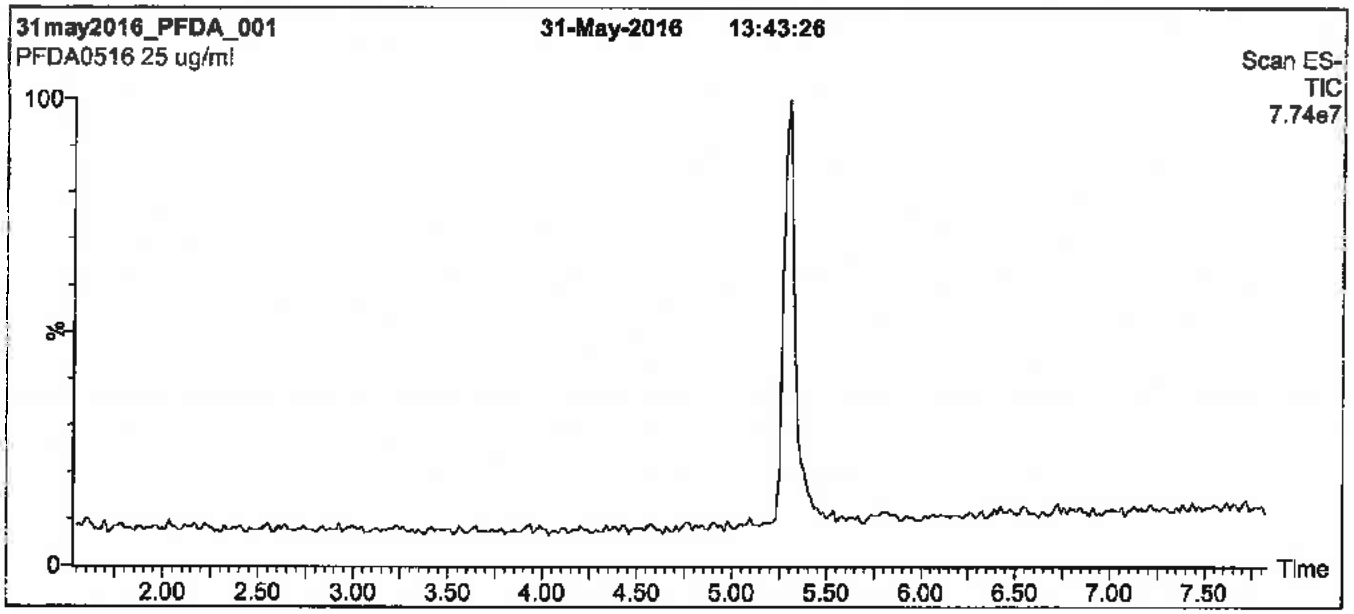
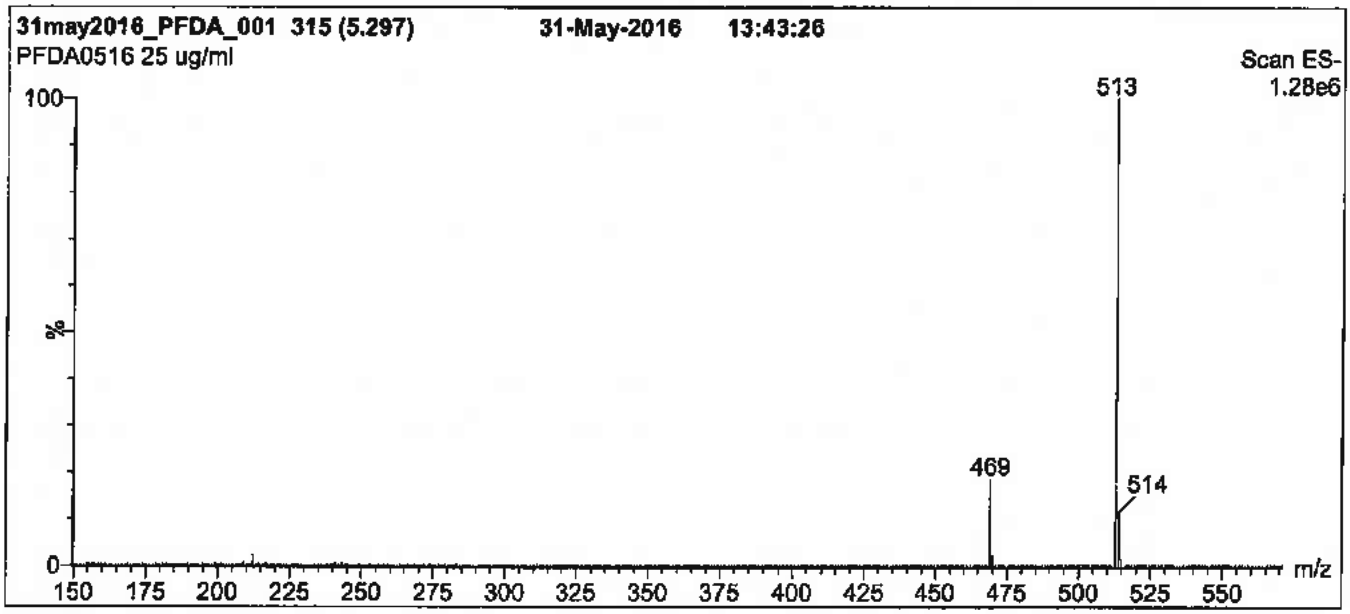
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

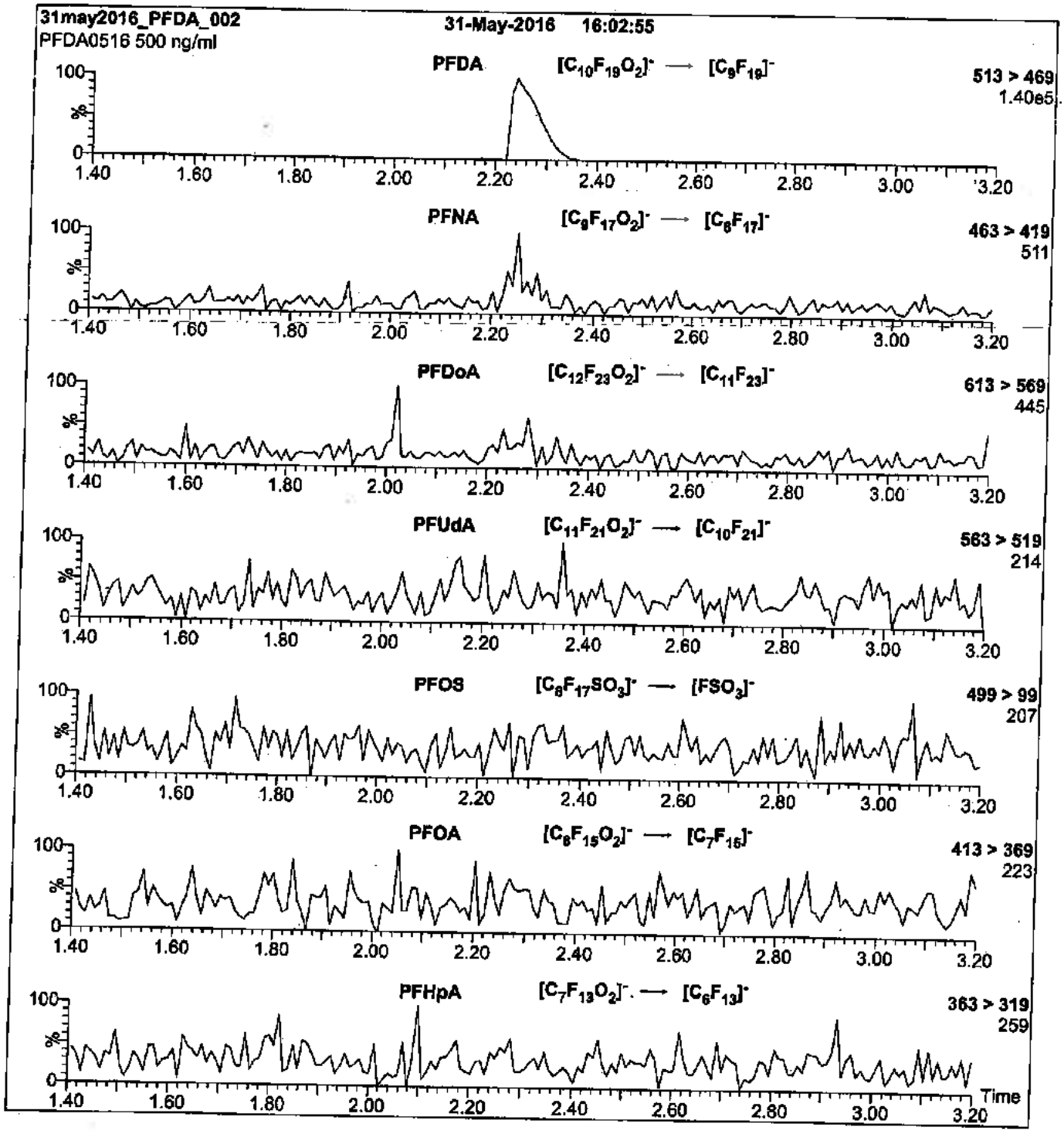
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

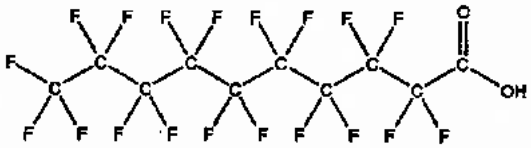
LCPFDA_00008

R: 9/21/17 SKJ

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDA	**LOT NUMBER:**	PFDA0517
COMPOUND:	Perfluoro-n-decanoic acid		
STRUCTURE:		**CAS #:**	335-76-2



MOLECULAR FORMULA:	$C_{10}HF_{19}O_2$	**MOLECULAR WEIGHT:**	514.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/29/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/29/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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UNCERTAINTY:

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

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

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

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CALA

ANAB ACCREDITED

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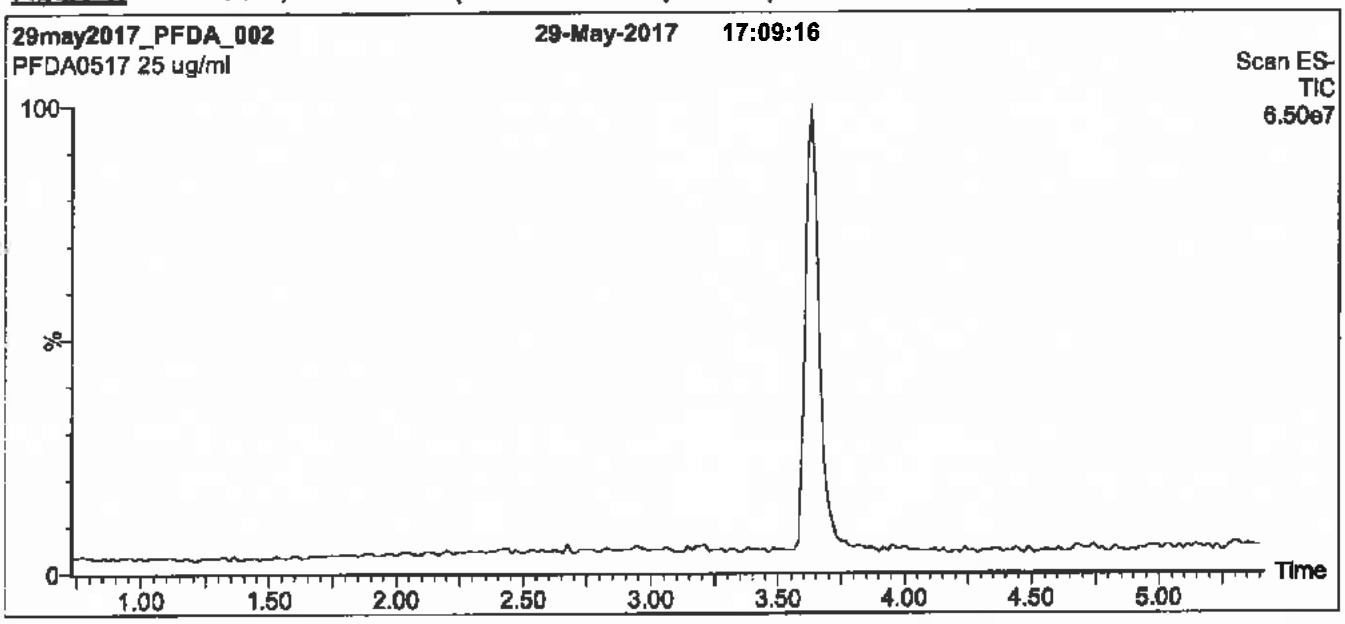
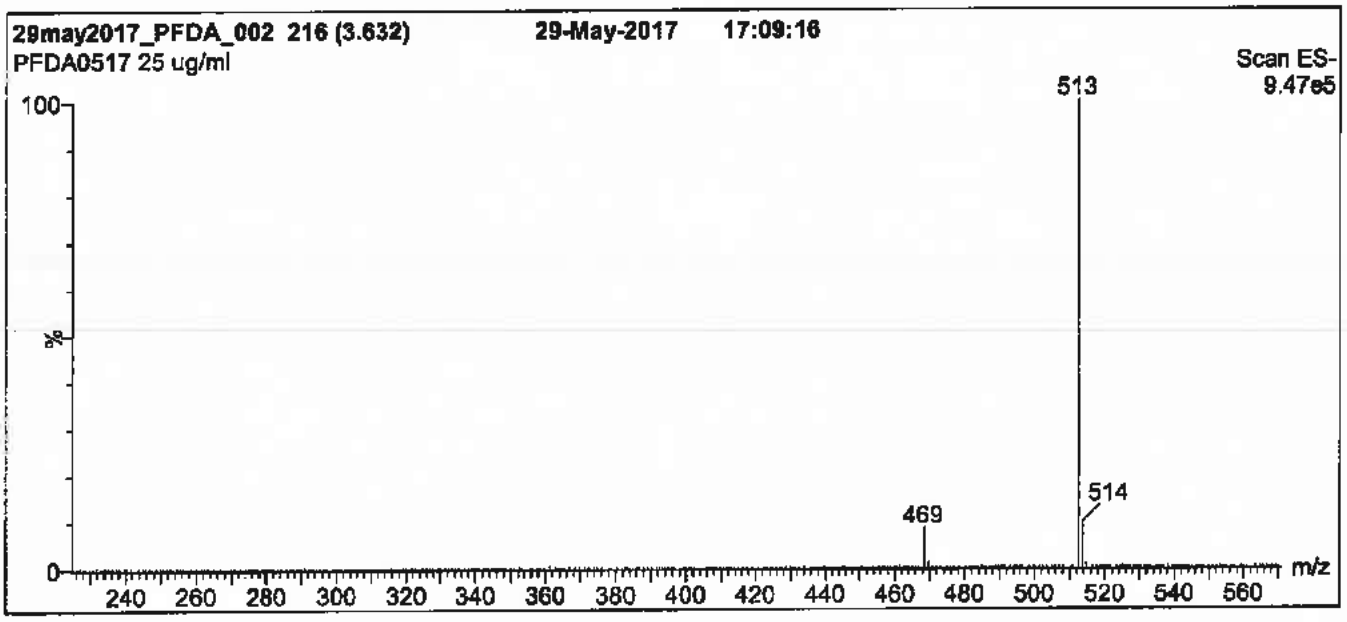




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

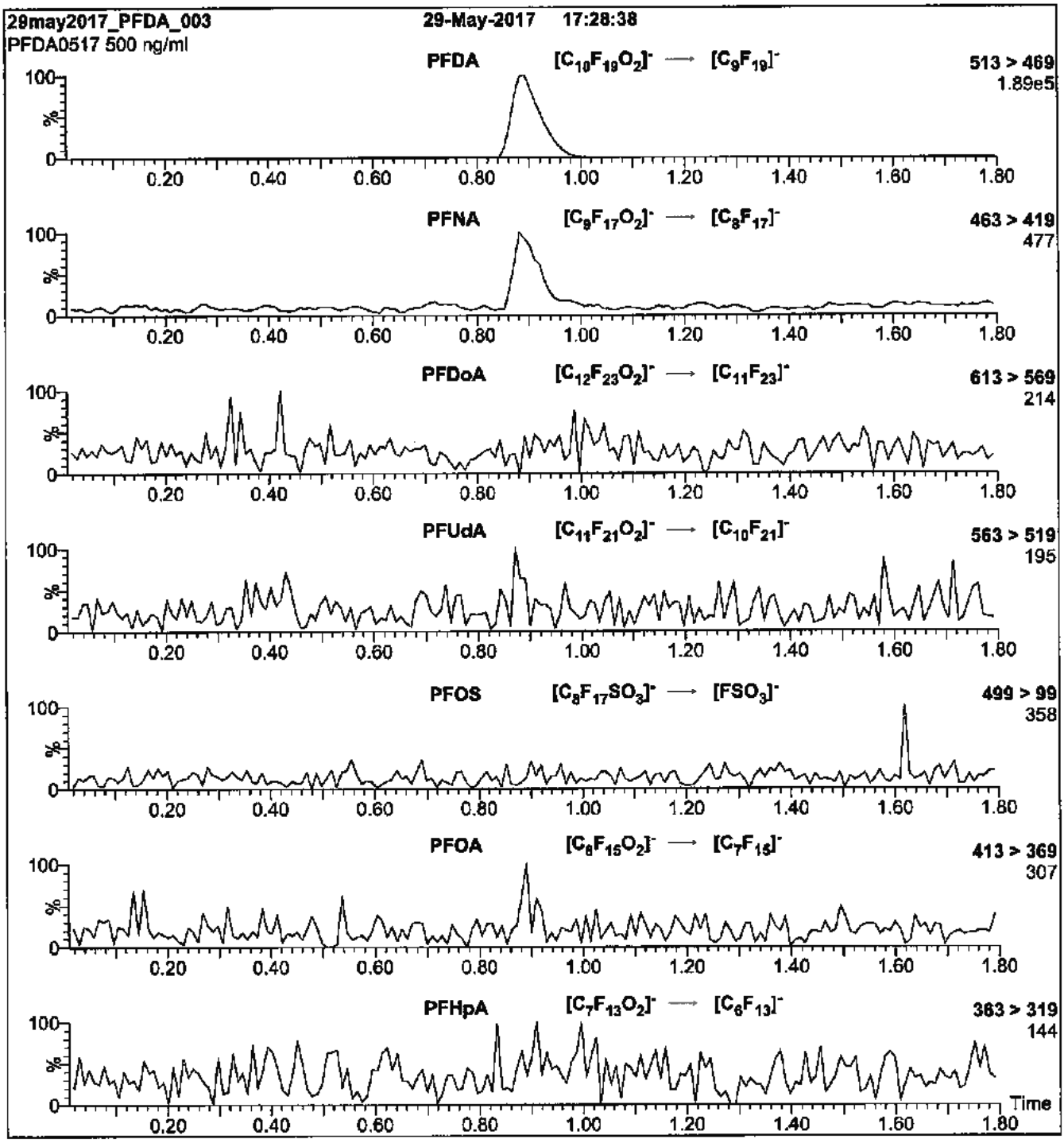
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 13

Reagent

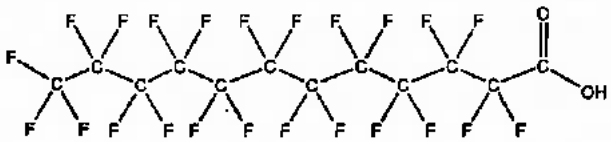
LCPFDoA_00007

r: 12/21/16 SPV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDoA	**LOT NUMBER:**	PFDoA0516
COMPOUND:	Perfluoro-n-dodecanoic acid		
STRUCTURE:		**CAS #:**	307-55-1



MOLECULAR FORMULA:	$C_{12}HF_{23}O_2$	**MOLECULAR WEIGHT:**	614.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/02/2016 (mm/dd/yyyy)

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

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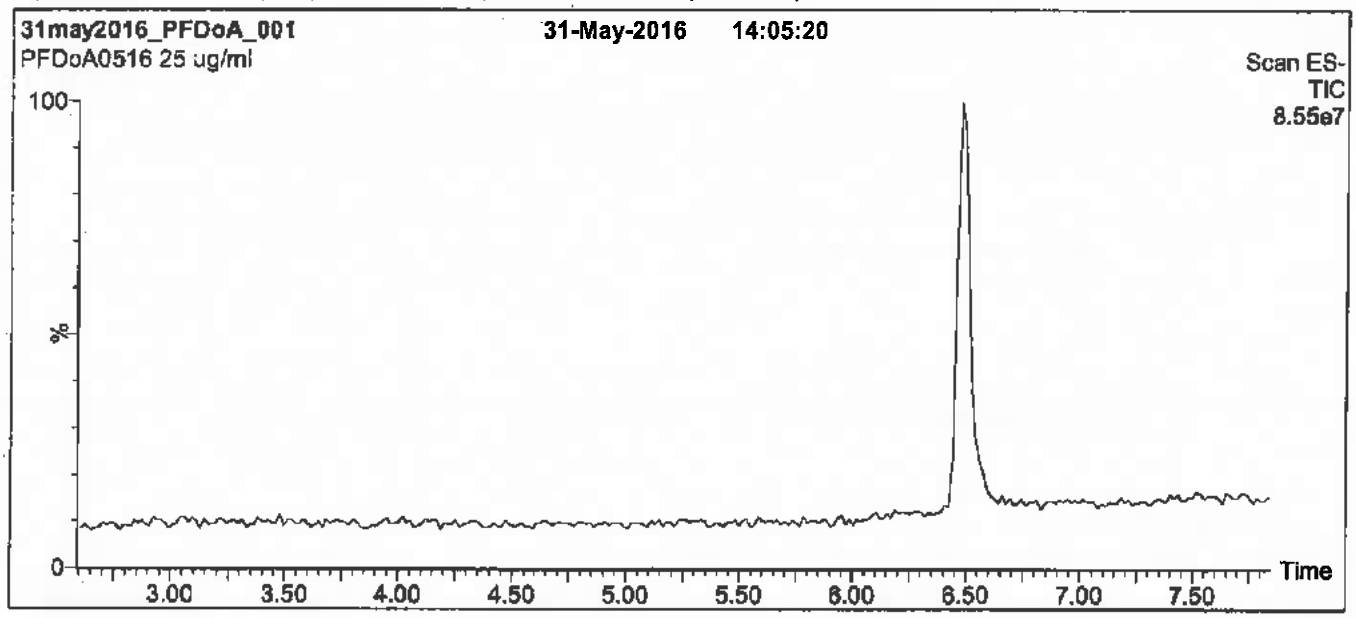
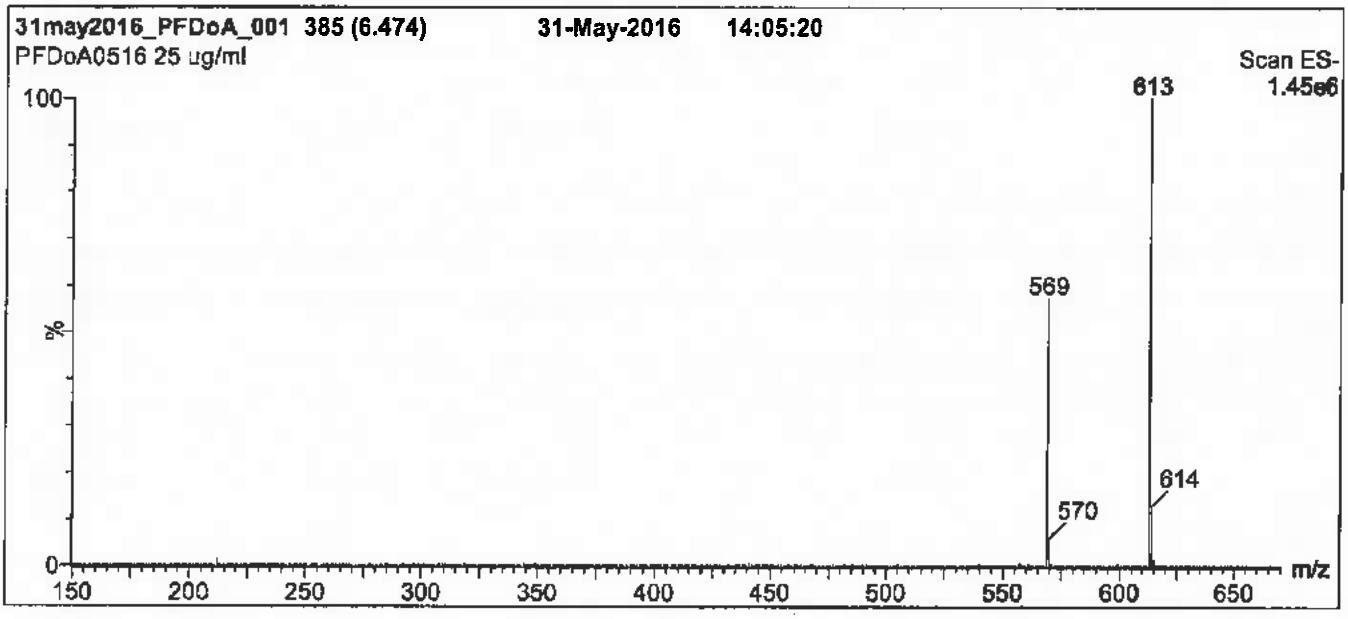




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

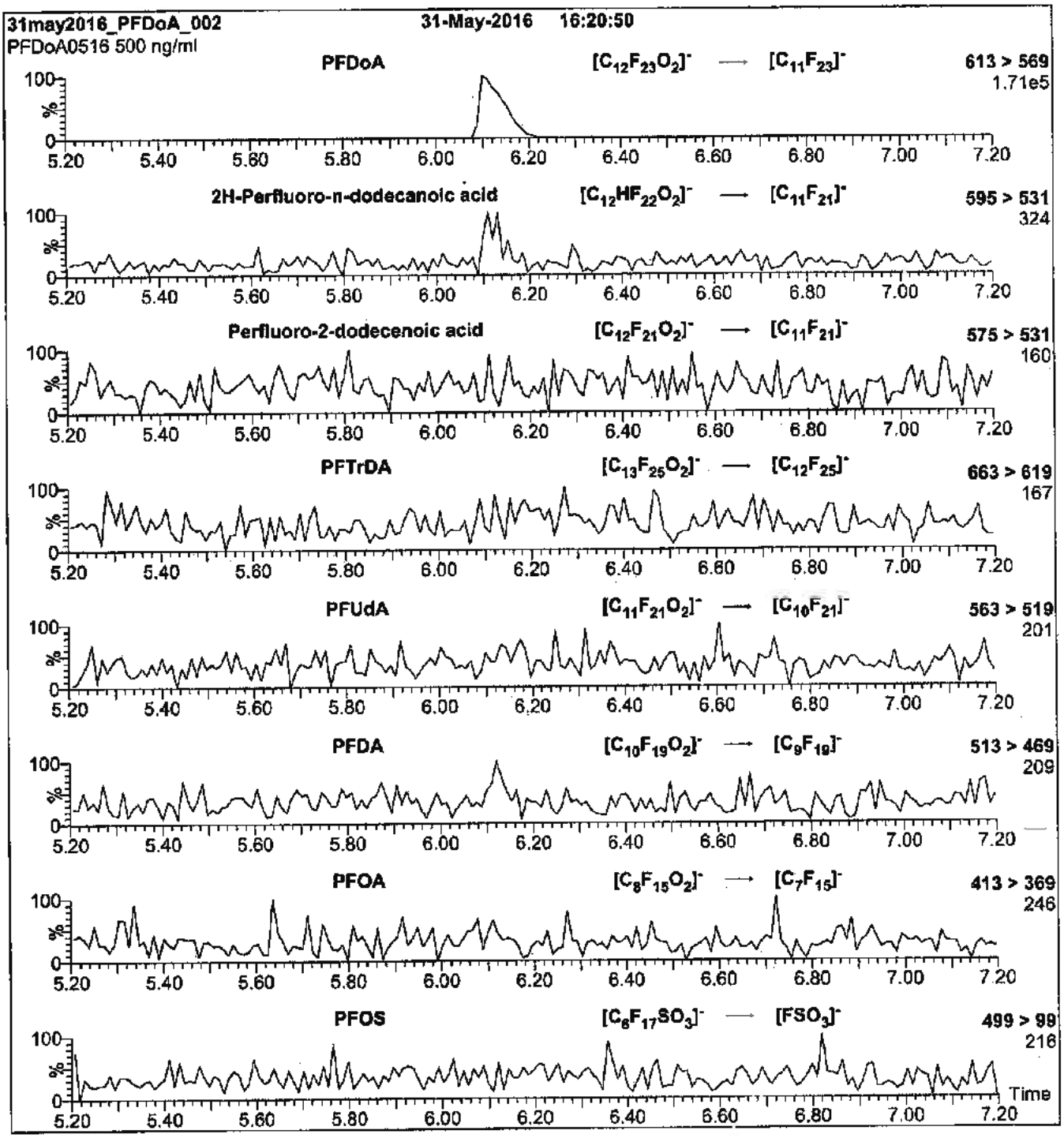
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFDoA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

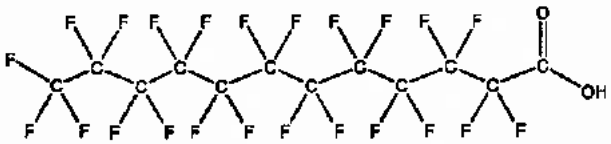
LCPFDoA_00008

P: 10/20/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDoA	**LOT NUMBER:**	PFDoA0517
COMPOUND:	Perfluoro-n-dodecanoic acid		
STRUCTURE:		**CAS #:**	307-55-1



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CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/29/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/29/2022		
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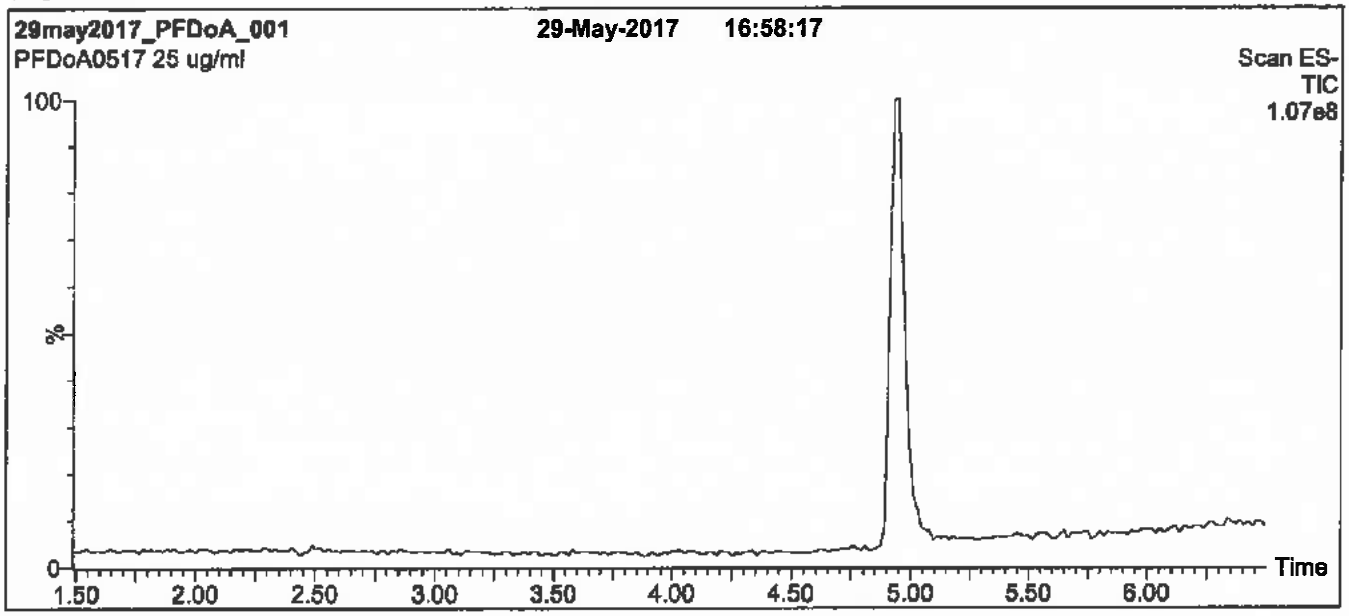
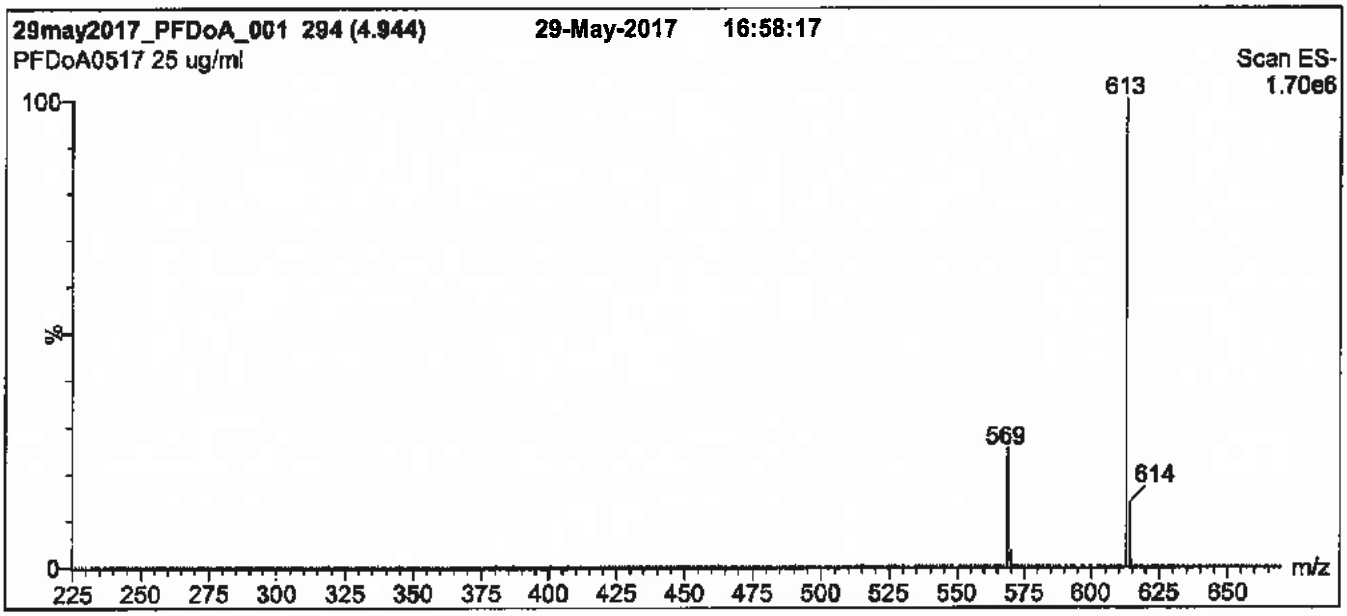
Figure 1: **PFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

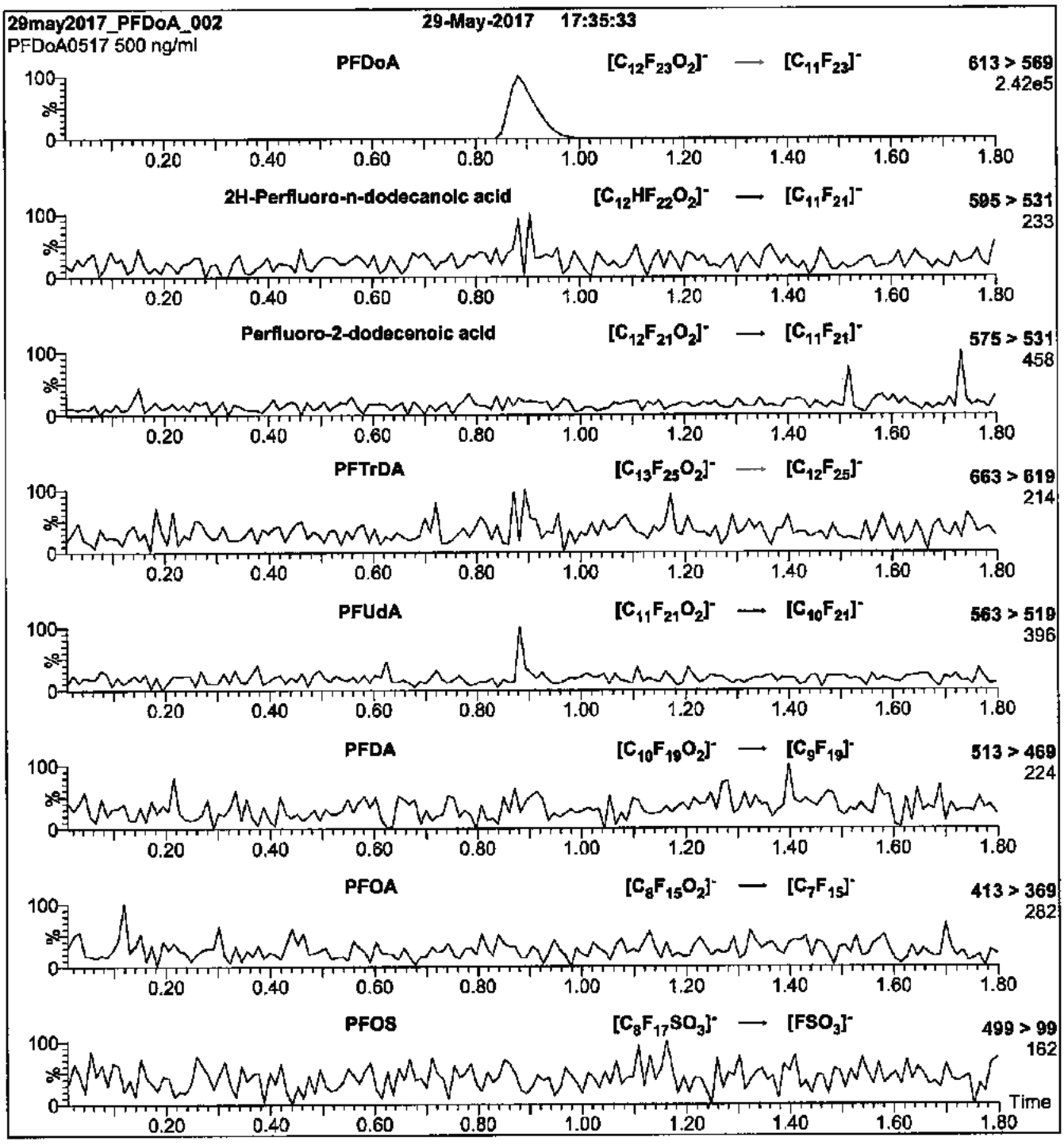
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFDoA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

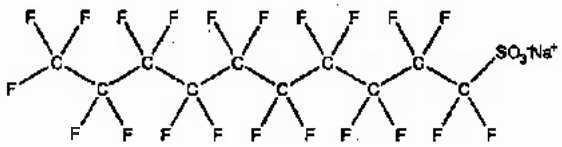
LCPFDSA_00002

D: 12/29/16 SK✓

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	L-PFDS	**LOT NUMBER:**	LPFDS0516
COMPOUND:	Sodium perfluoro-1-decanesulfonate		
STRUCTURE:		**CAS #:**	2806-15-7



MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$	**MOLECULAR WEIGHT:**	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/26/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

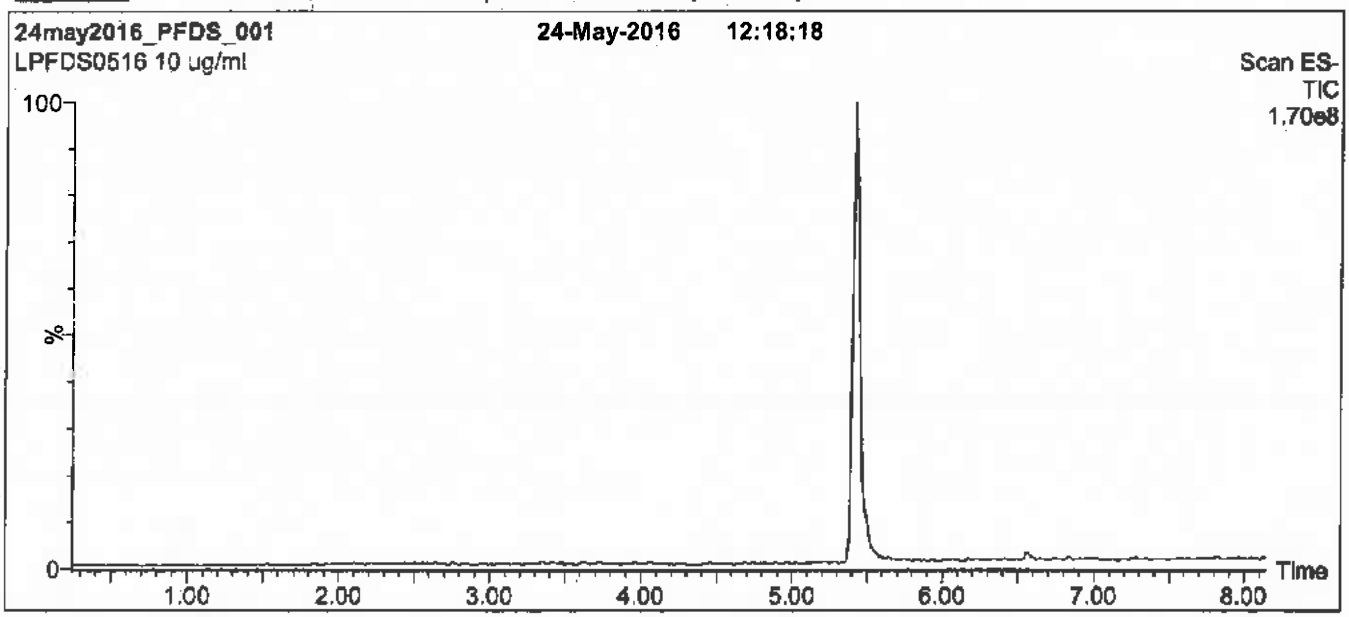
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

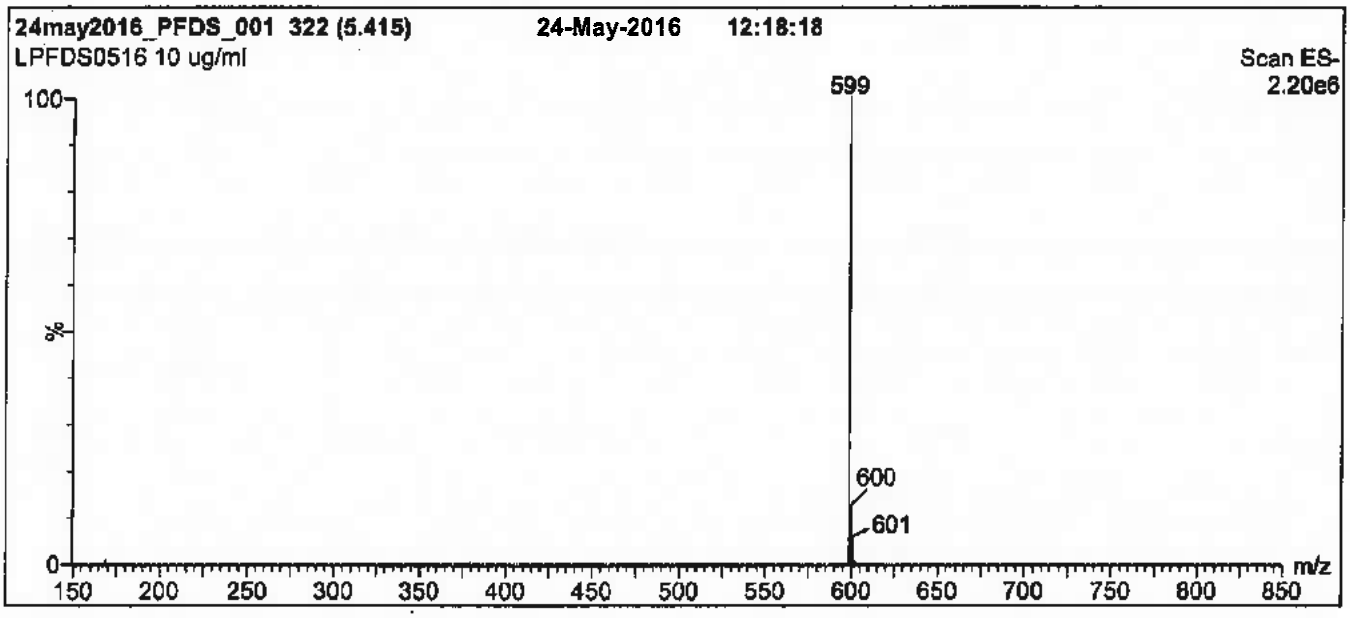
CALA

ANAB ACCREDITED

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

Figure 1: **L-PFDS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

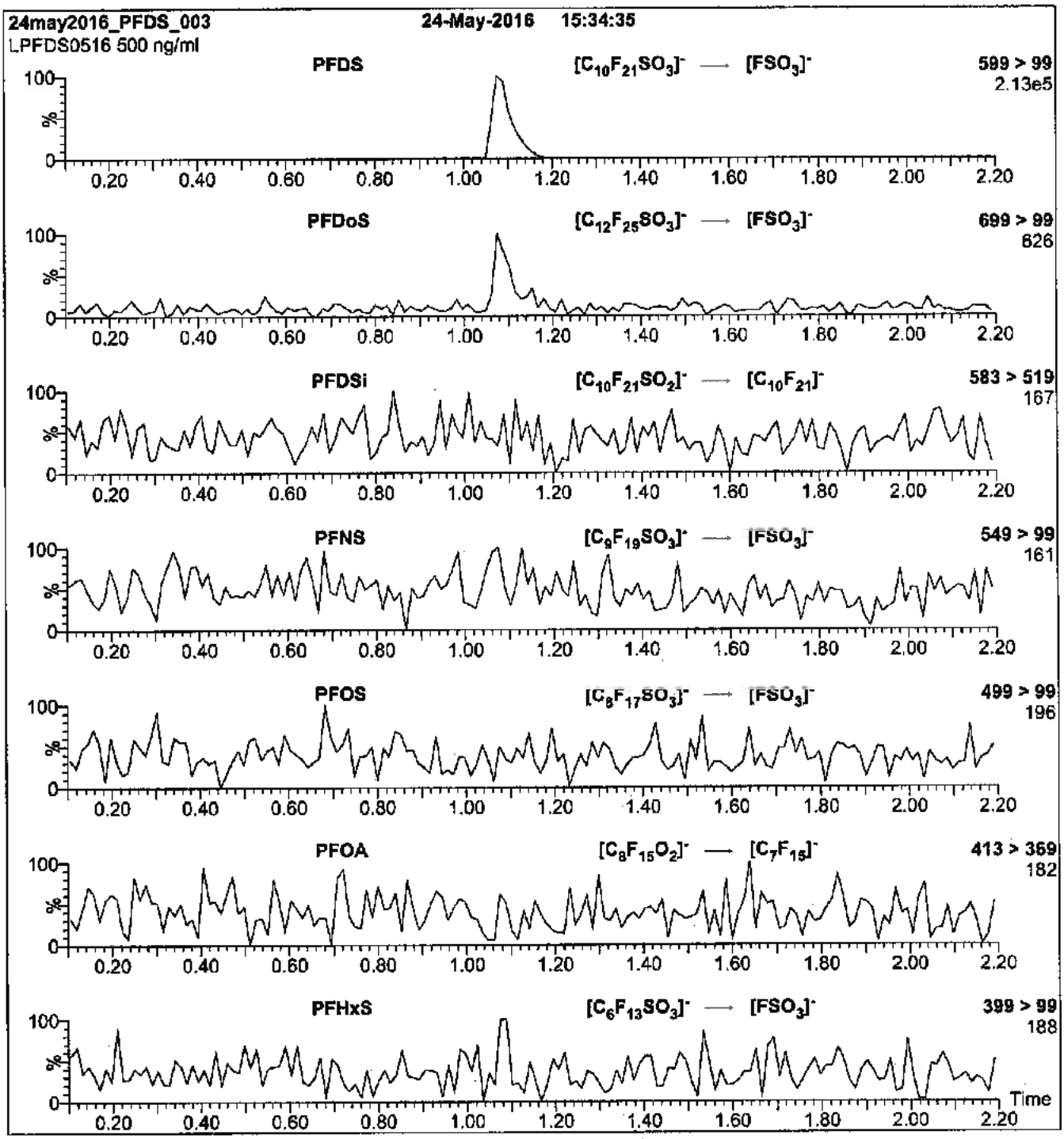
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFDS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFDS)

Mobile phase: Isocratic 80% (50:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.70e-3
Collision Energy (eV) = 50

Reagent

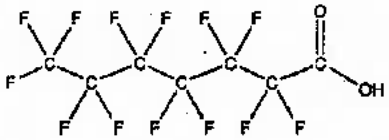
LCPFHpA_00008

P: 12/29/16 SGN

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFHpA	**LOT NUMBER:**	PFHpA1216
COMPOUND:	Perfluoro-n-heptanoic acid		
STRUCTURE:		**CAS #:**	375-85-9



MOLECULAR FORMULA:	$C_7HF_{13}O_2$	**MOLECULAR WEIGHT:**	364.06
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/02/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/12/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED

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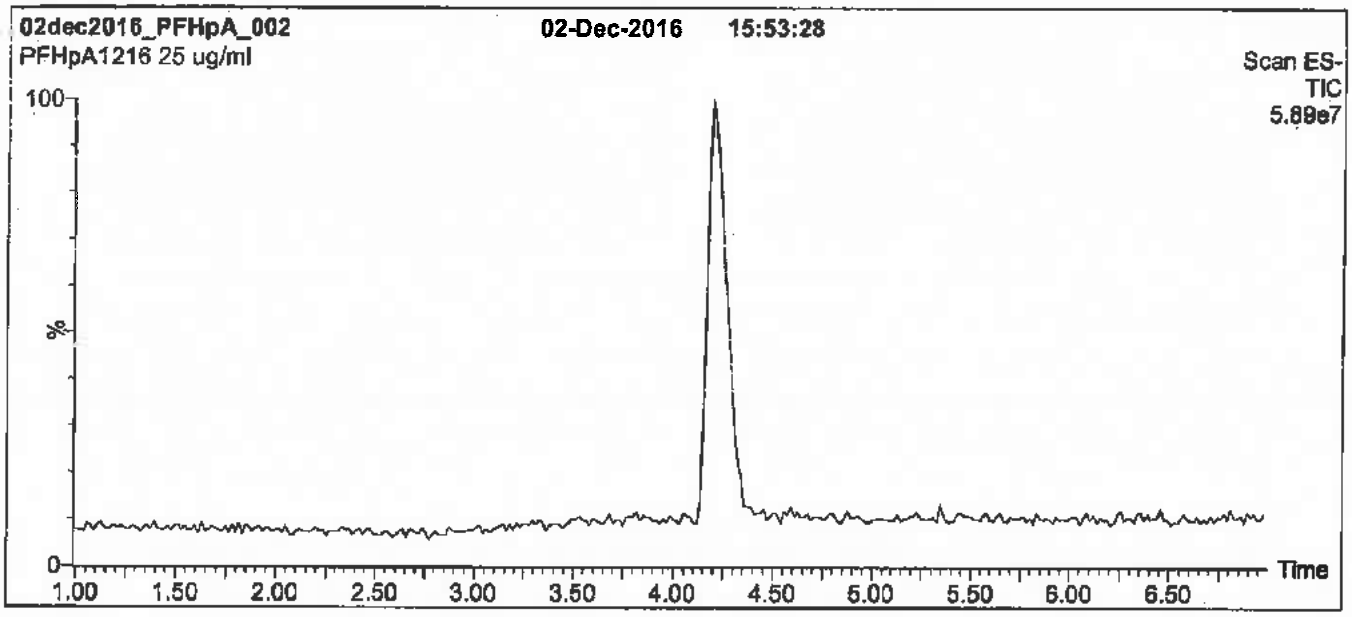
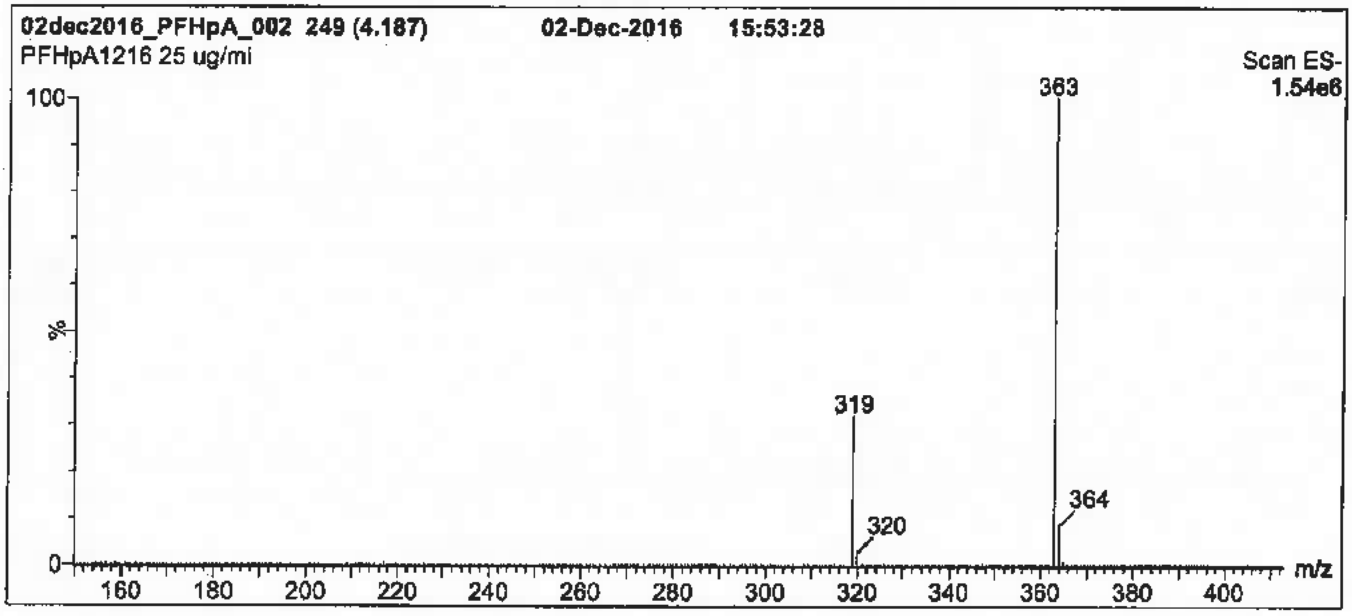
Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

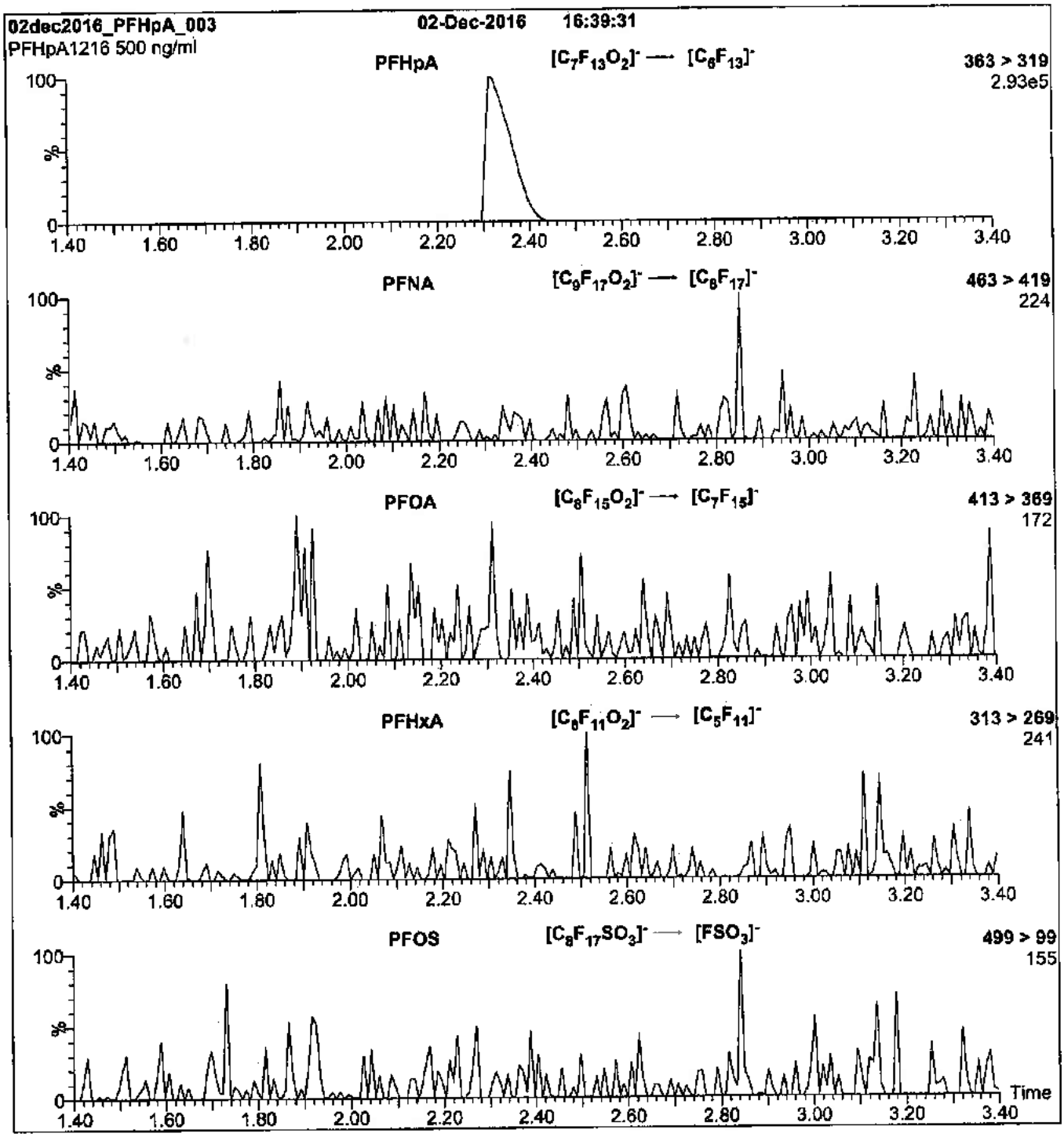
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFHpA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

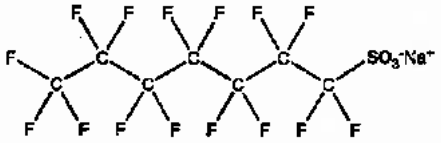
LCPFHpSA_00003

R: 9/21/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	L-PFHpS	**LOT NUMBER:**	LPFHpS0817
COMPOUND:	Sodium perfluoro-1-heptanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.6 ± 2.4 µg/ml (PFHpS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/01/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/07/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

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

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UNCERTAINTY:

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

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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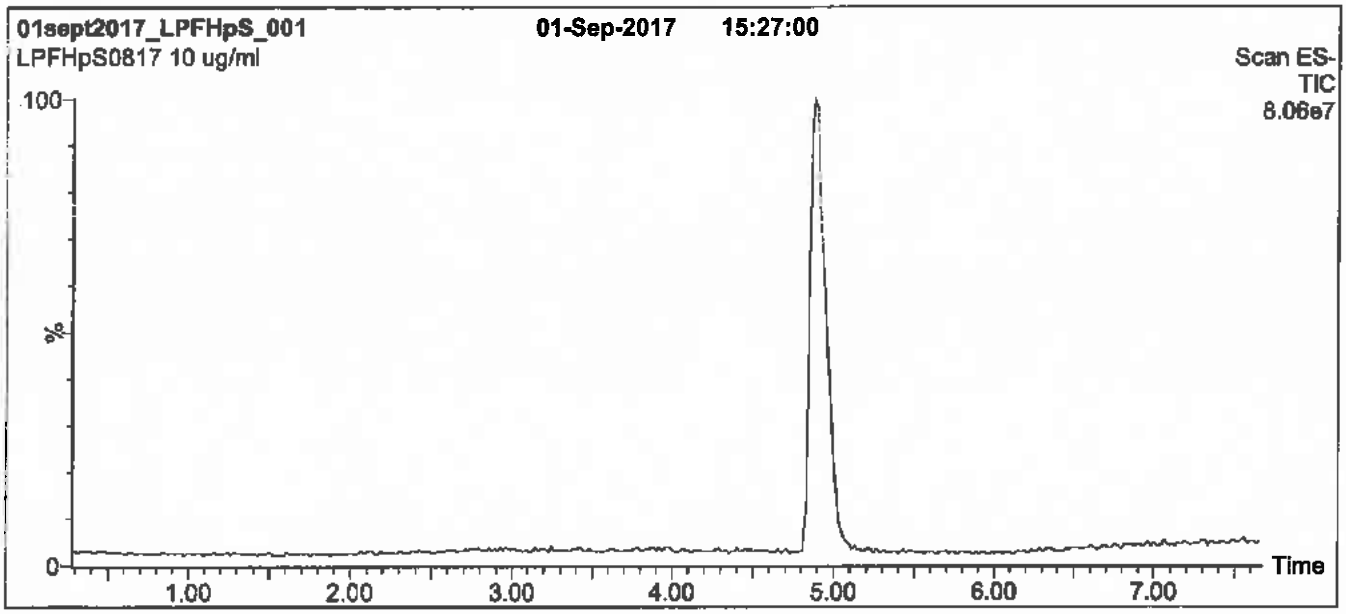
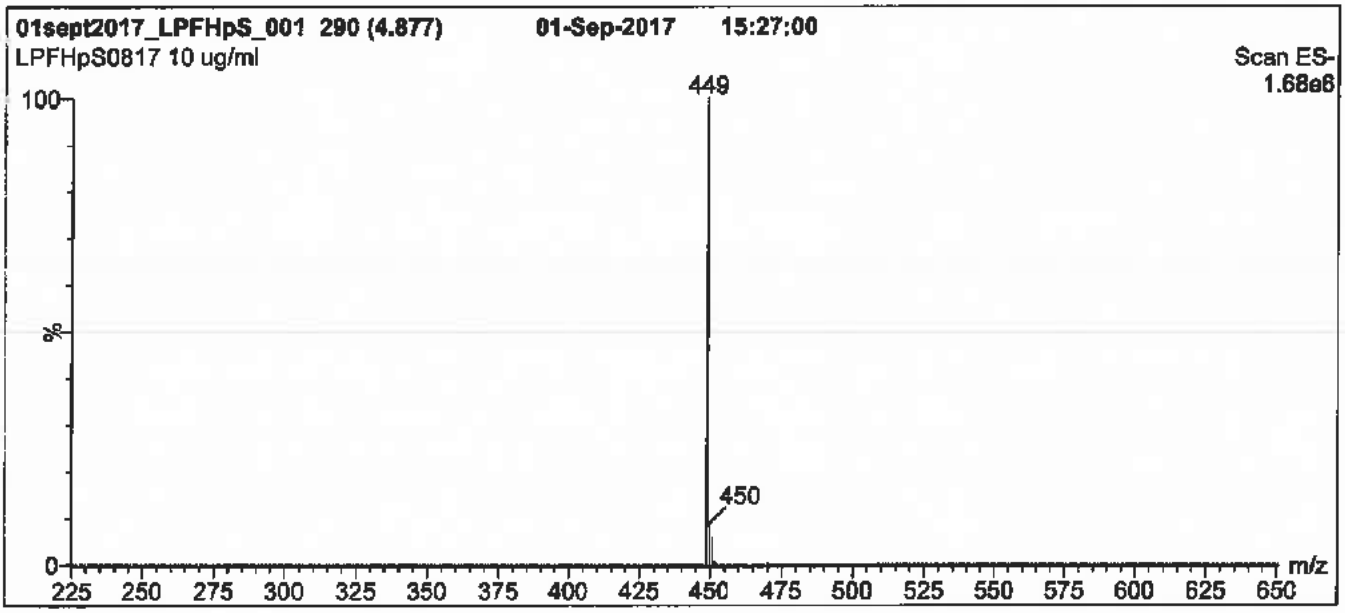
Figure 1: **L-PFHpS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

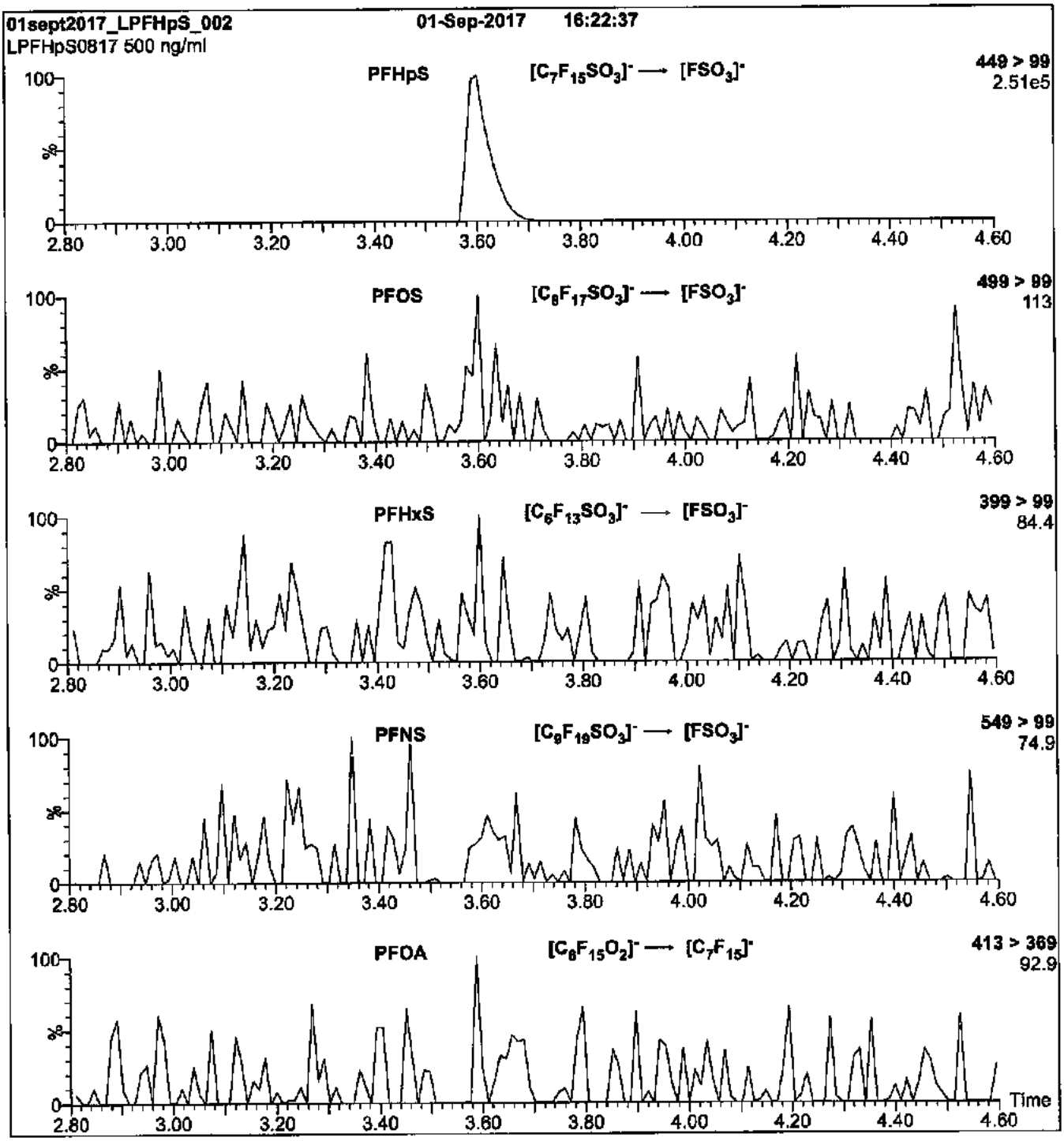
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 650 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFHpS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00007

R: 12/29/16 SAV

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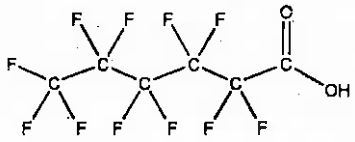
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFHxA	**LOT NUMBER:**	PFHxA1215
COMPOUND:	Perfluoro-n-hexanoic acid		
STRUCTURE:		**CAS #:**	307-24-4



MOLECULAR FORMULA:	$C_6HF_{11}O_2$	**MOLECULAR WEIGHT:**	314.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/22/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/23/2015
B.G. Chittim (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

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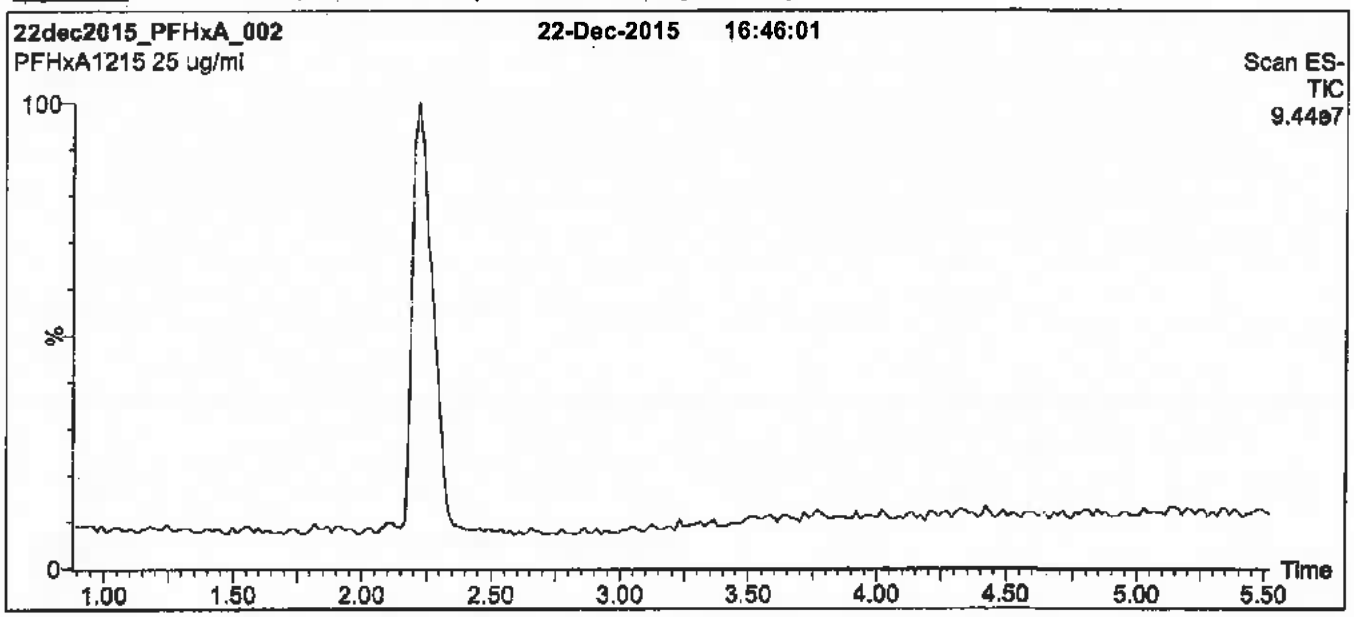
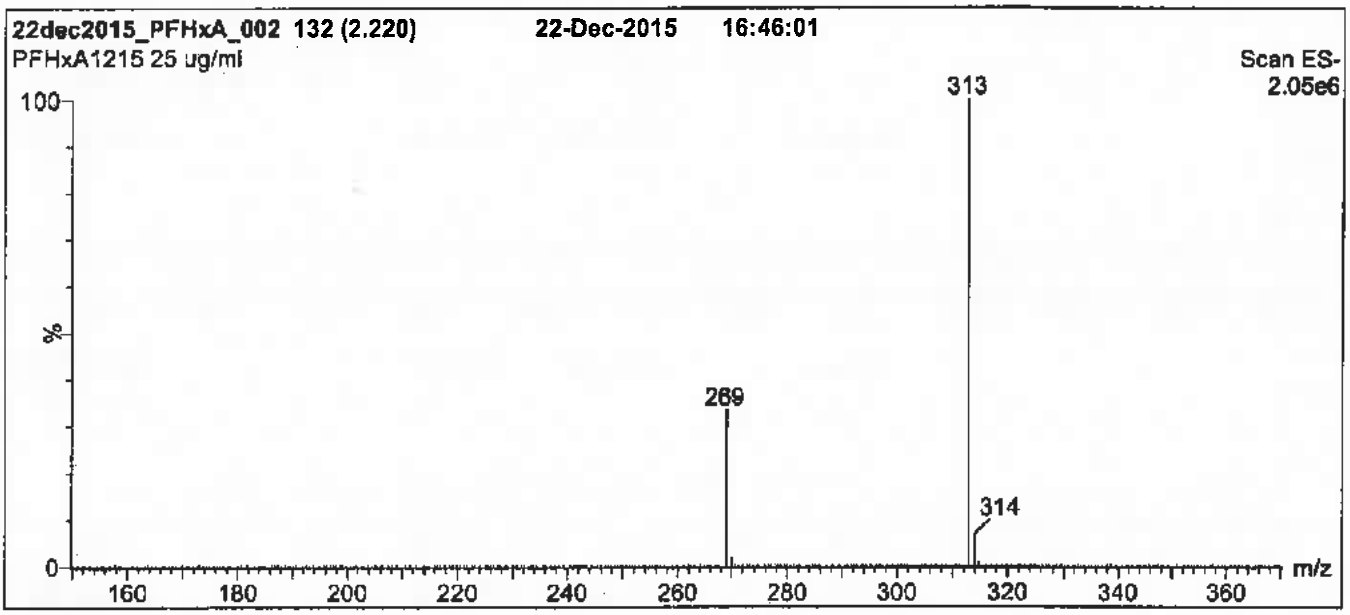
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

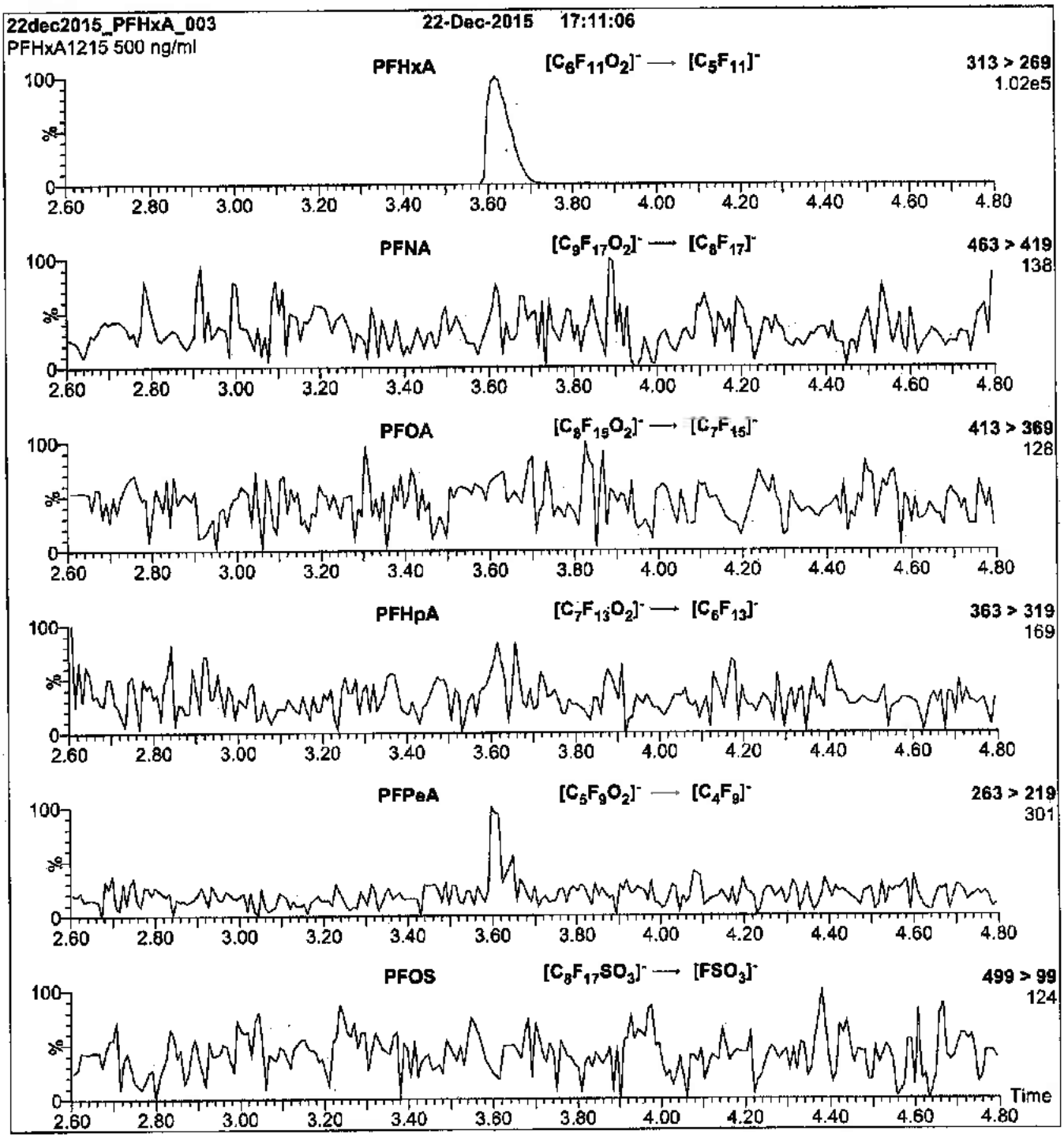
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFHxA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxDA_00008

T: 12/29/16 SEV

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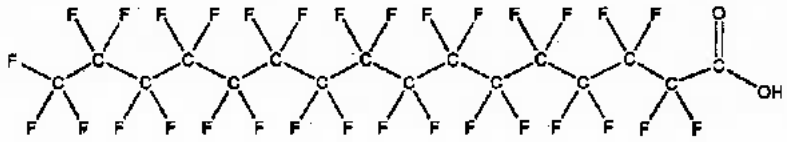
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFHxDA	**LOT NUMBER:**	PFHxDA0516
COMPOUND:	Perfluoro-n-hexadecanoic acid		
STRUCTURE:		**CAS #:**	67905-19-5



MOLECULAR FORMULA:	$C_{16}HF_{31}O_2$	**MOLECULAR WEIGHT:**	814.13
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/25/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/25/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% of PFODA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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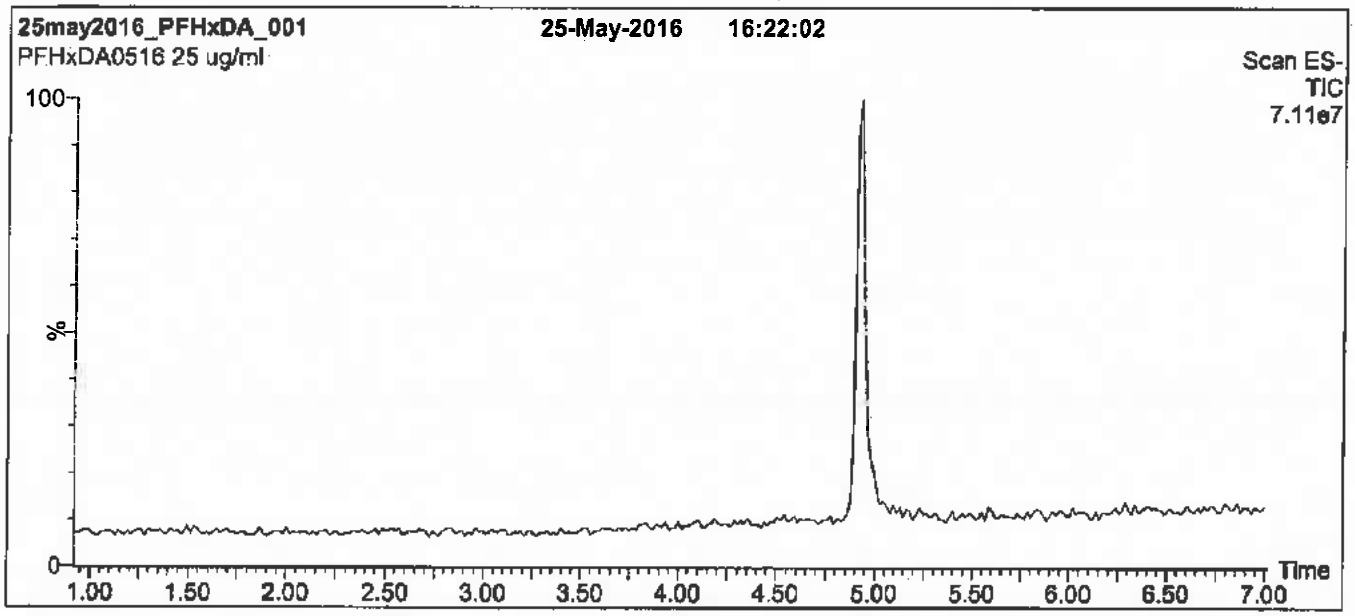
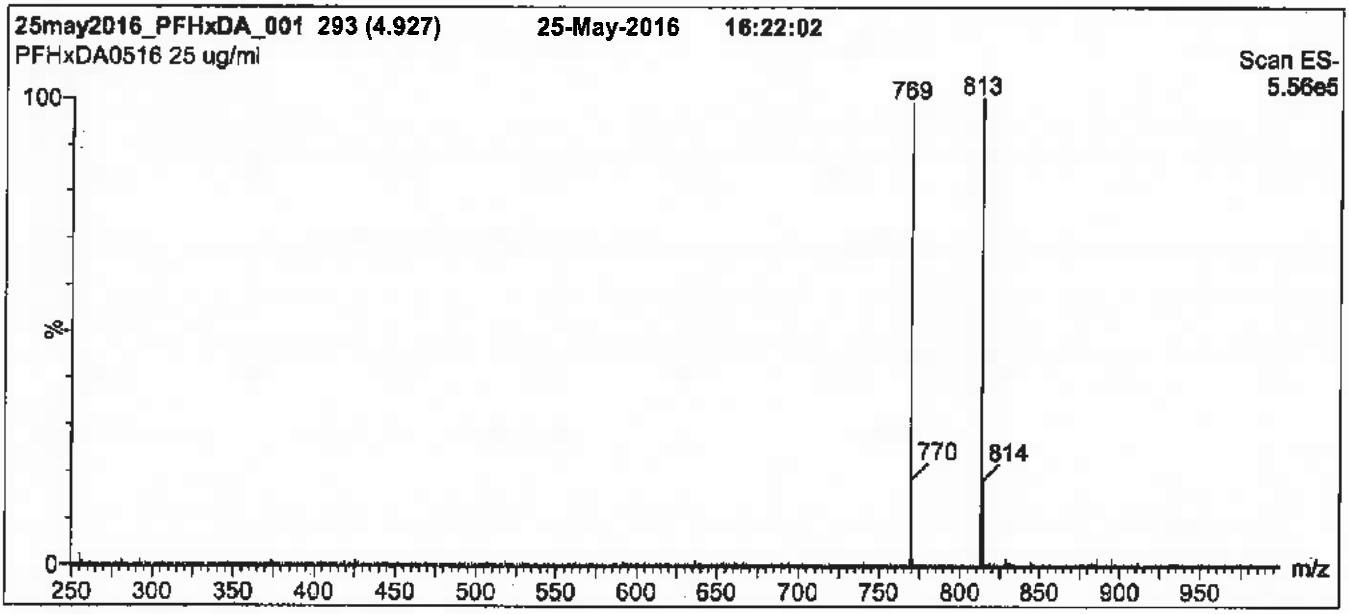
Figure 1: **PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 6 min and hold for 2.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

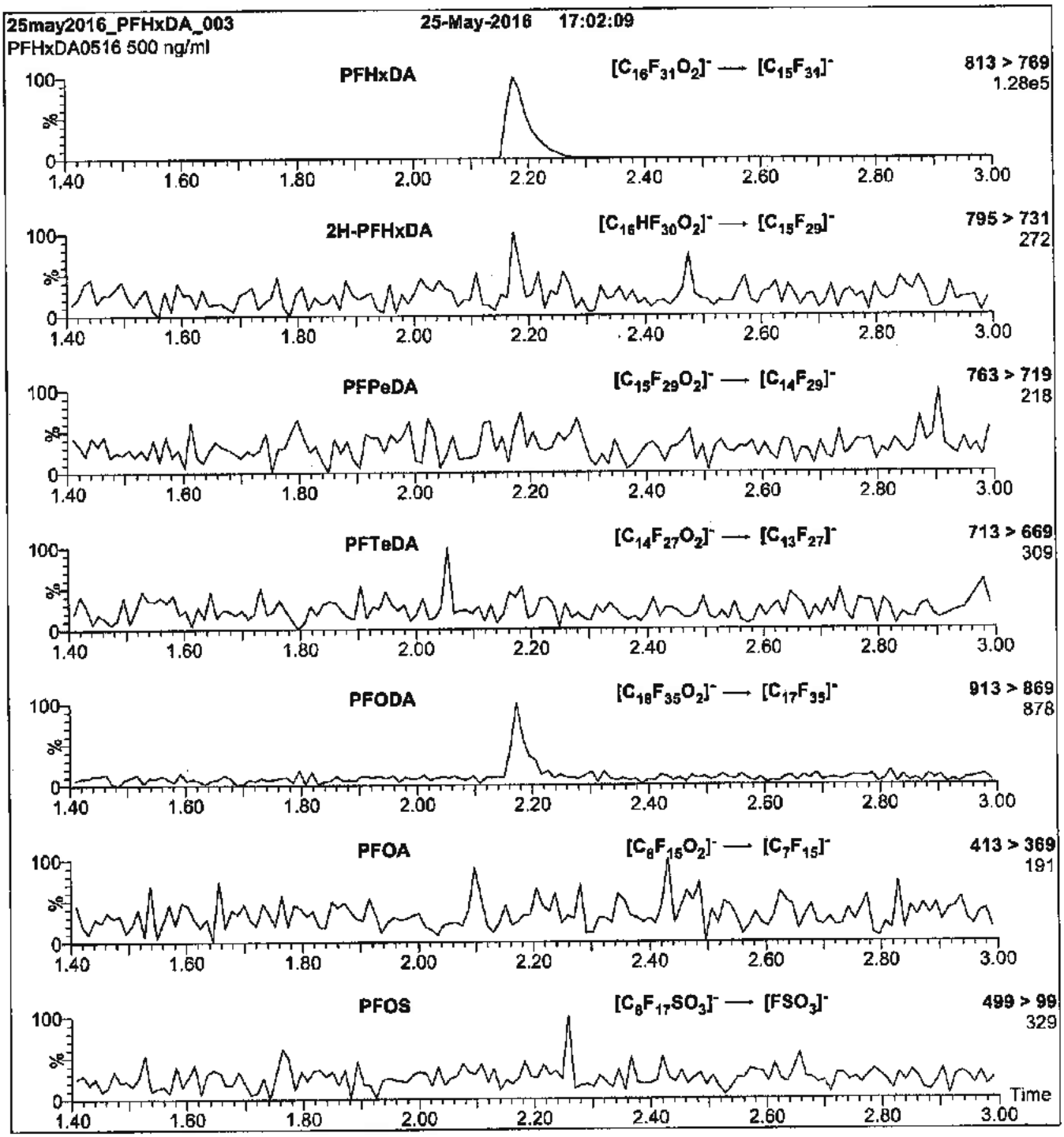
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFHxDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 15

Reagent

LCPFHxS-br_00004

R: 12/29/16 SKJ

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0615
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	06/29/2015
LAST TESTED: (mm/dd/yyyy)	07/03/2015
EXPIRY DATE: (mm/dd/yyyy)	07/03/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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

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TRACEABILITY:

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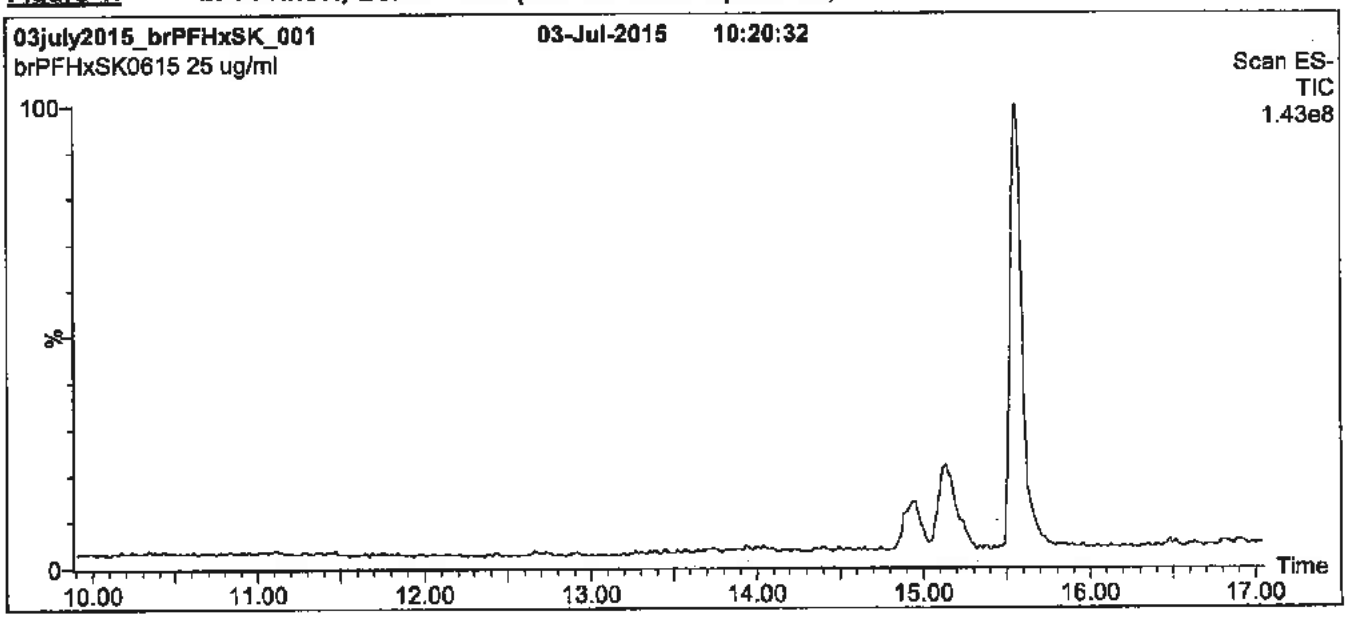
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

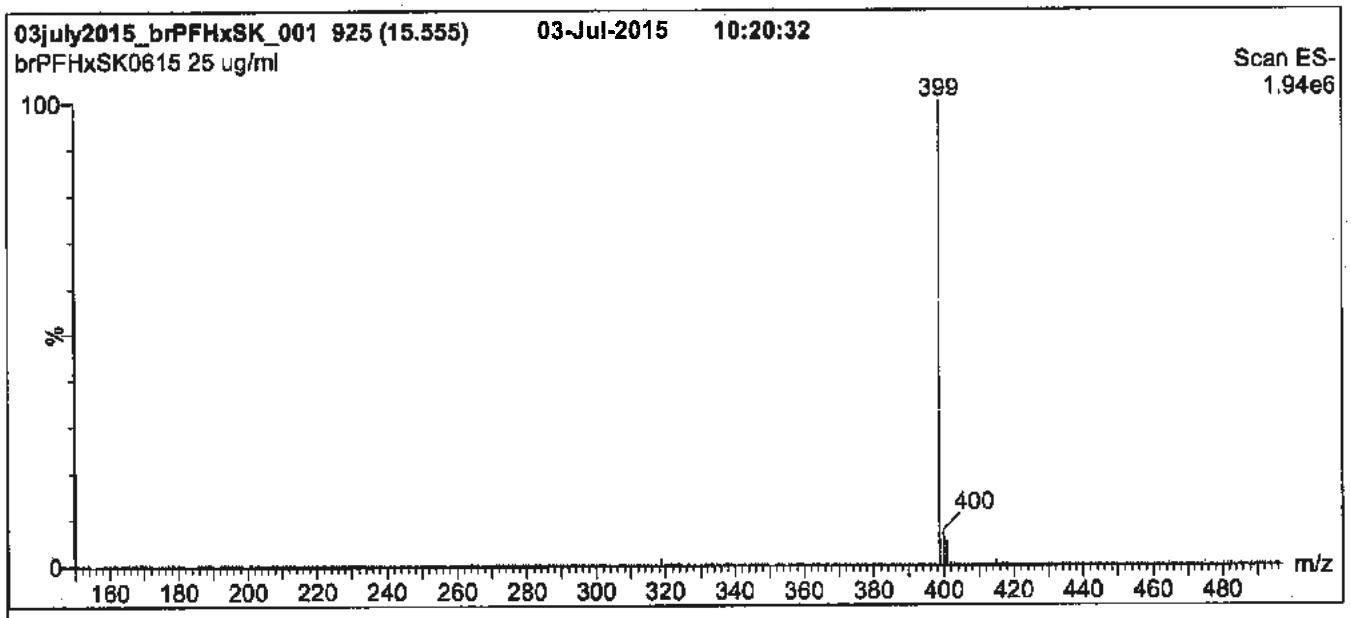
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: _____ **Date:** 09/27/2016 (mm/dd/yyyy)
B.G. Chittim

Figure 1: **br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

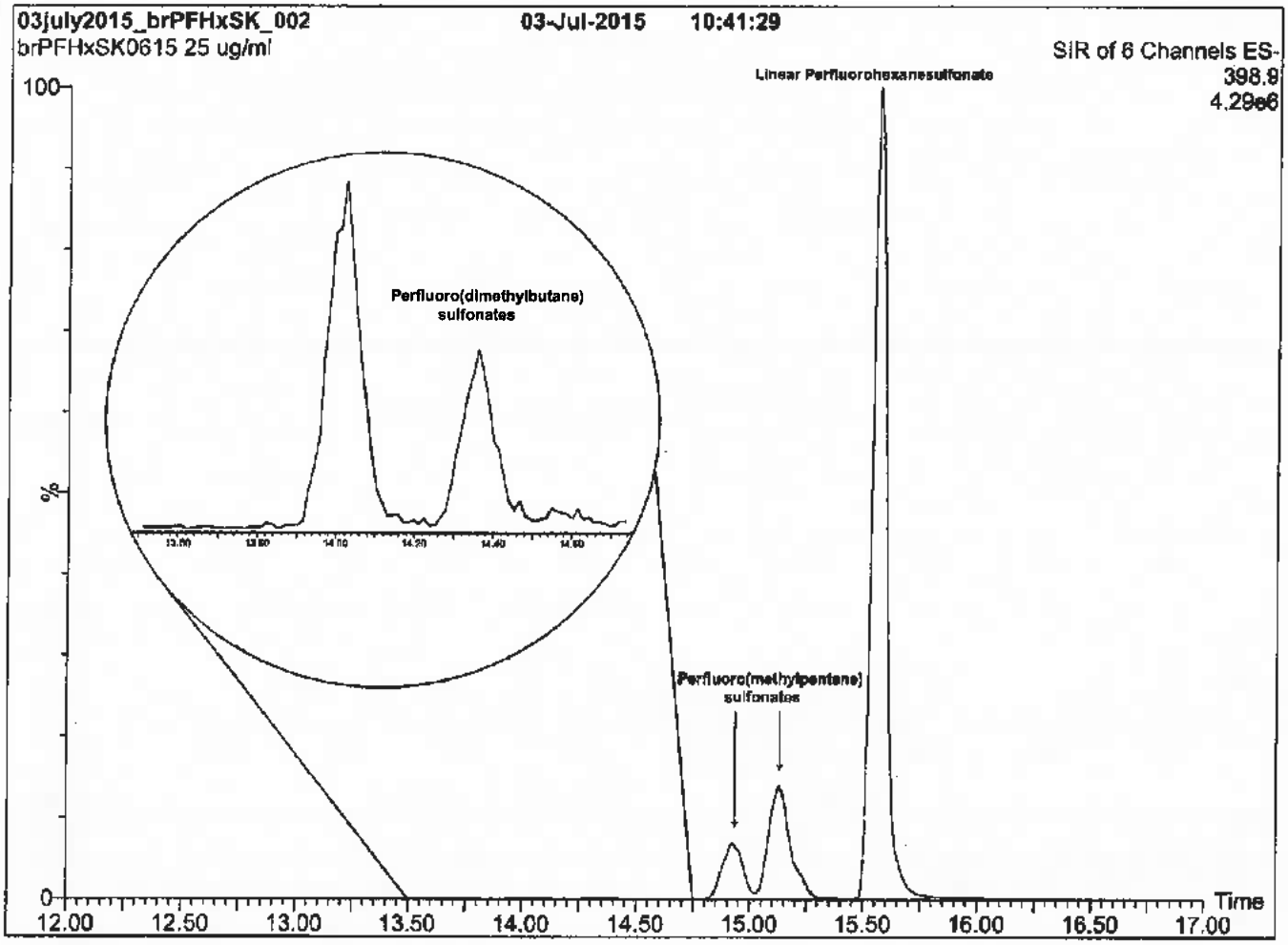
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFHxSK; LC/MS Data**



Conditions for Figure 2:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

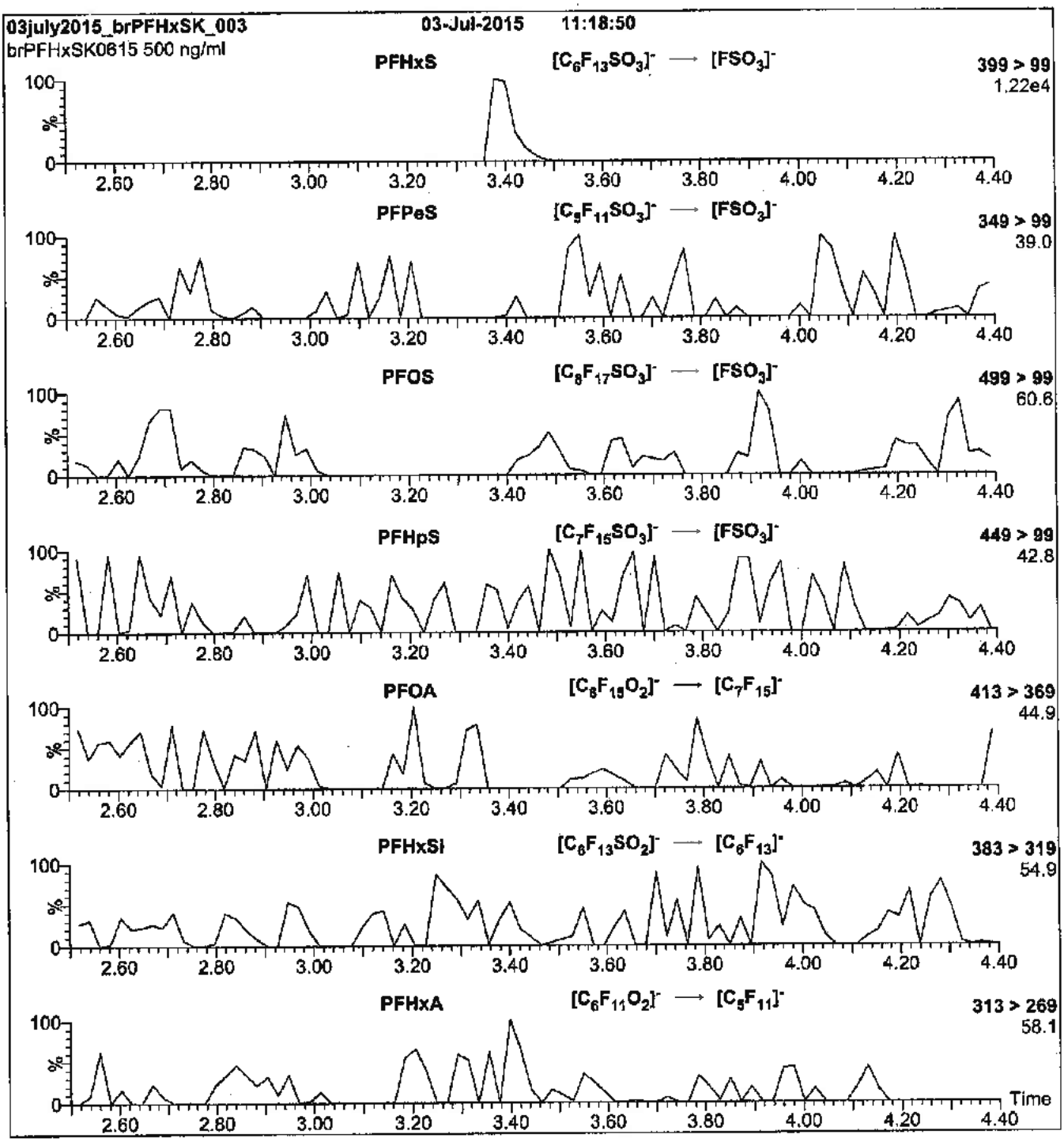
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: **br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml br-PFHxSK)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

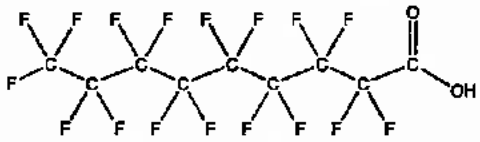
LCPFNA_00009

R: 9/21/17 SKJ

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFNA	**LOT NUMBER:**	PFNA0717
COMPOUND:	Perfluoro-n-nonanoic acid		
STRUCTURE:		**CAS #:**	375-95-1



MOLECULAR FORMULA:	$C_9HF_{17}O_2$	**MOLECULAR WEIGHT:**	464.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/20/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/20/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/24/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

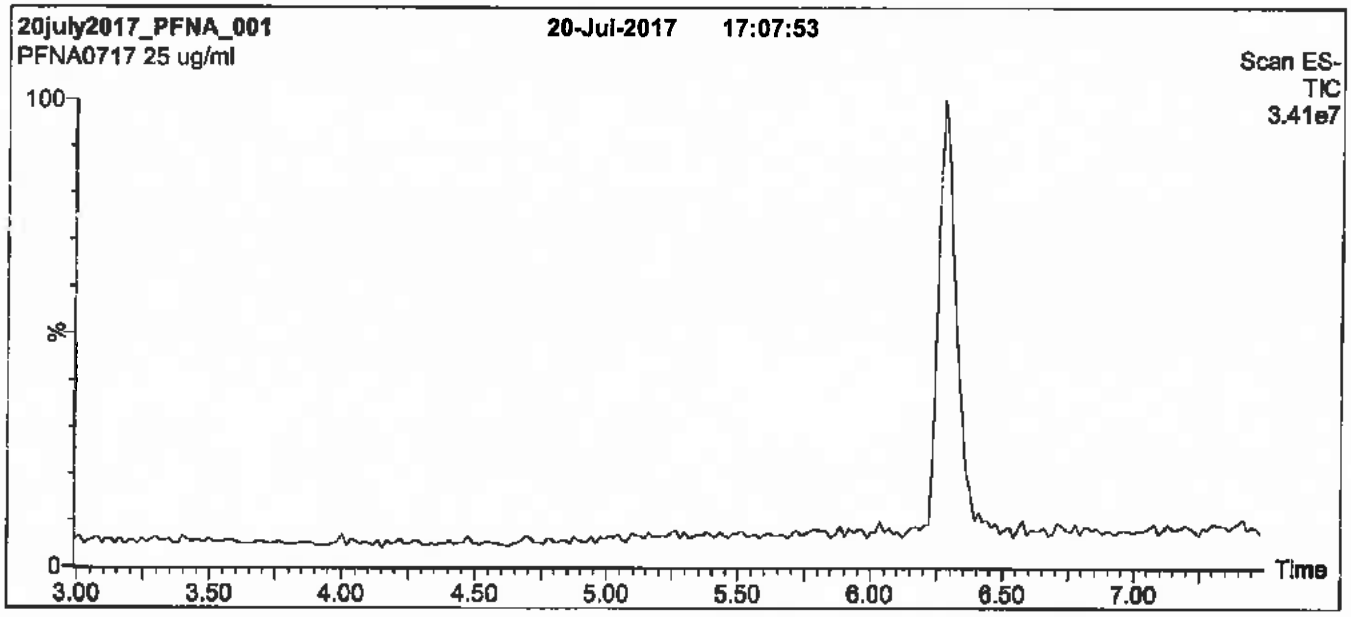
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

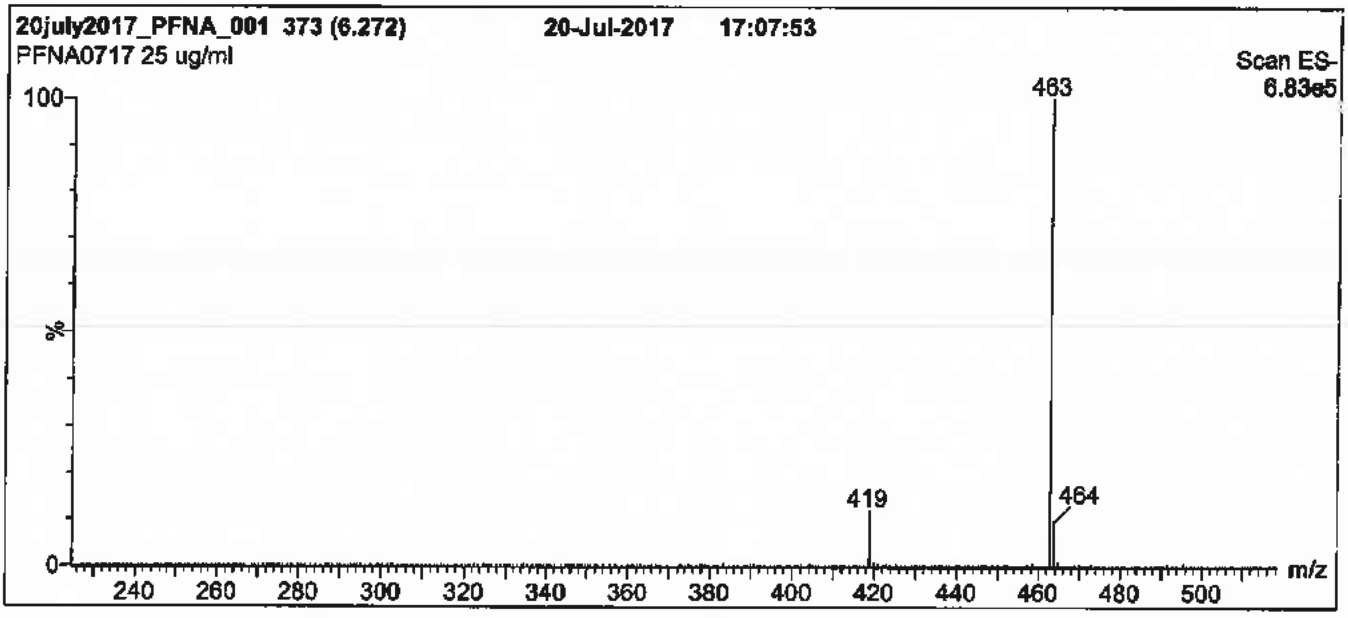
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

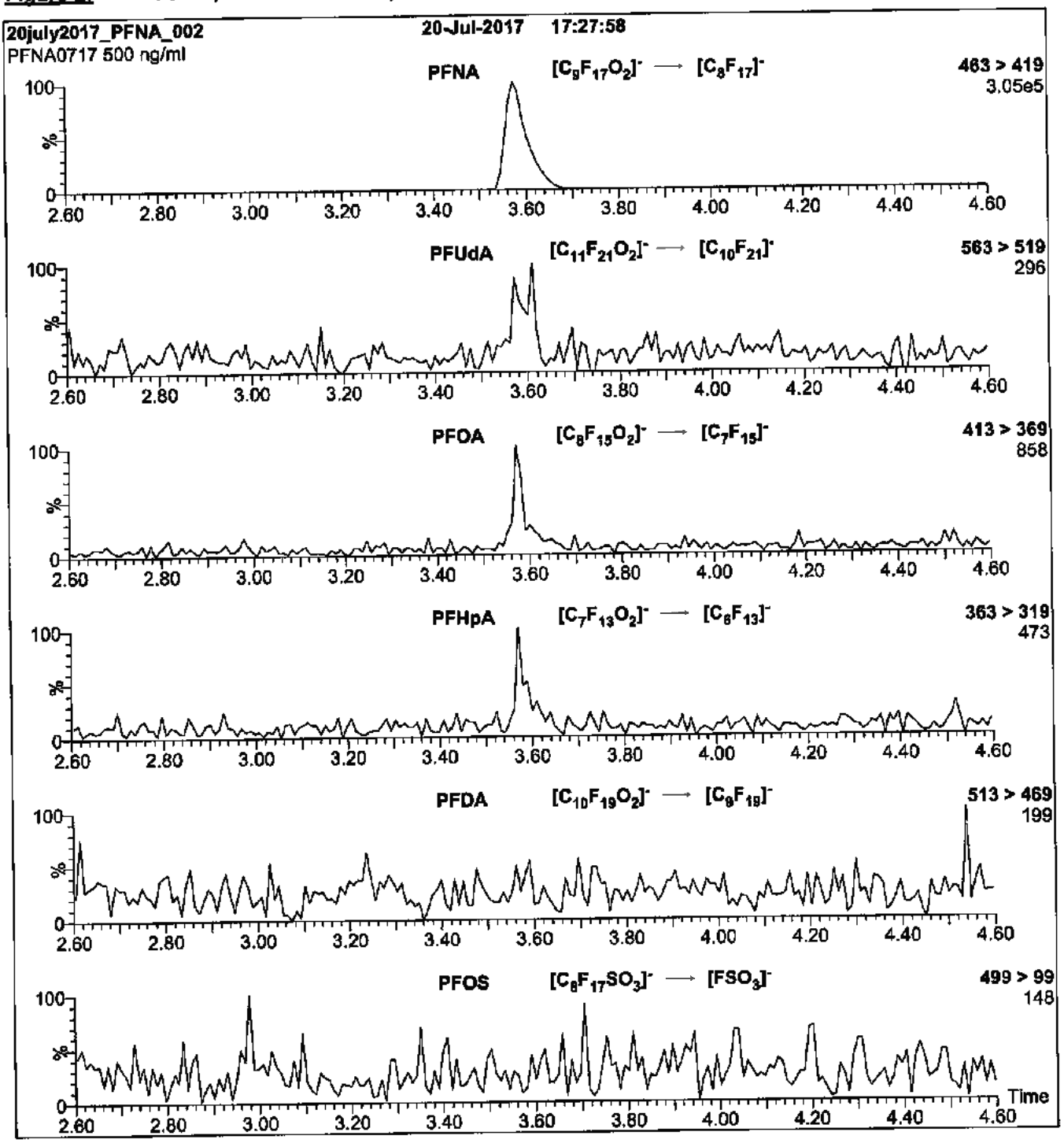
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFNA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFNS_00003

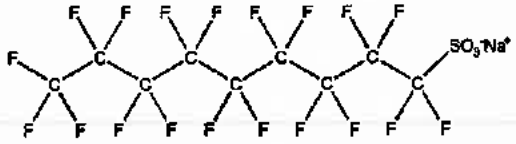
1106804
ID: LCPFNS_00003
Exp: 09/27/22 Prpd: SKV
L-PFNS at 48.0ug/mL

R: 12/4/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	L-PFNS	**LOT NUMBER:**	LPFNS0917
COMPOUND:	Sodium perfluoro-1-nonanesulfonate		
STRUCTURE:		**CAS #:**	98789-57-2



MOLECULAR FORMULA:	$C_9F_{19}SO_3Na$	**MOLECULAR WEIGHT:**	572.12
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.0 ± 2.4 µg/ml (PFNS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/27/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/27/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/28/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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SYNTHESIS / CHARACTERIZATION:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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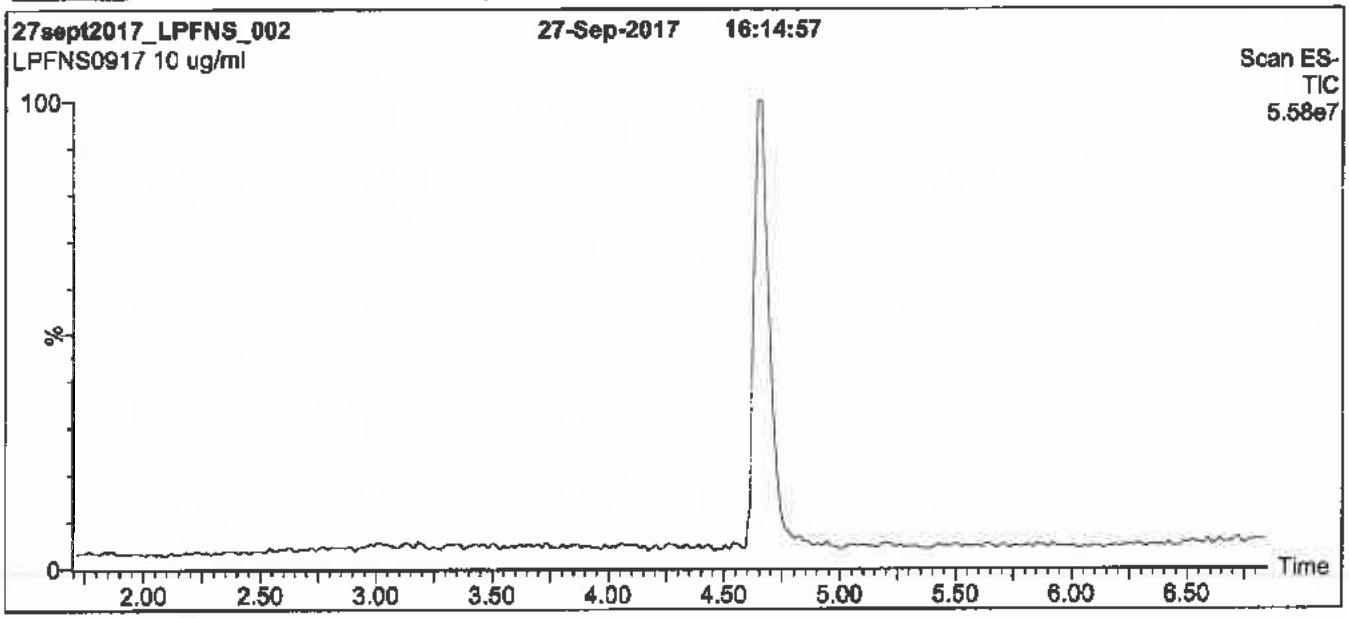
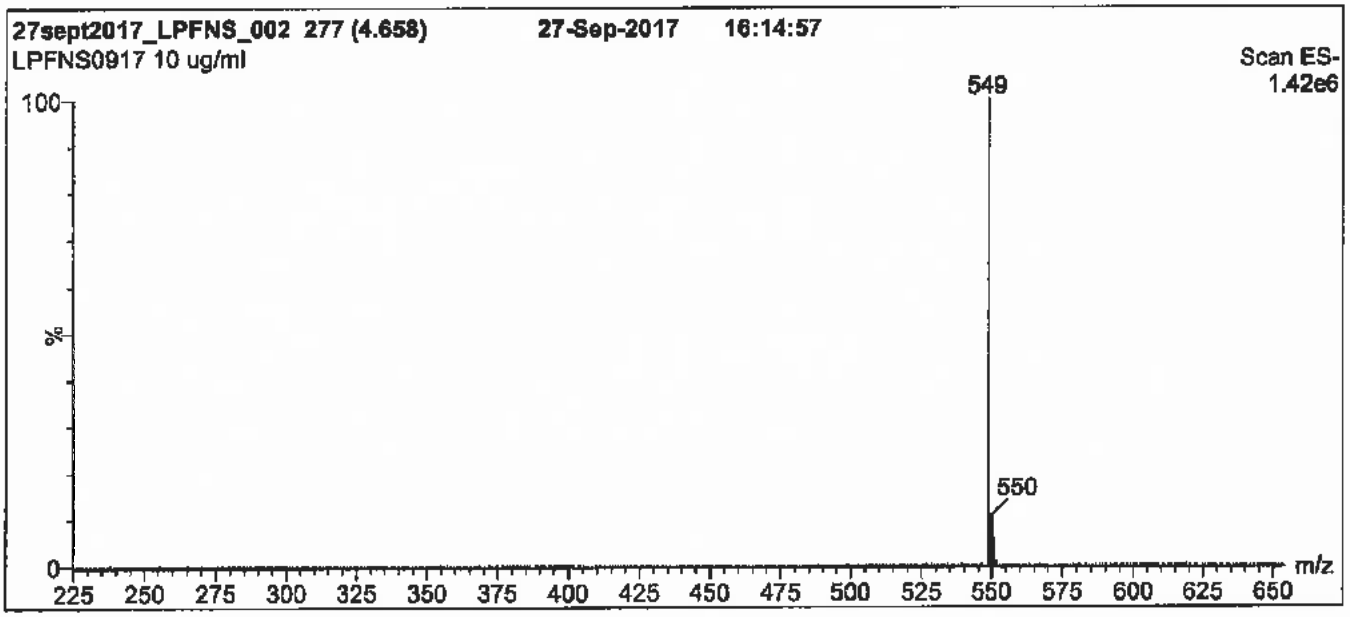
CALA

ANAB ACCREDITED

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

Figure 1: **L-PFNS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

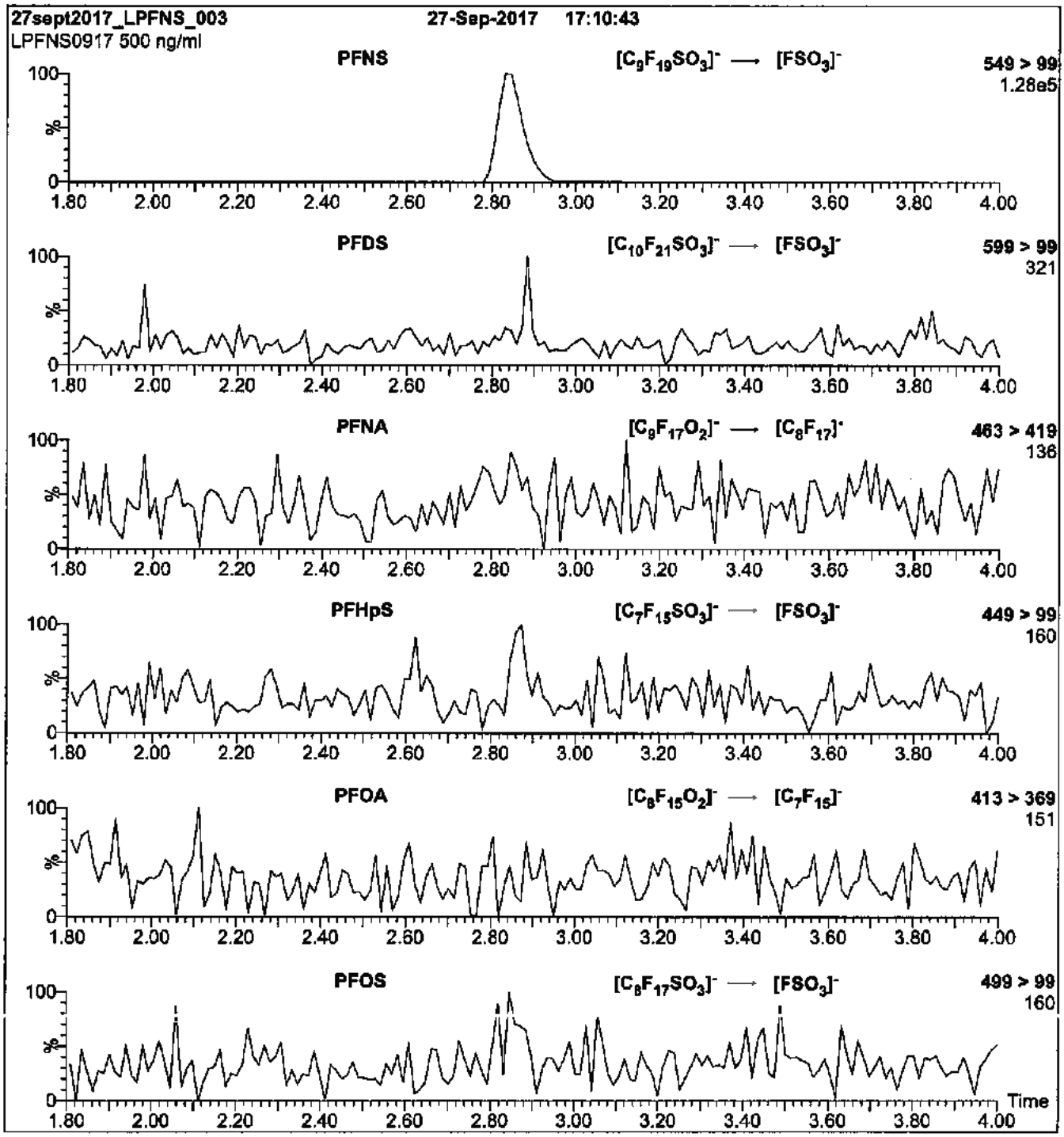
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFNS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFNS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 45

Reagent

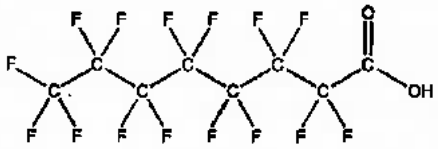
LCPFOA_00008

R: 12/24/16 SPV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFOA	**LOT NUMBER:**	PFOA0716
COMPOUND:	Perfluoro-n-octanoic acid		
STRUCTURE:		**CAS #:**	335-67-1



MOLECULAR FORMULA:	$C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	414.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	08/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/02/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/05/2016 (mm/dd/yyyy)

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED

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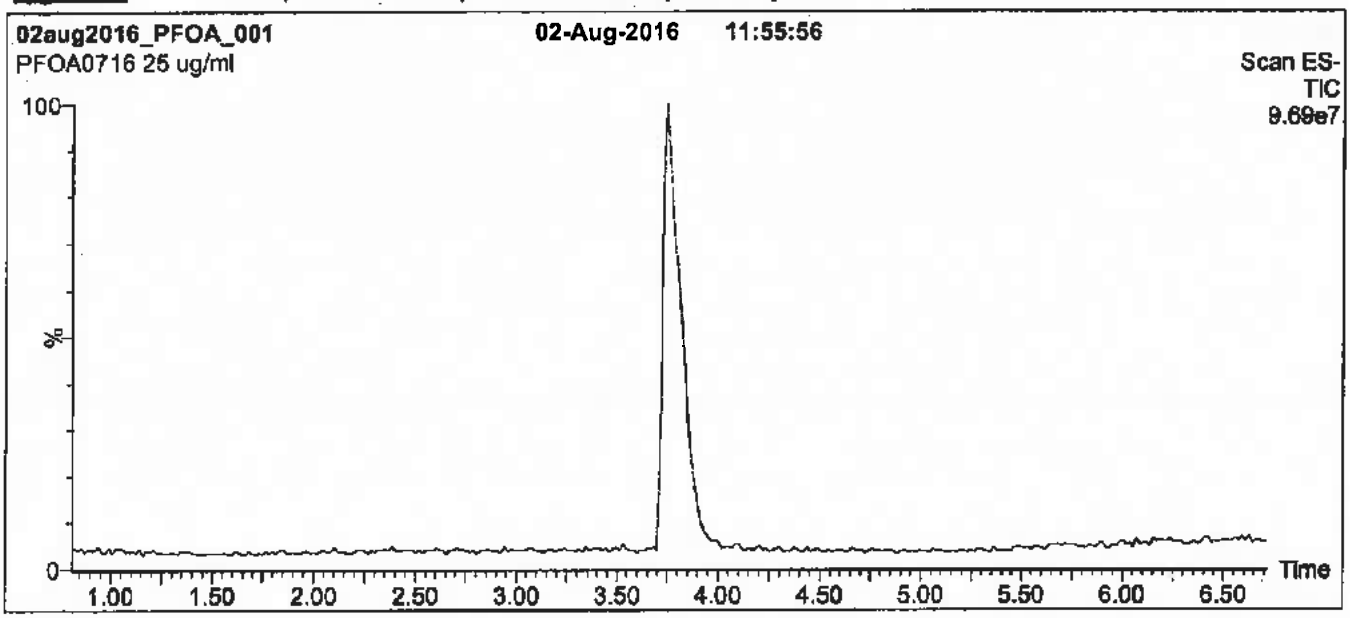
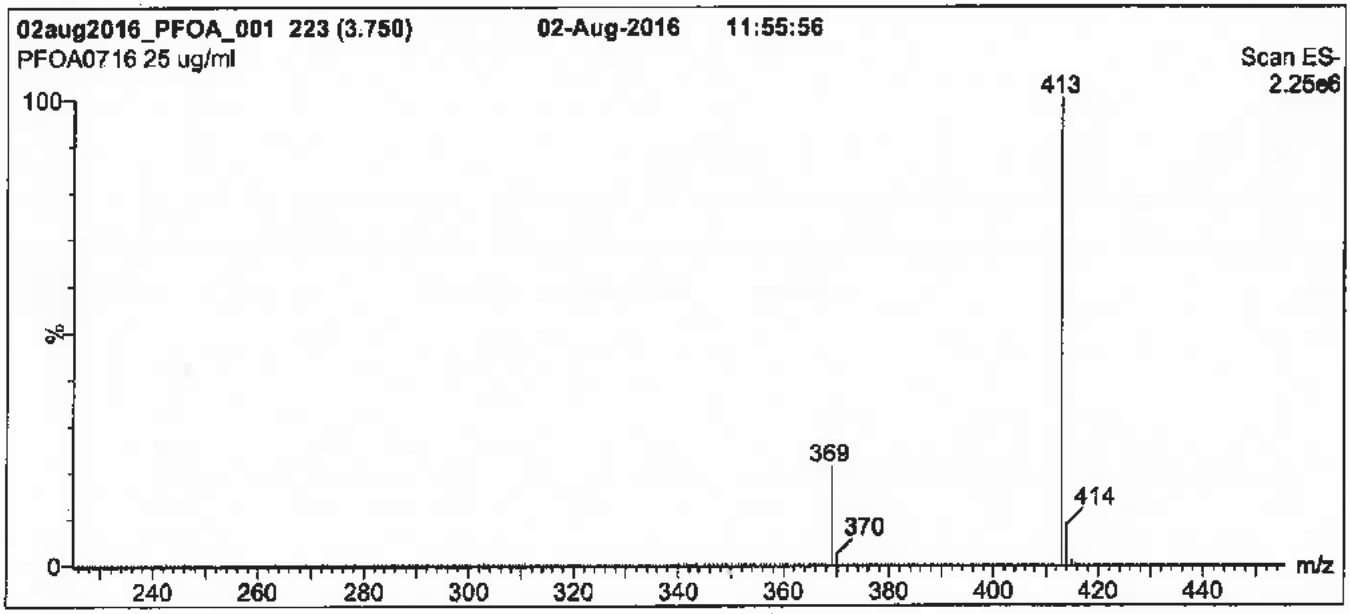
Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

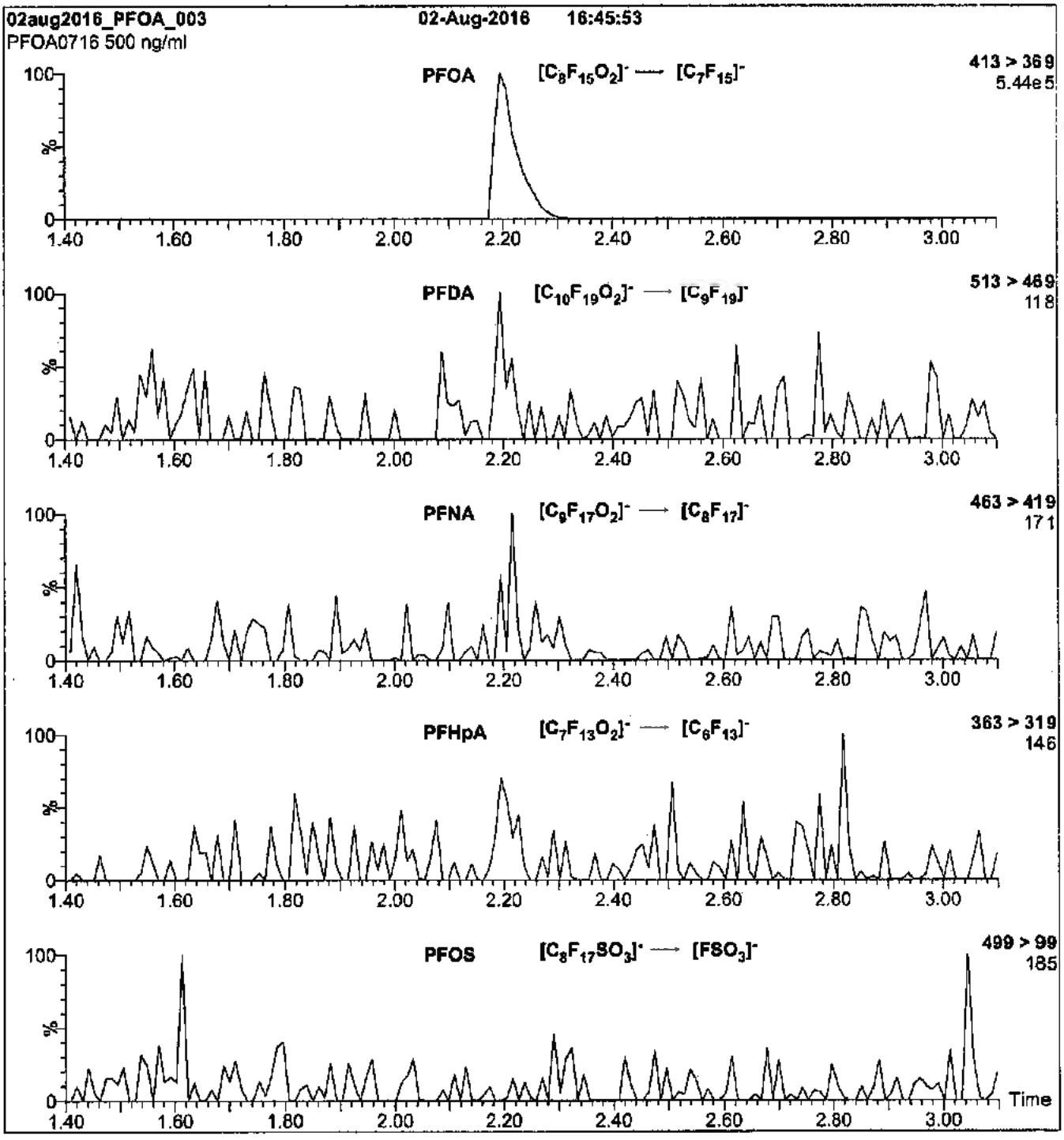
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

injection: Direct loop injection
10 µl (500 ng/ml PFOA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

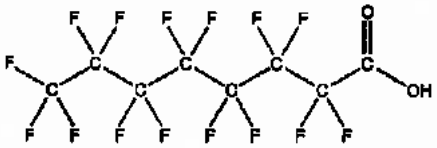
LCPFOA_00009

P: 10/2017 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	PFOA	**LOT NUMBER:**	PFOA0917
COMPOUND:	Perfluoro-n-octanoic acid		
STRUCTURE:		**CAS #:**	335-67-1



MOLECULAR FORMULA:	$C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	414.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/27/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/27/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/28/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA

ANAB ACCREDITED

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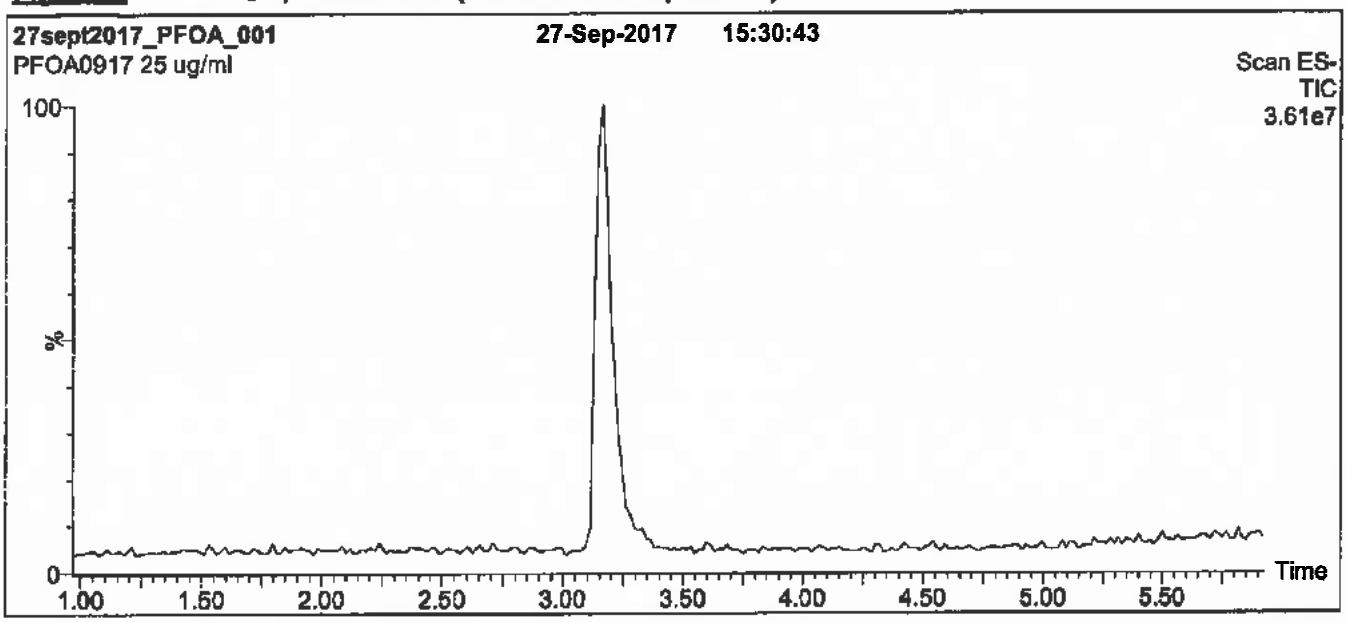
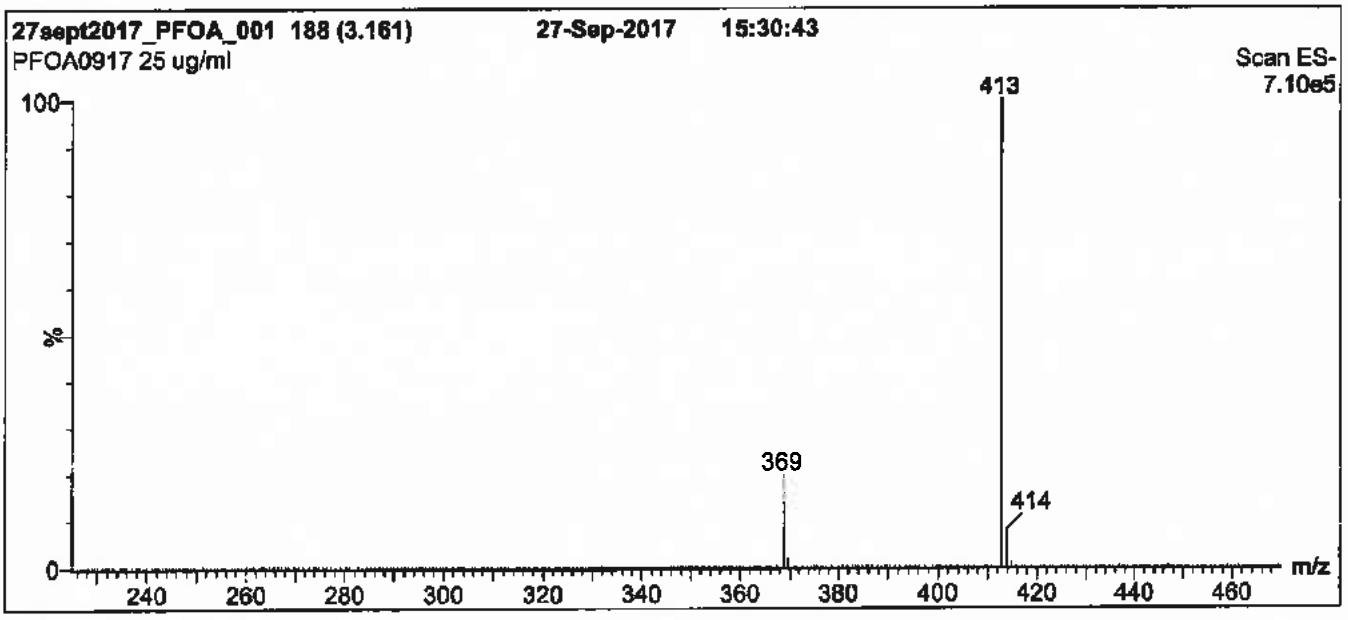
Figure 1: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

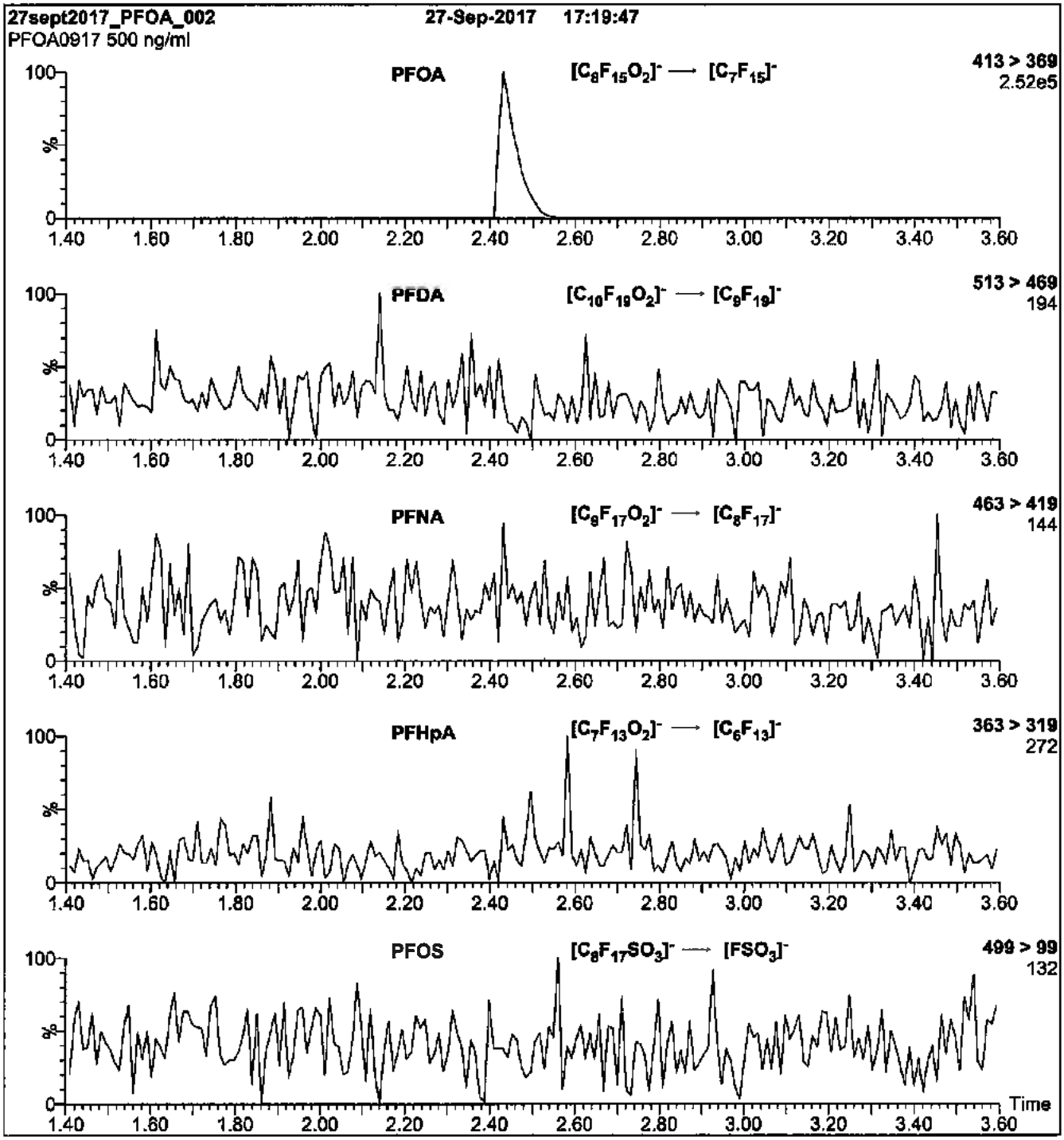
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFOA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

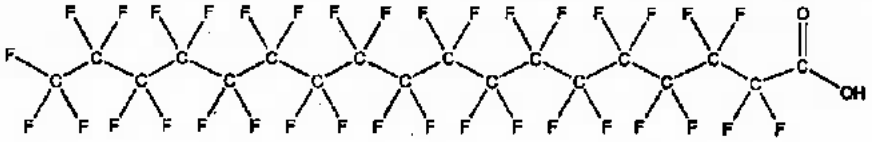
LCPFODA_00008

R: 12/20/16 SFN

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFODA	**LOT NUMBER:**	PFODA0416
COMPOUND:	Perfluoro-n-octadecanoic acid		
STRUCTURE:		**CAS #:**	16517-11-6



MOLECULAR FORMULA:	$C_{18}HF_{35}O_2$	**MOLECULAR WEIGHT:**	914.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/29/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/29/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/20/2016 (mm/dd/yyyy)

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL

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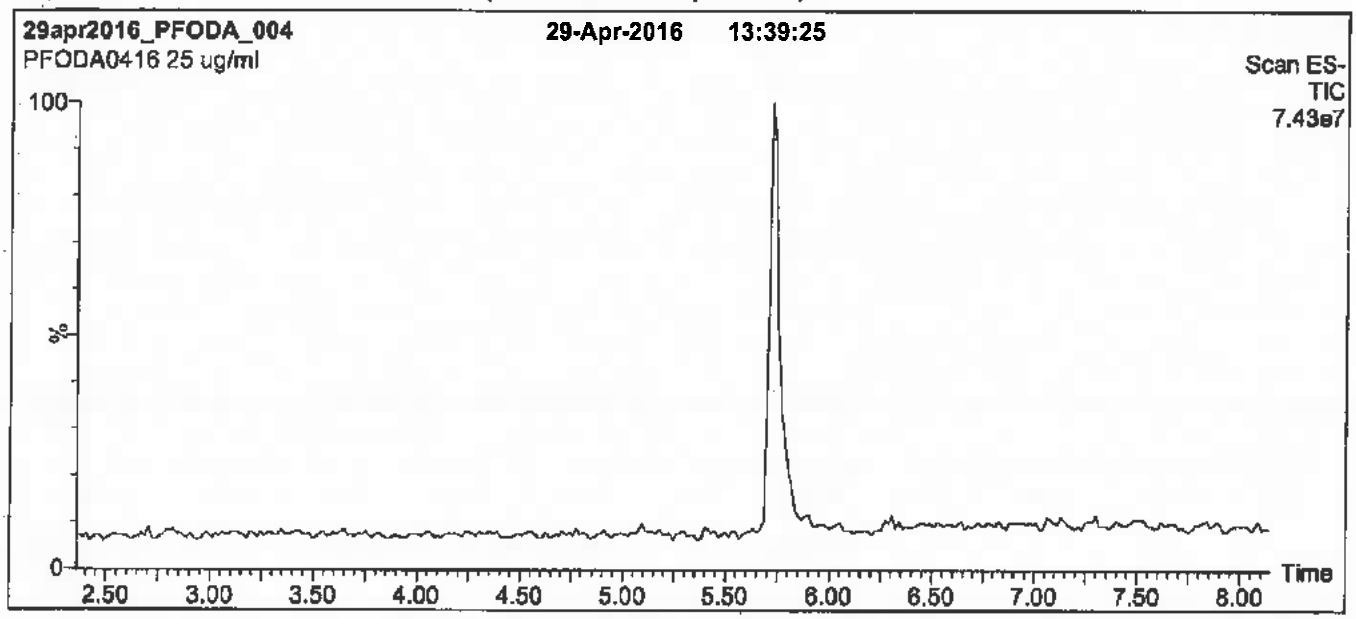
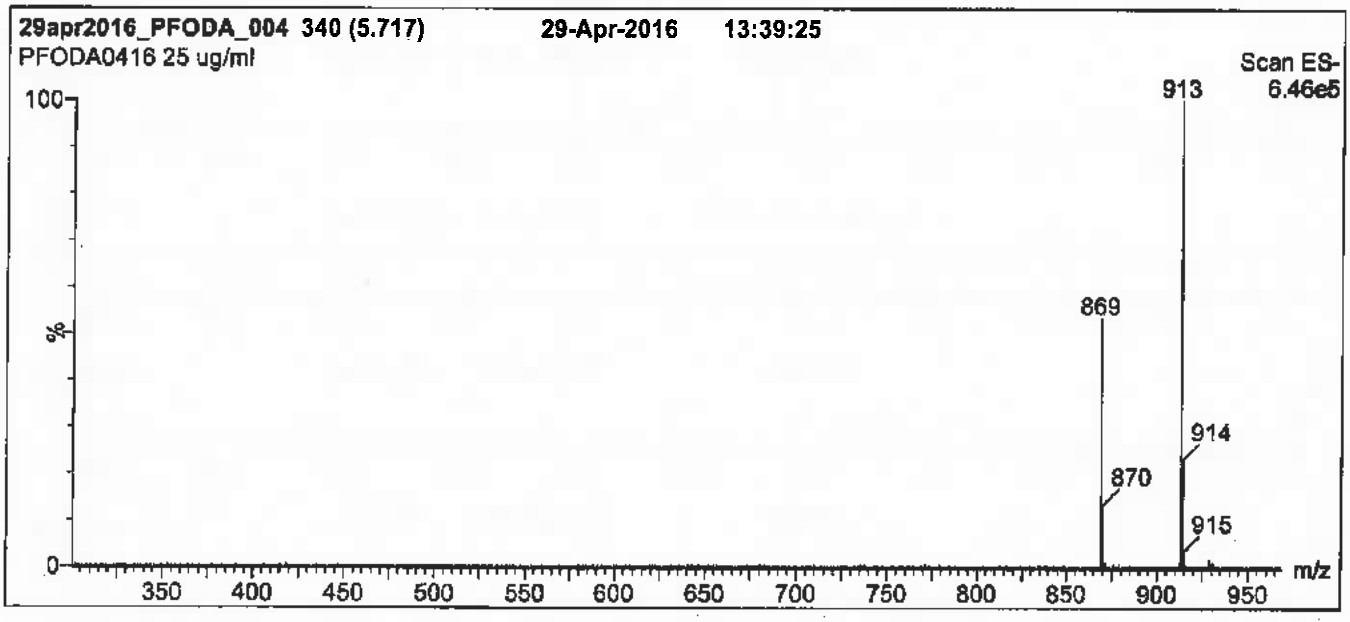
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 6 min and hold for
2.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

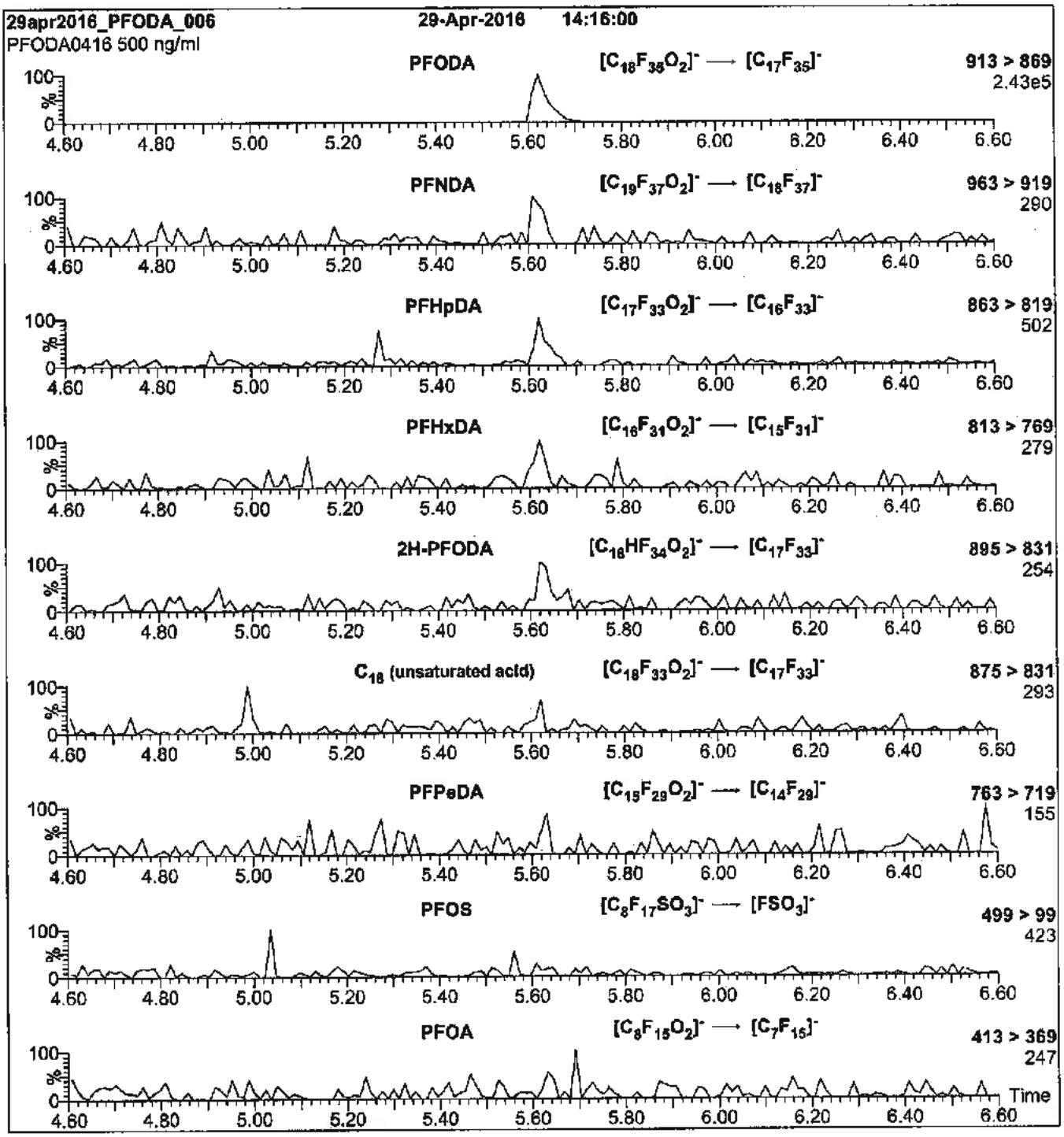
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFODA)

Mobile phase: Isocratic 90% (50:20 MeOH:ACN) / 10% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCPFOS-br_00004

P: Realinosk

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK1015
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	10/13/2015
LAST TESTED: (mm/dd/yyyy)	10/14/2015
EXPIRY DATE: (mm/dd/yyyy)	10/14/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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CALA

ANAB ACCREDITED

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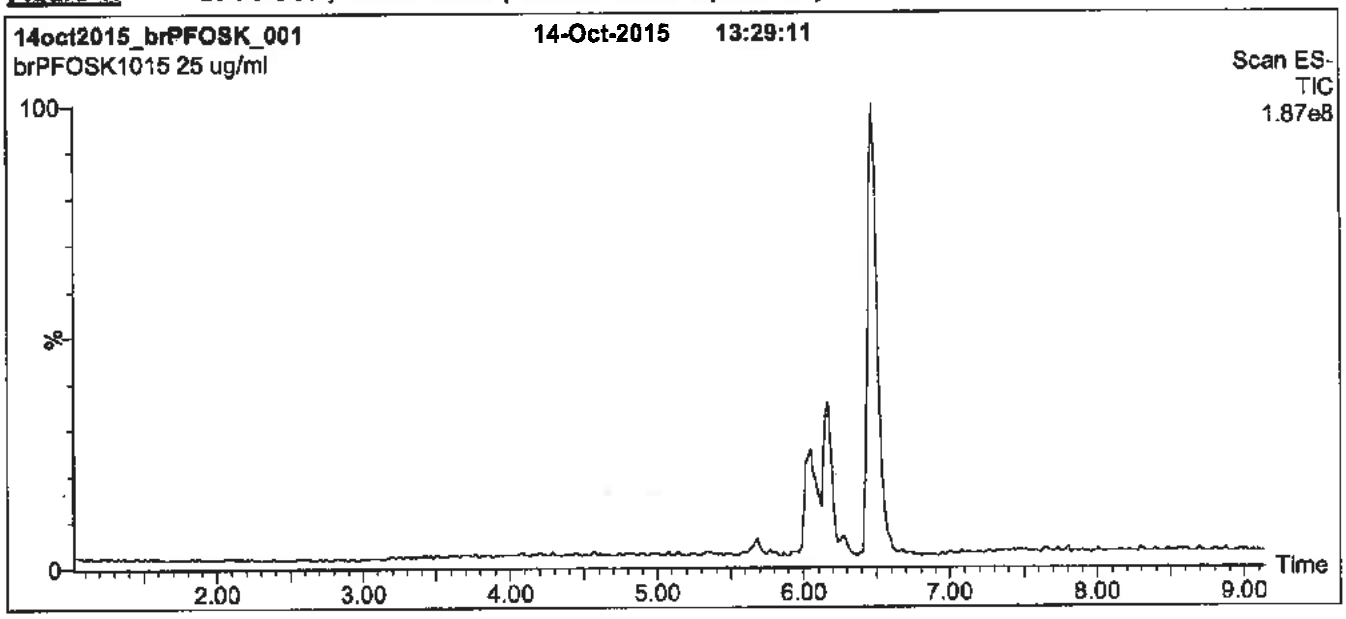
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

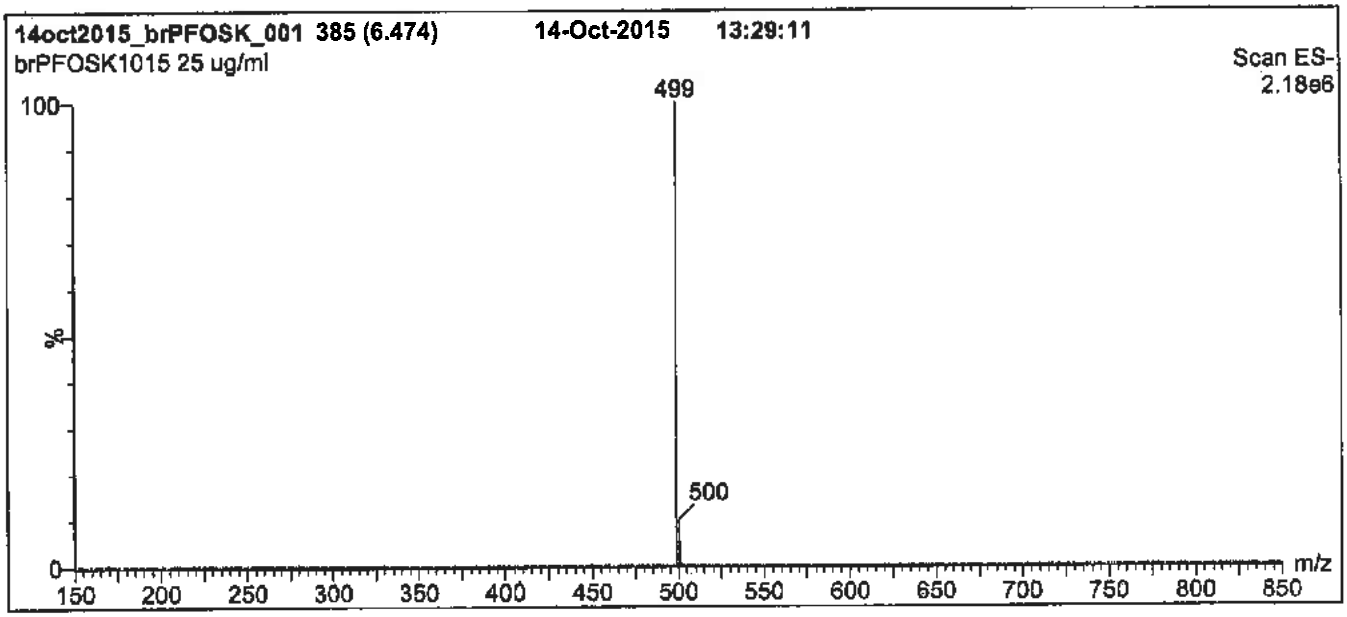
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CFSO_3^-K^+$ (CF$_3$ branch)	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CFCF_2SO_3^-K^+$ (CF$_3$ branch)	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CFCF_2CF_2SO_3^-K^+$ (CF$_3$ branch)	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CFCF_2CF_2CF_2SO_3^-K^+$ (CF$_3$ branch)	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CFCF_2CF_2CF_2CF_2SO_3^-K^+$ (CF$_3$ branch)	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CFCF_2CF_2CF_2CF_2CF_2SO_3^-K^+$ (CF$_3$ branch)	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-C(CF_3)(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3^-K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 10/15/2015 (mm/dd/yyyy)

Figure 1: **br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

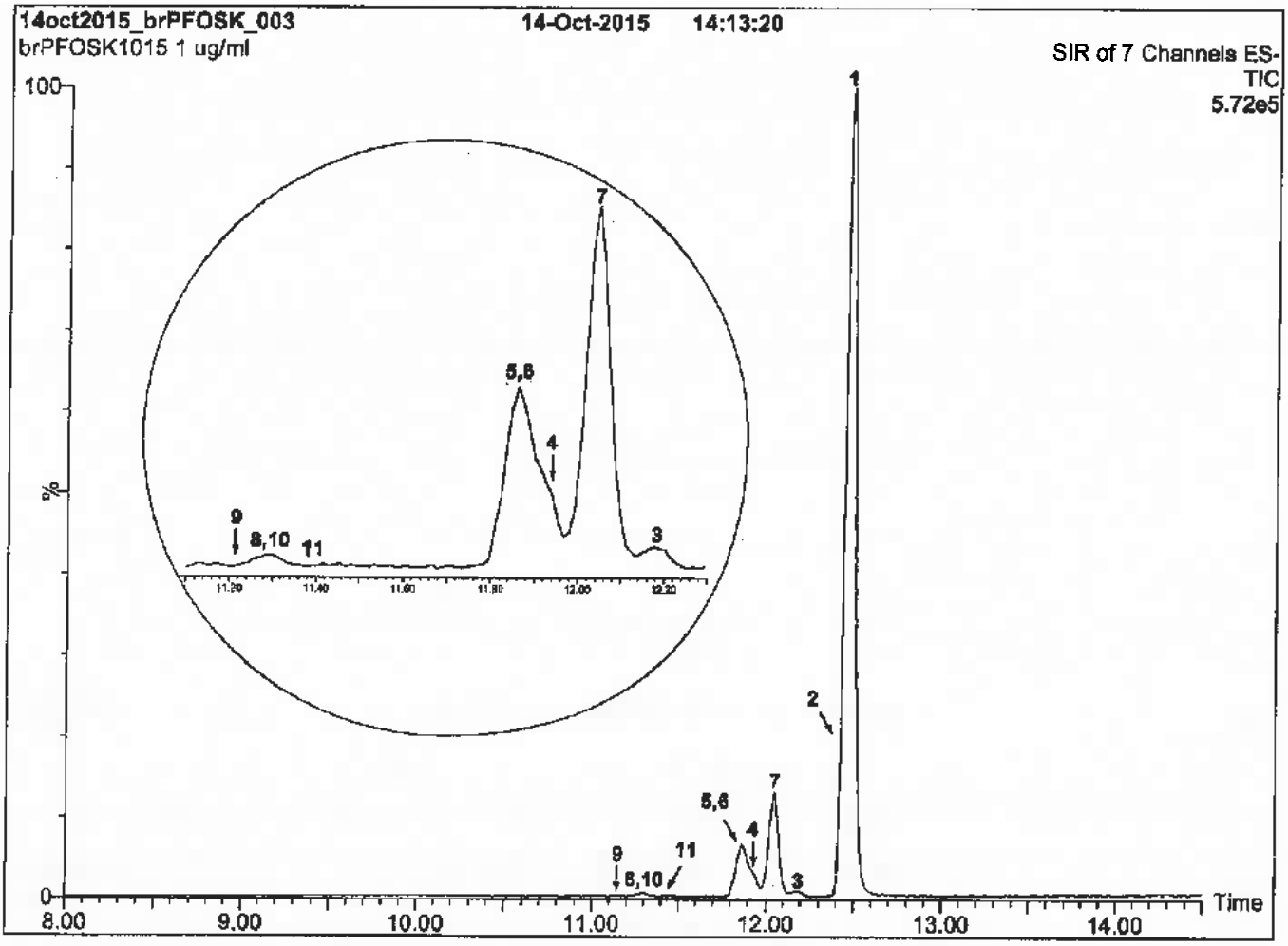
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFOSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

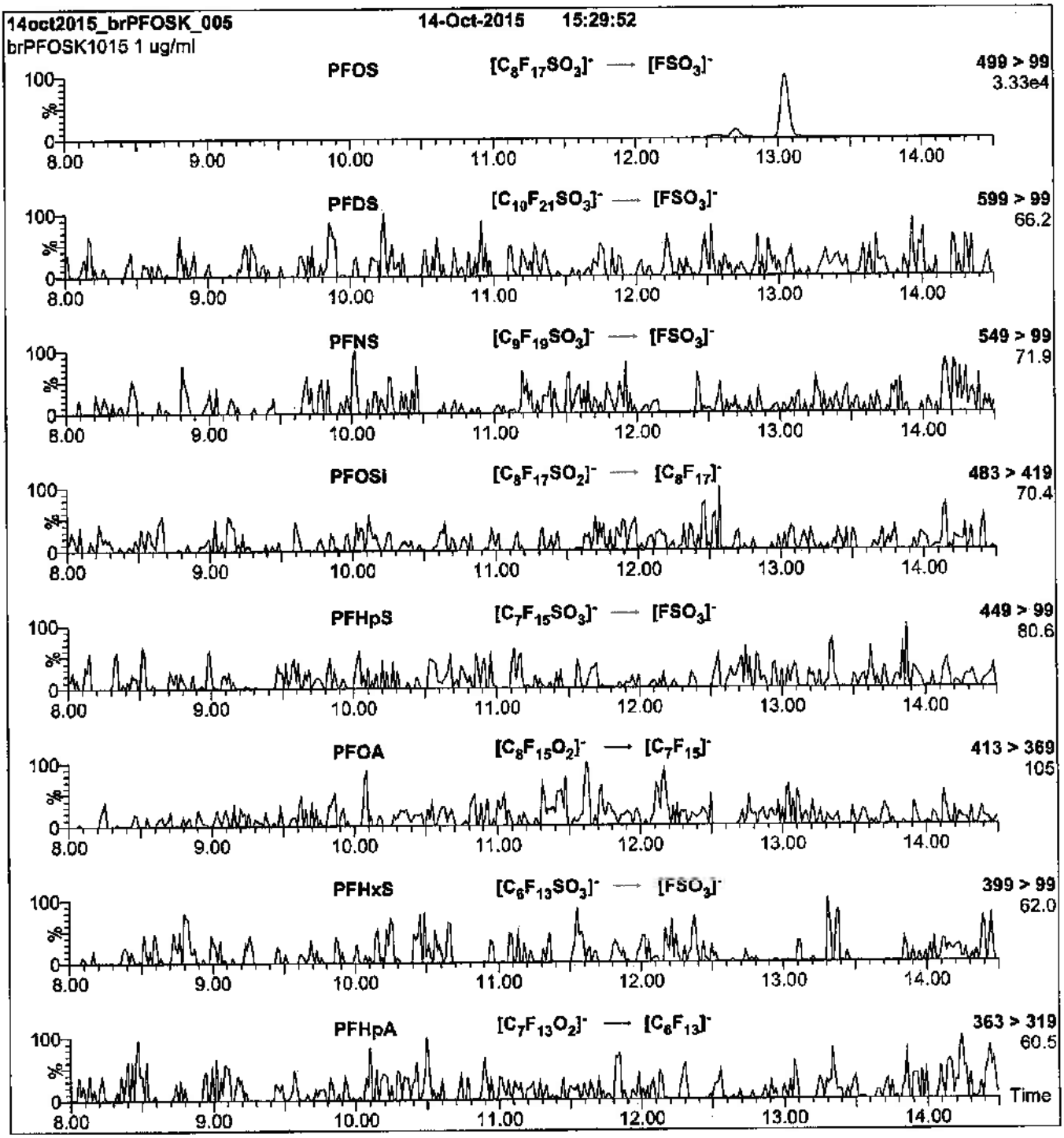
Chromatographic Conditions:

Column:	Acquity UPLC BEH Shield RP_{18} (1.7 µm, 2.1 x 100 mm)
Injection:	1.0 µg/ml of br-PFOSK
Mobile Phase:	Gradient 45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer) Ramp to 90% organic over 15 min and hold for 3 min. Return to initial conditions over 1 min. Time: 20 min
Flow:	300 µl/min

MS Conditions:

SIR (ES-)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: **br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.06e-3
Collision Energy (eV) = 11-60 (variable)

Reagent

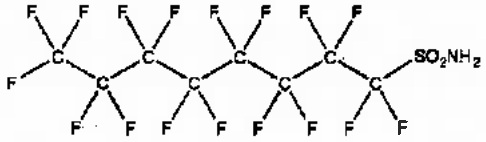
LCPFOSA_00010

12/20/16 SKJ

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	FOSA-I	**LOT NUMBER:**	FOSA0916I
COMPOUND:	Perfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/07/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA

ANAB ACCREDITED

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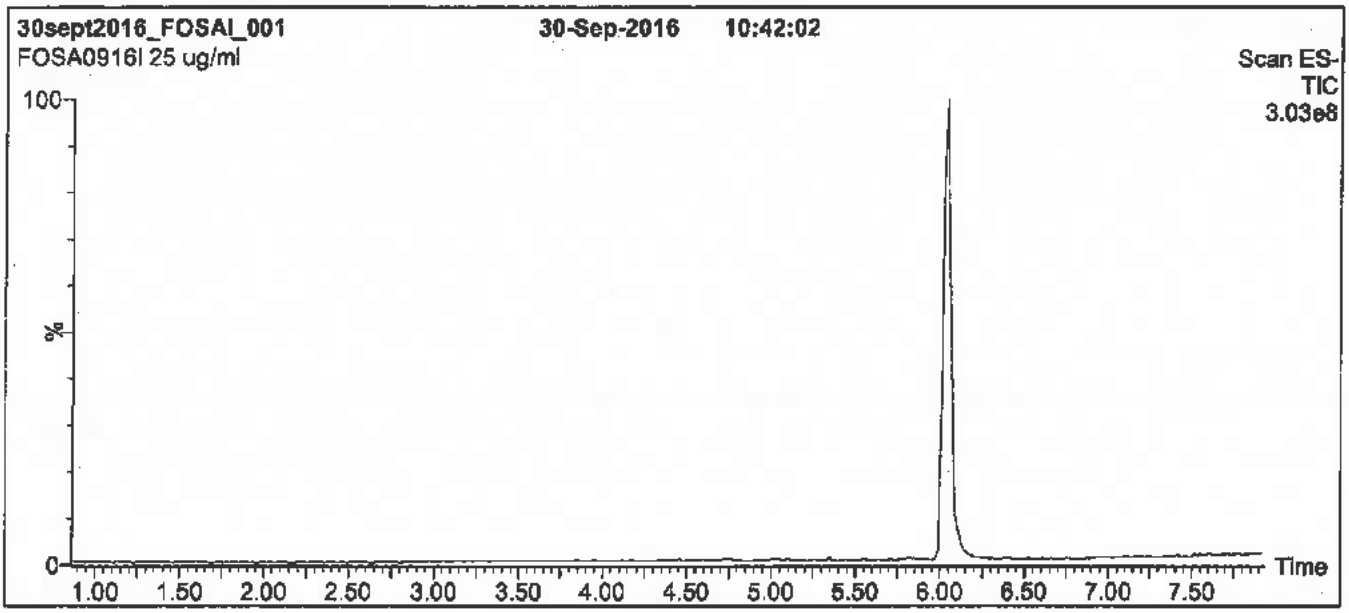
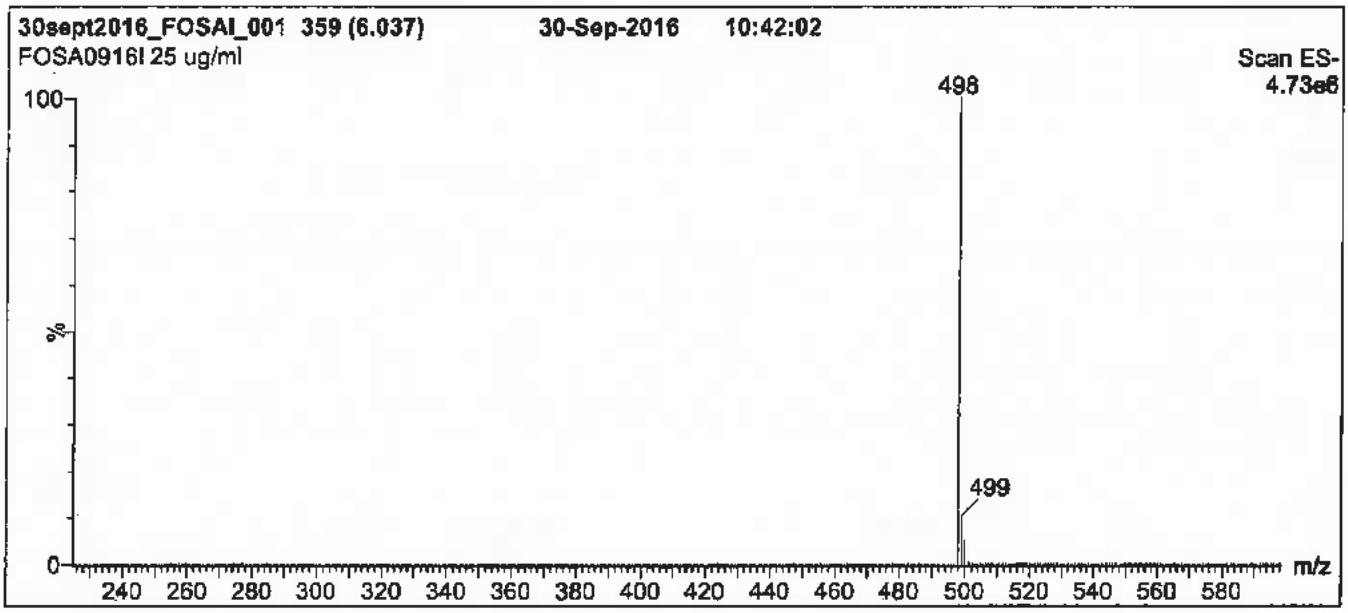
Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

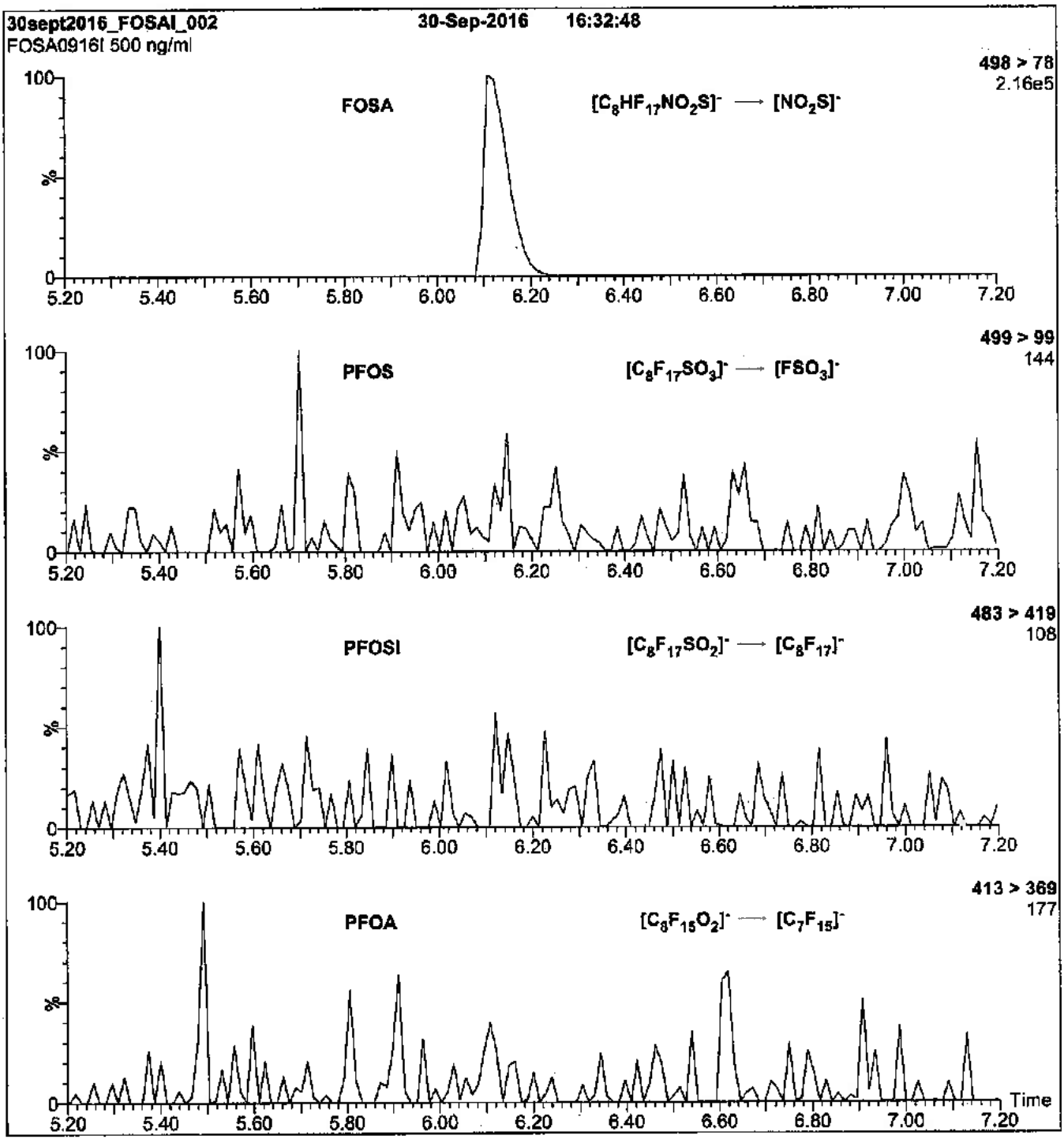
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml FOSA-I)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

Reagent

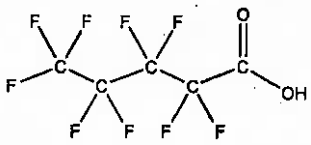
LCPFPeA_00007

r: 12/29/16 SK
s: 1/6/17 SK

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFPeA	**LOT NUMBER:**	PFPeA0516
COMPOUND:	Perfluoro-n-pentanoic acid		
STRUCTURE:		**CAS #:**	2706-90-3



MOLECULAR FORMULA:	$C_5HF_8O_2$	**MOLECULAR WEIGHT:**	264.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/02/2016 (mm/dd/yyyy)

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

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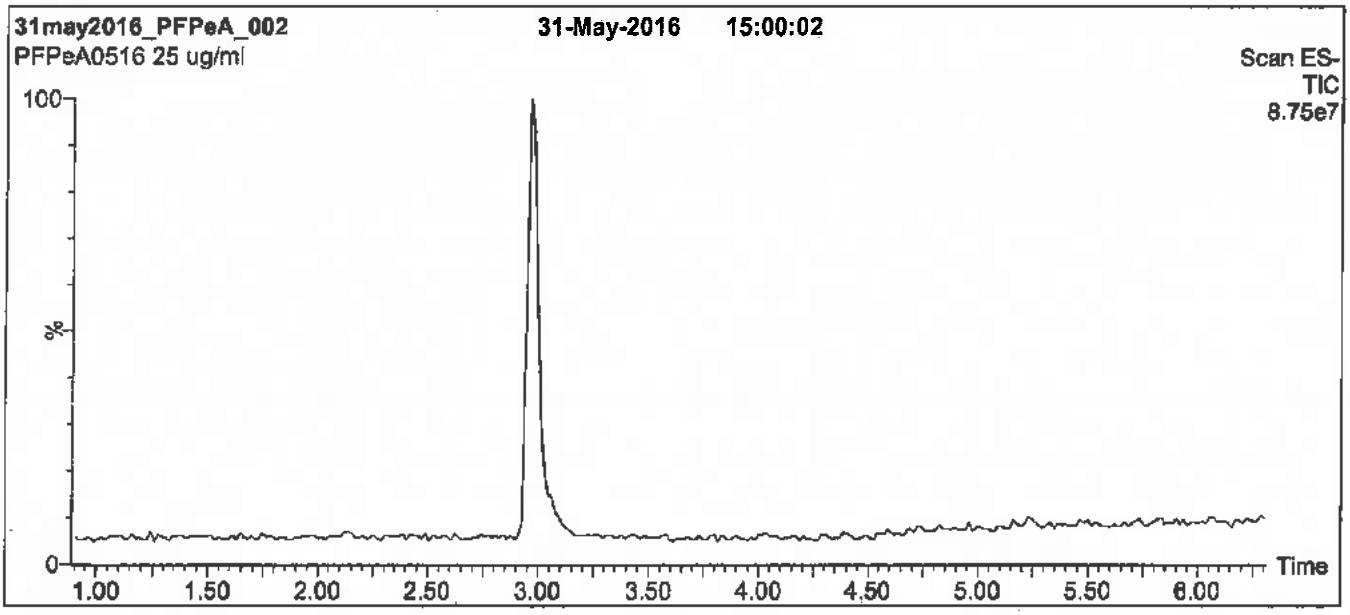
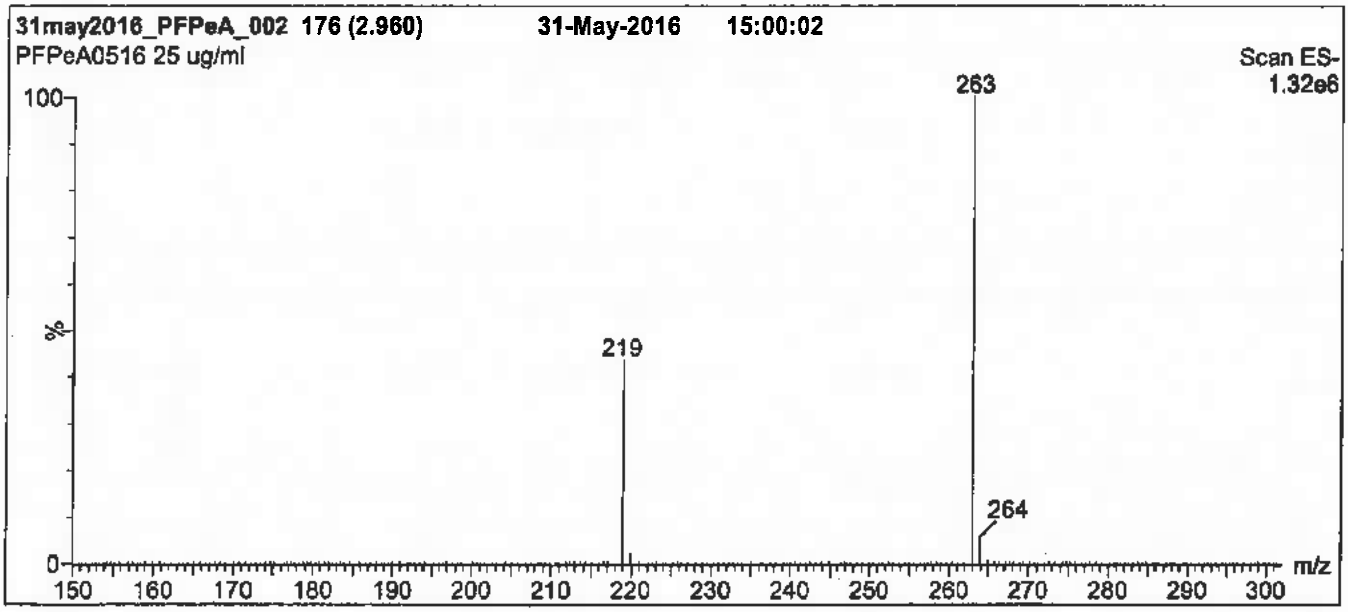
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

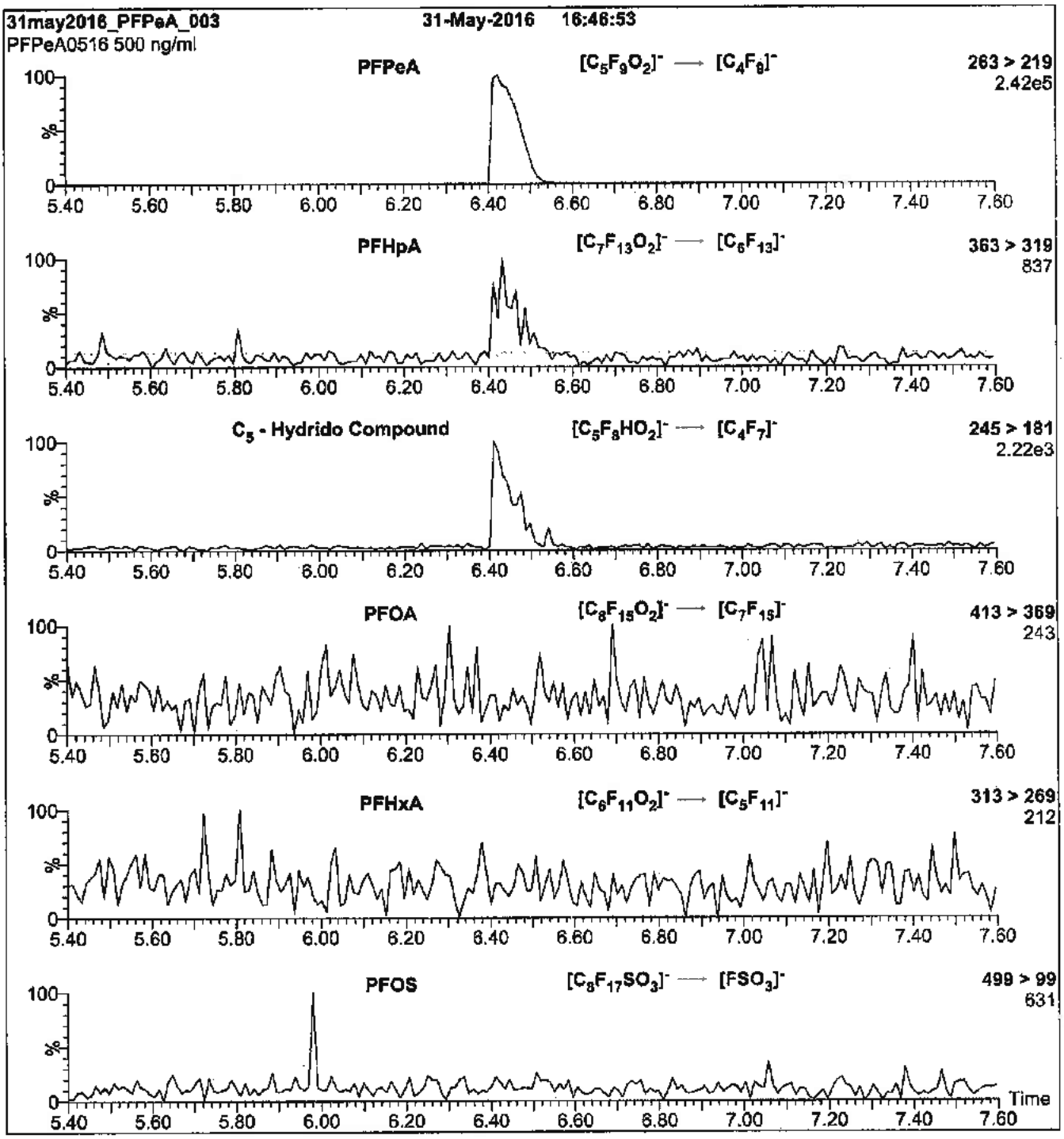
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFPeA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 9

Reagent

LCPFPeS_00003

1106801
ID: LCPFPeS_00003
Exp: 01/11/22 Rpt: SKV
PF-1-pentanesulfonate Na

P: 12/4/17 SKV

WELLINGTON LABORATORIES

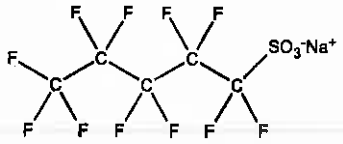
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFPeS
COMPOUND: Sodium perfluoro-1-pentanesulfonate

LOT NUMBER: LPFPeS0117

STRUCTURE:

CAS #: 630402-22-1



MOLECULAR FORMULA:	$C_5F_{11}SO_3Na$	**MOLECULAR WEIGHT:**	372.09
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.9 ± 2.3 µg/ml (PFPeS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/11/2017		
EXPIRY DATE: (mm/dd/yyyy)	01/11/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/06/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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UNCERTAINTY:

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

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

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

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

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ANAB ACCREDITED

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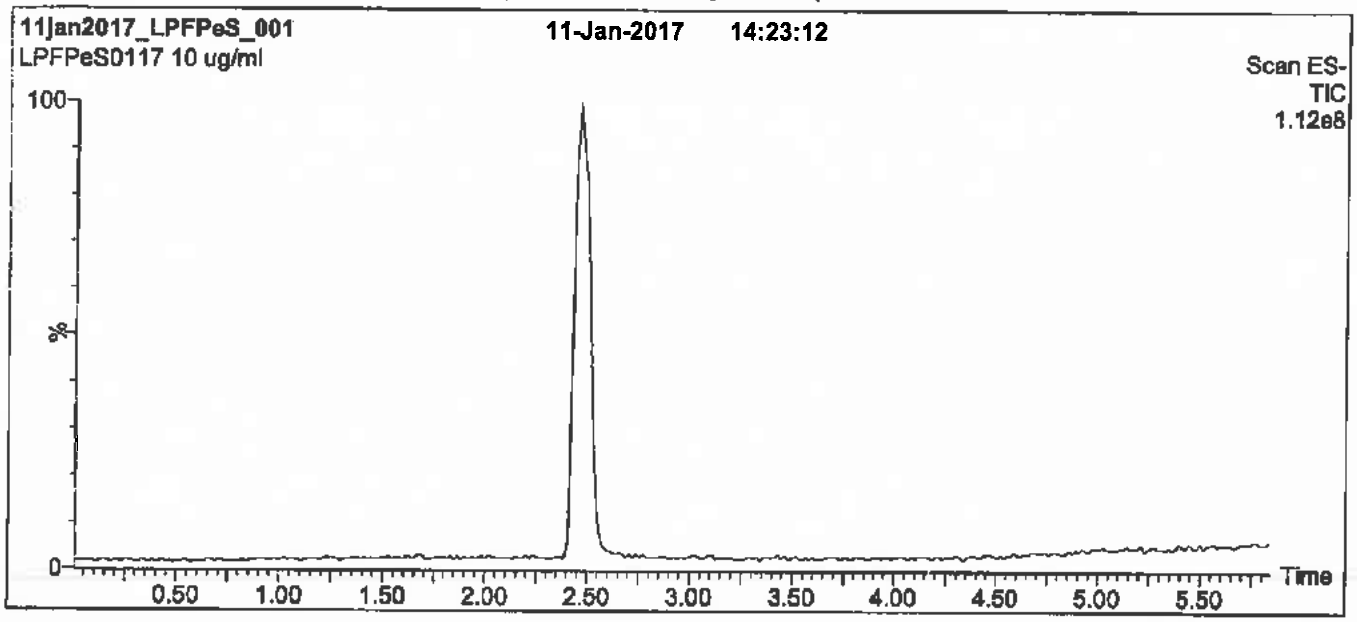
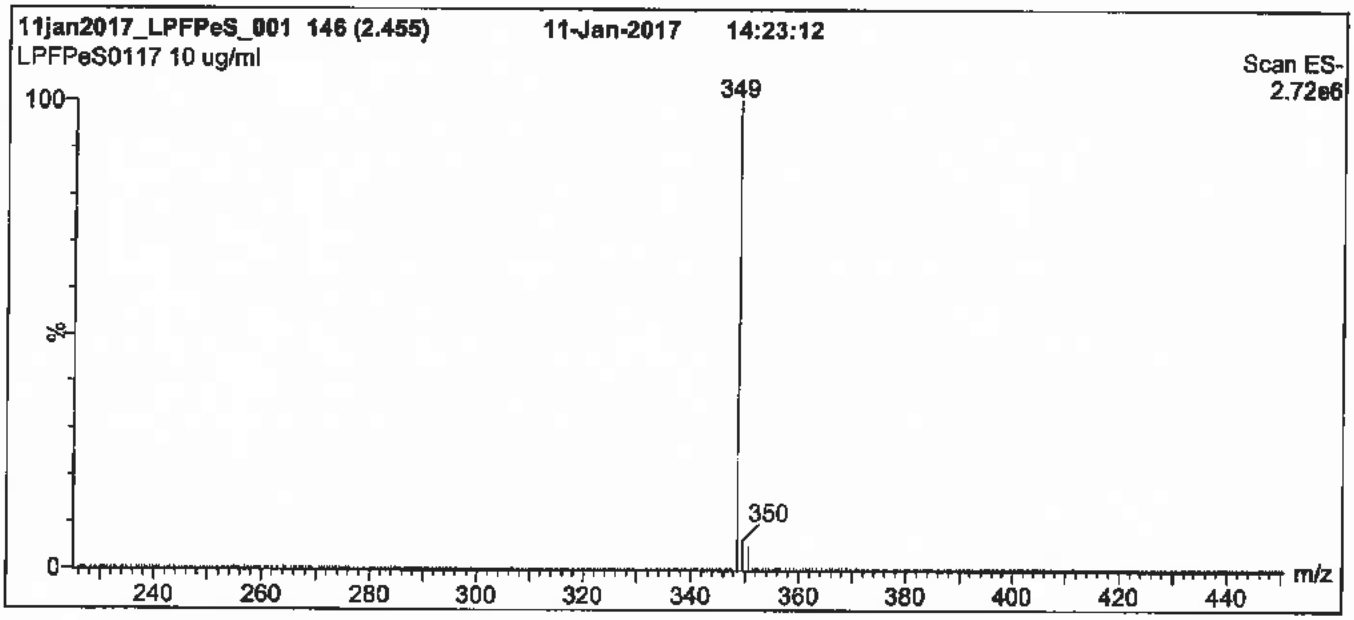
Figure 1: **L-PFPeS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

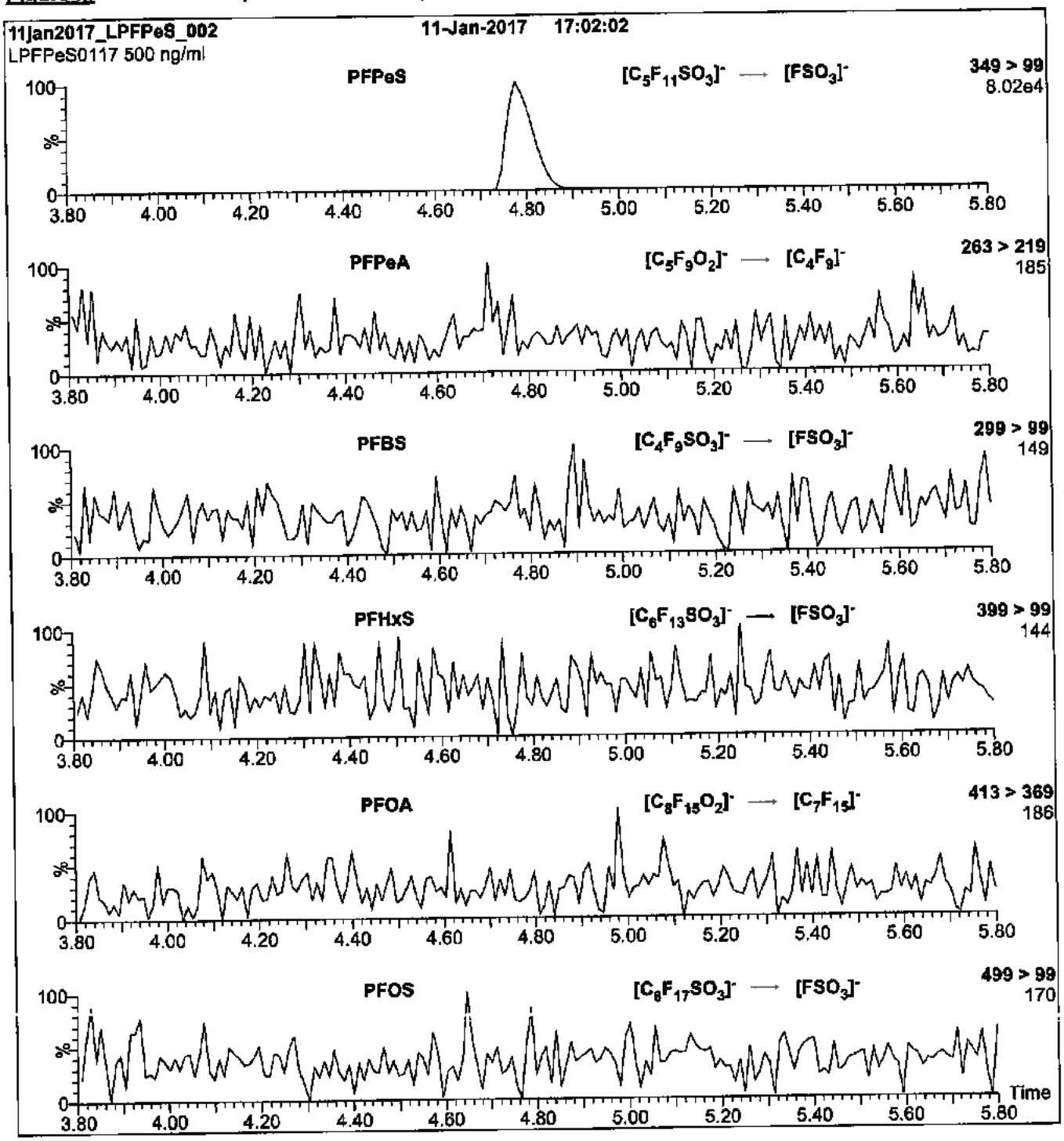
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFPeS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFPeS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 30

Reagent

LCPFTeDA_00006

R: SBG 9/13/16

730645
ID: LCPFTeDA_00005
Exp: 12/09/20 Prpd: SBC
PF-n-tetradecanoic acid

730659
ID: LCPFTeDA_00006
Exp: 12/09/20 Prpd: SBC
PF-n-tetradecanoic acid

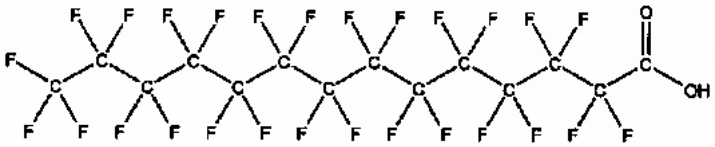
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA1215
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:

CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
EXPIRY DATE: (mm/dd/yyyy) 12/09/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/09/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

CALA

ANAB ACCREDITED

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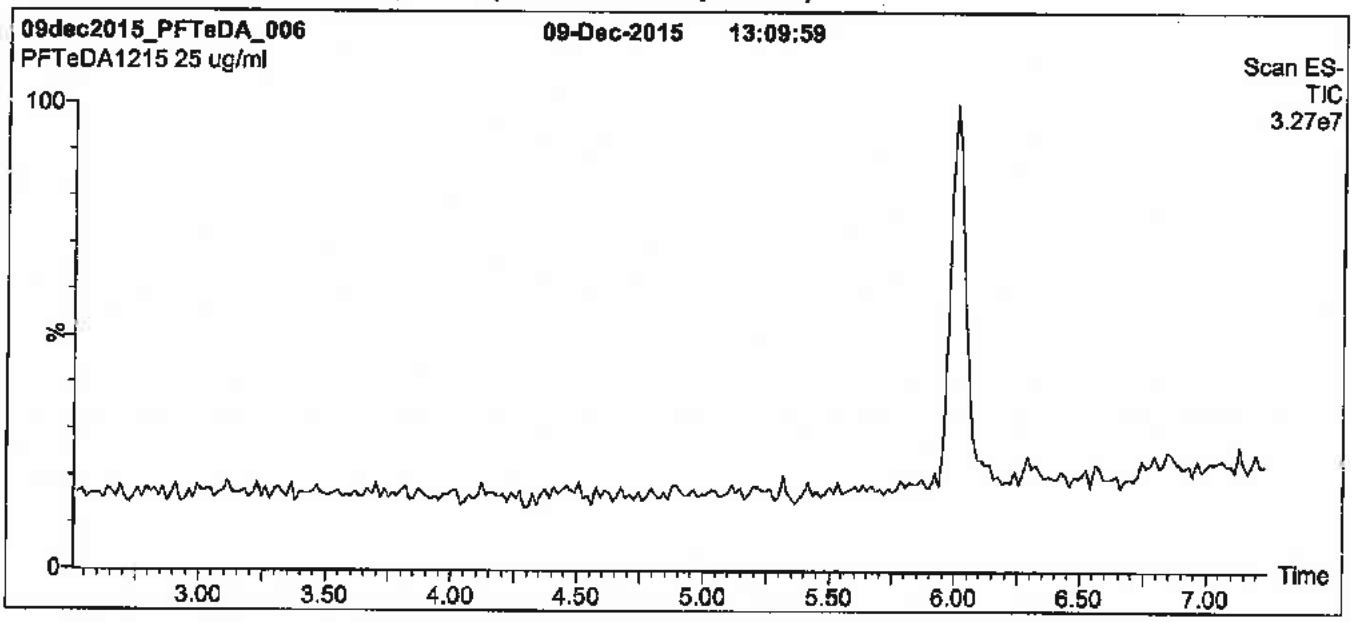
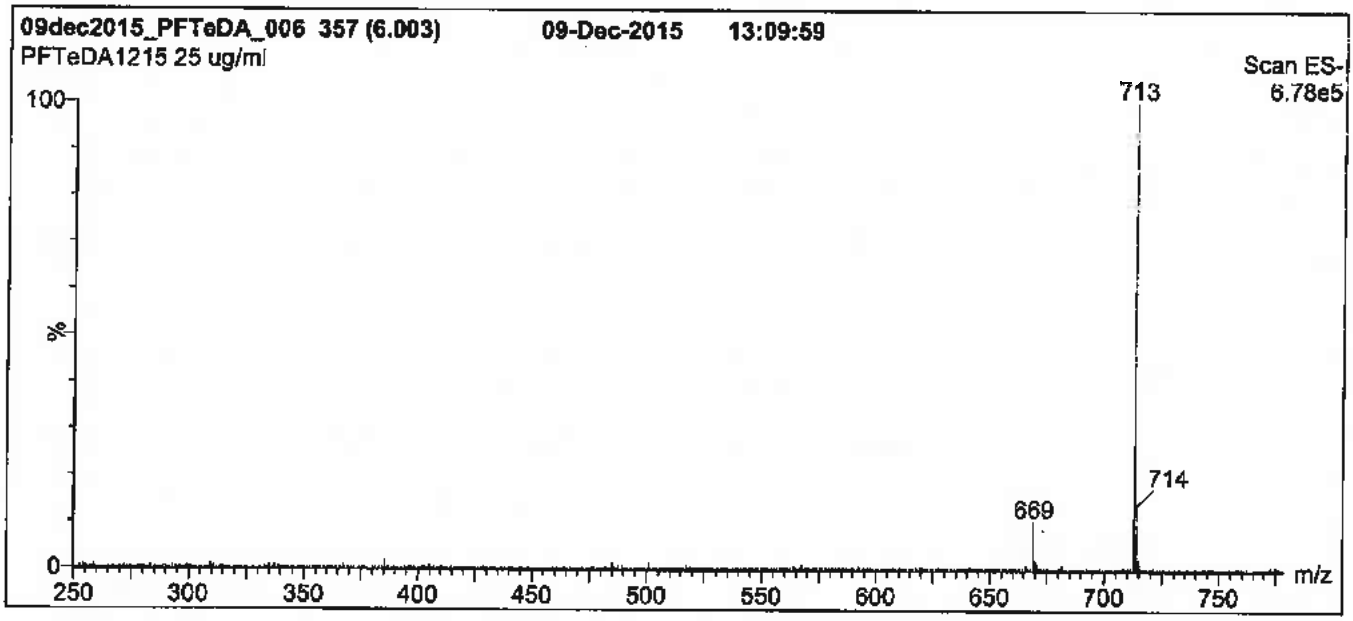
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

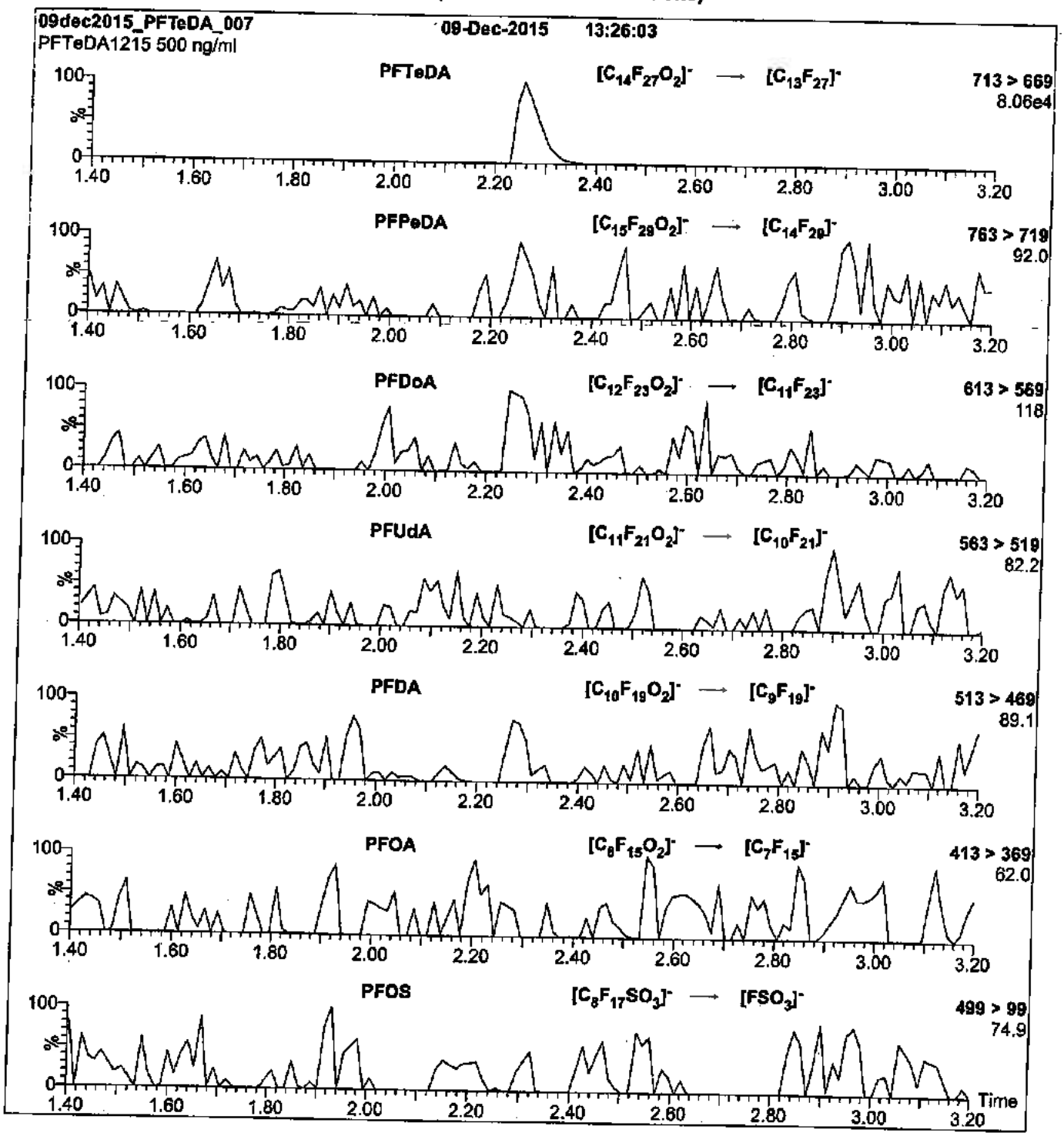
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTeDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

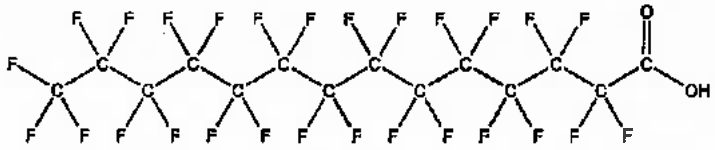
LCPFTeDA_00007

D: 12/20/16 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	PFTeDA	**LOT NUMBER:**	PFTeDA0916
COMPOUND:	Perfluoro-n-tetradecanoic acid		
STRUCTURE:		**CAS #:**	376-06-7



MOLECULAR FORMULA:	$C_{14}HF_{27}O_2$	**MOLECULAR WEIGHT:**	714.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
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FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/05/2016 (mm/dd/yyyy)

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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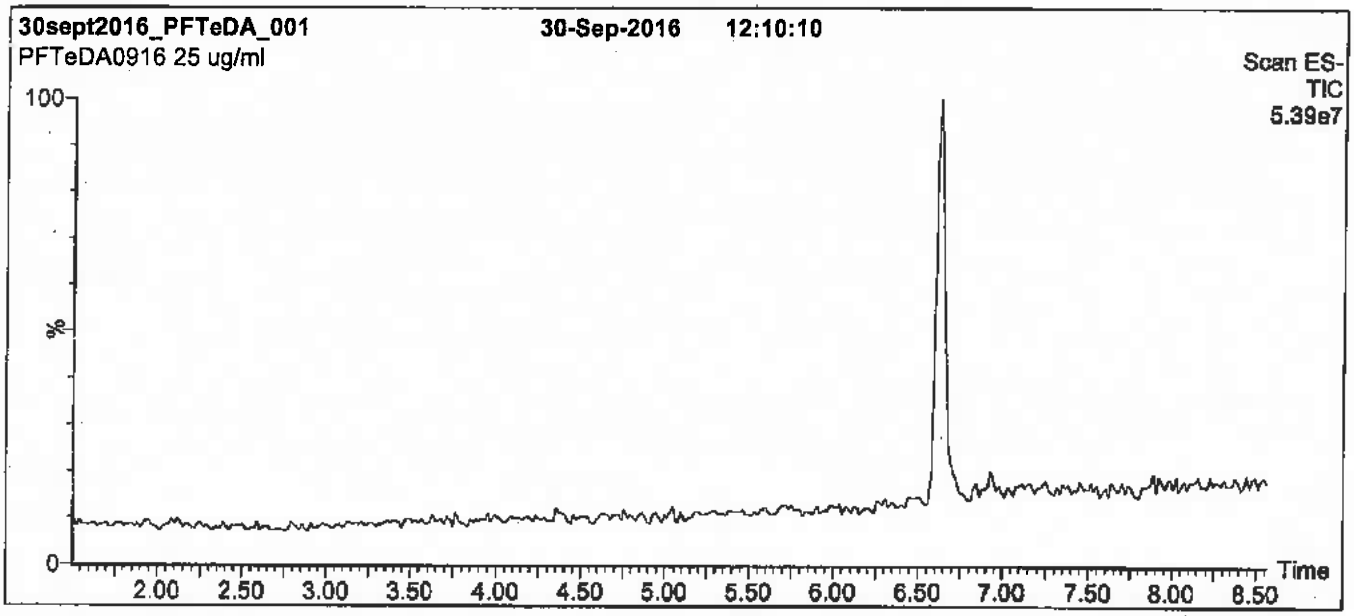
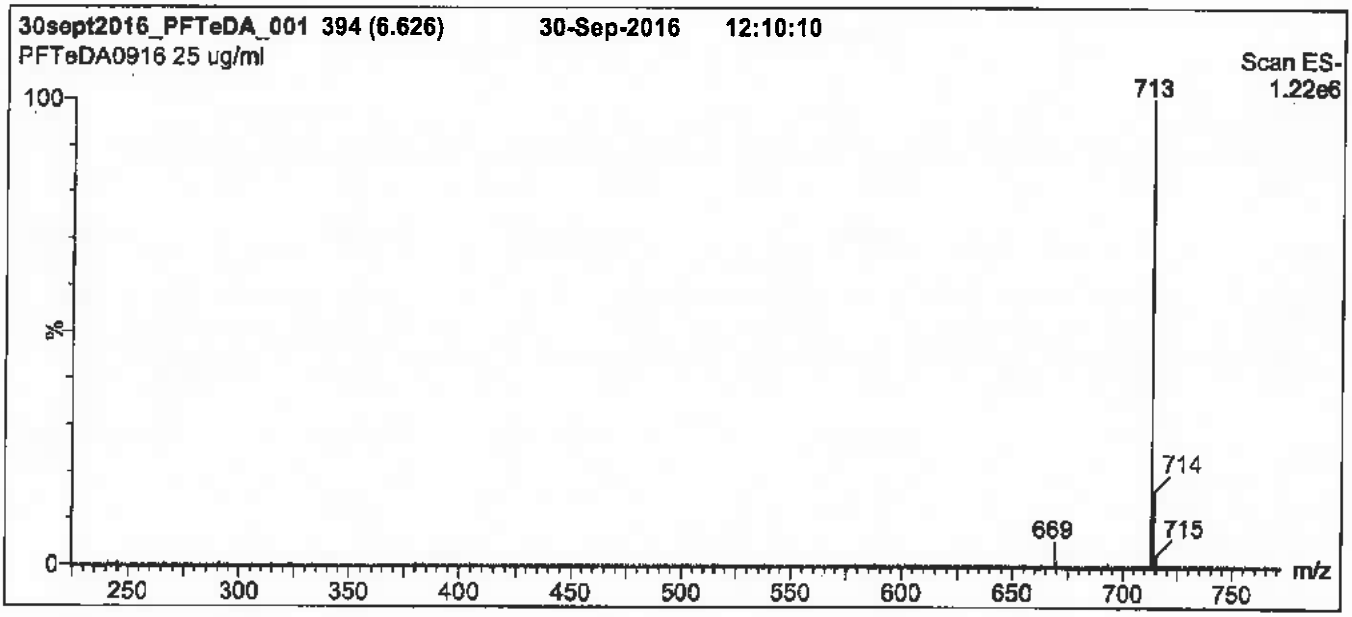
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

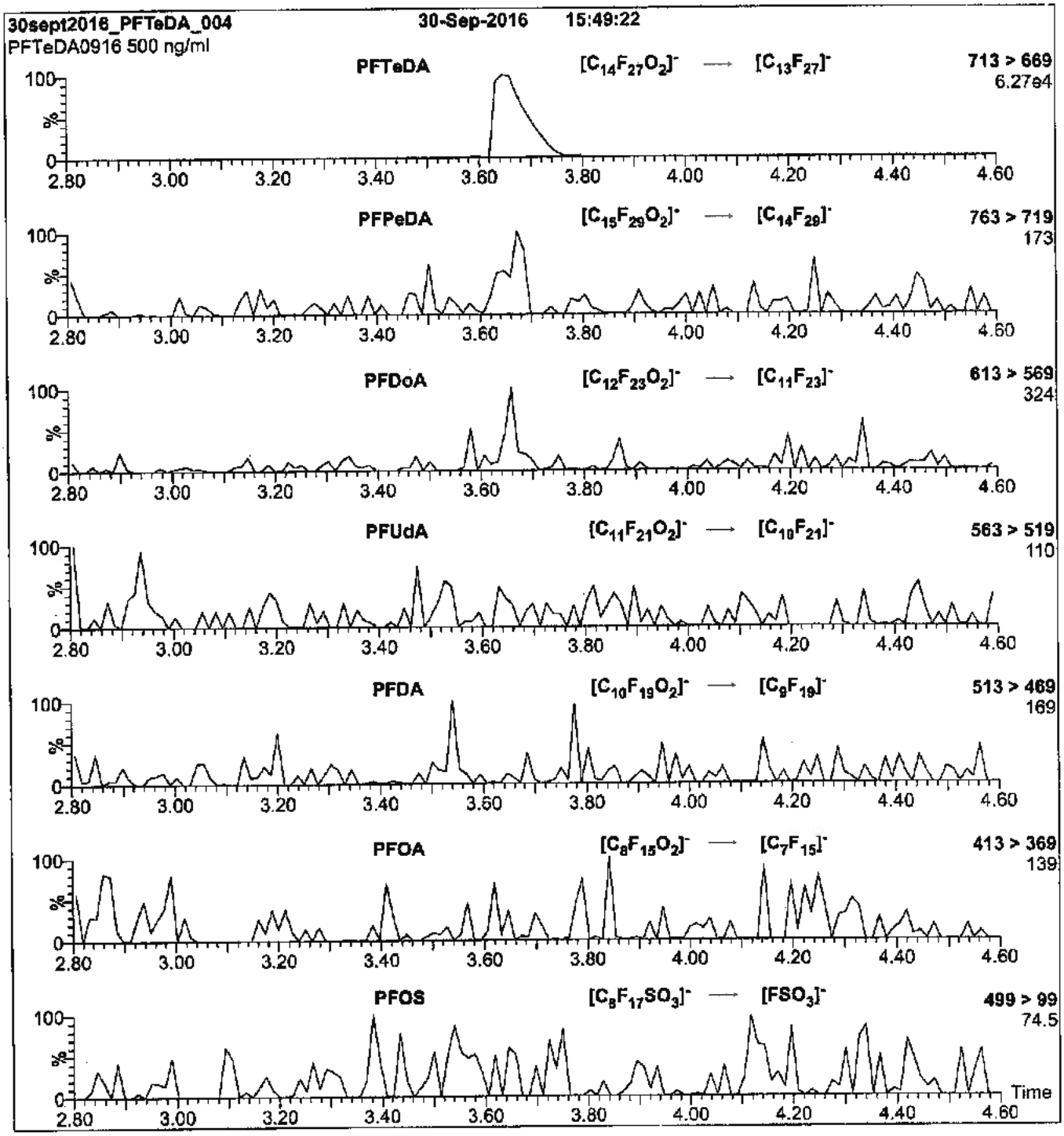
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTeDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 14

Reagent

LCPFTrDA_00006

R: SBC 9/13/16

730665
ID: LCPFTrDA_00005
Exp: 02/12/21 Prpd: SBC
PF-n-tridecanoic acid

730666
ID: LCPFTrDA_00005
Exp: 02/12/21 Prpd: SBC
PF-n-tridecanoic acid

WELLINGTON LABORATORIES

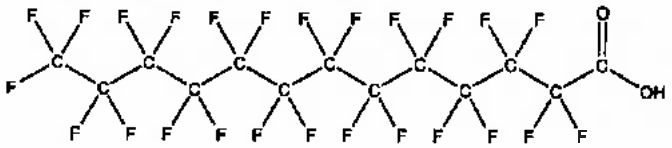
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid

LOT NUMBER: PFTrDA0216

STRUCTURE:

CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 664.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/16/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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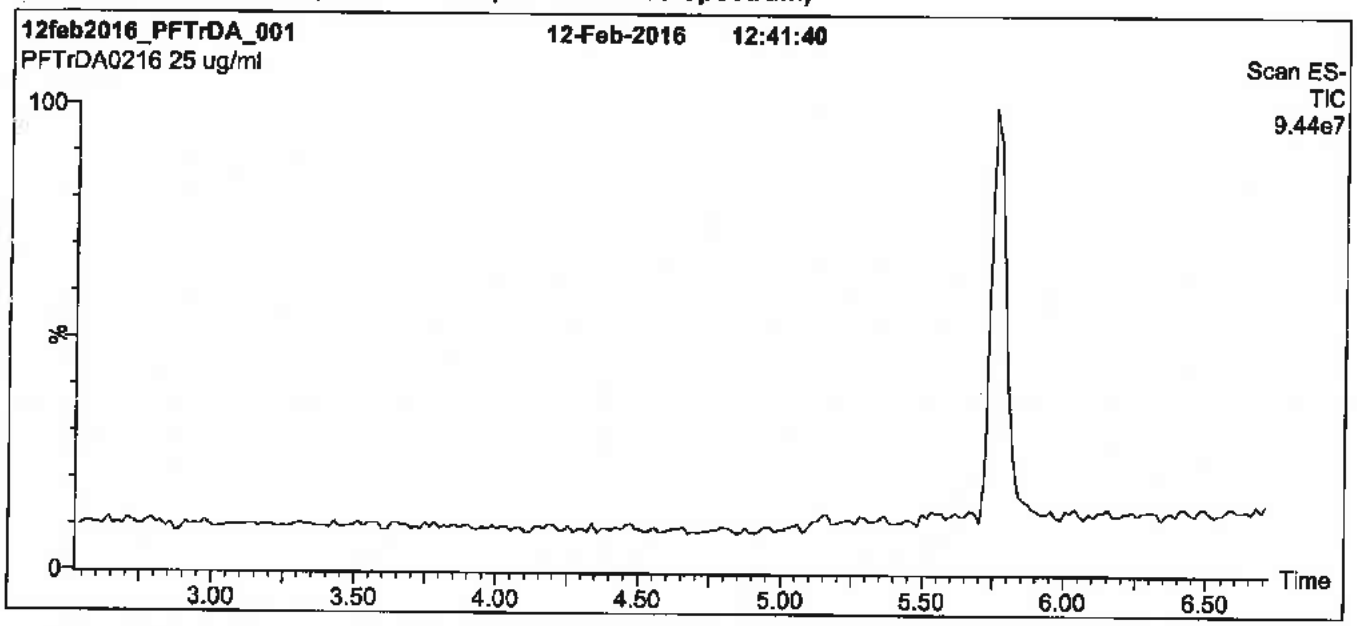
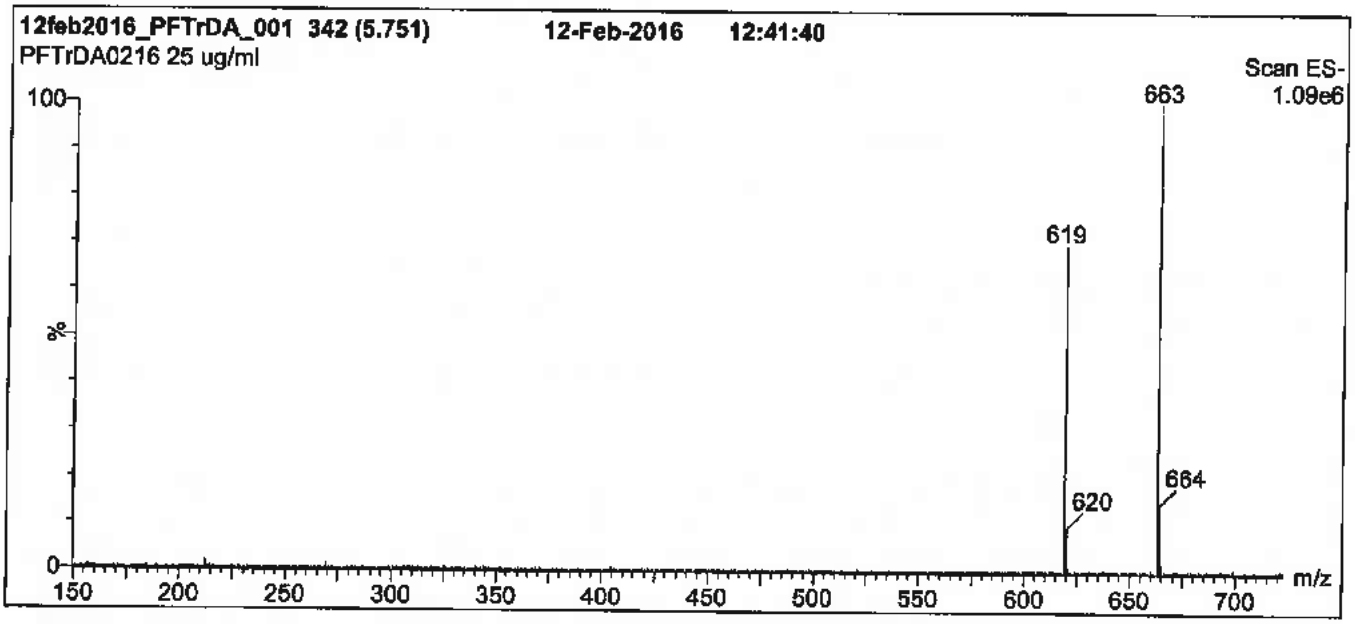
Figure 1: **PFTrDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

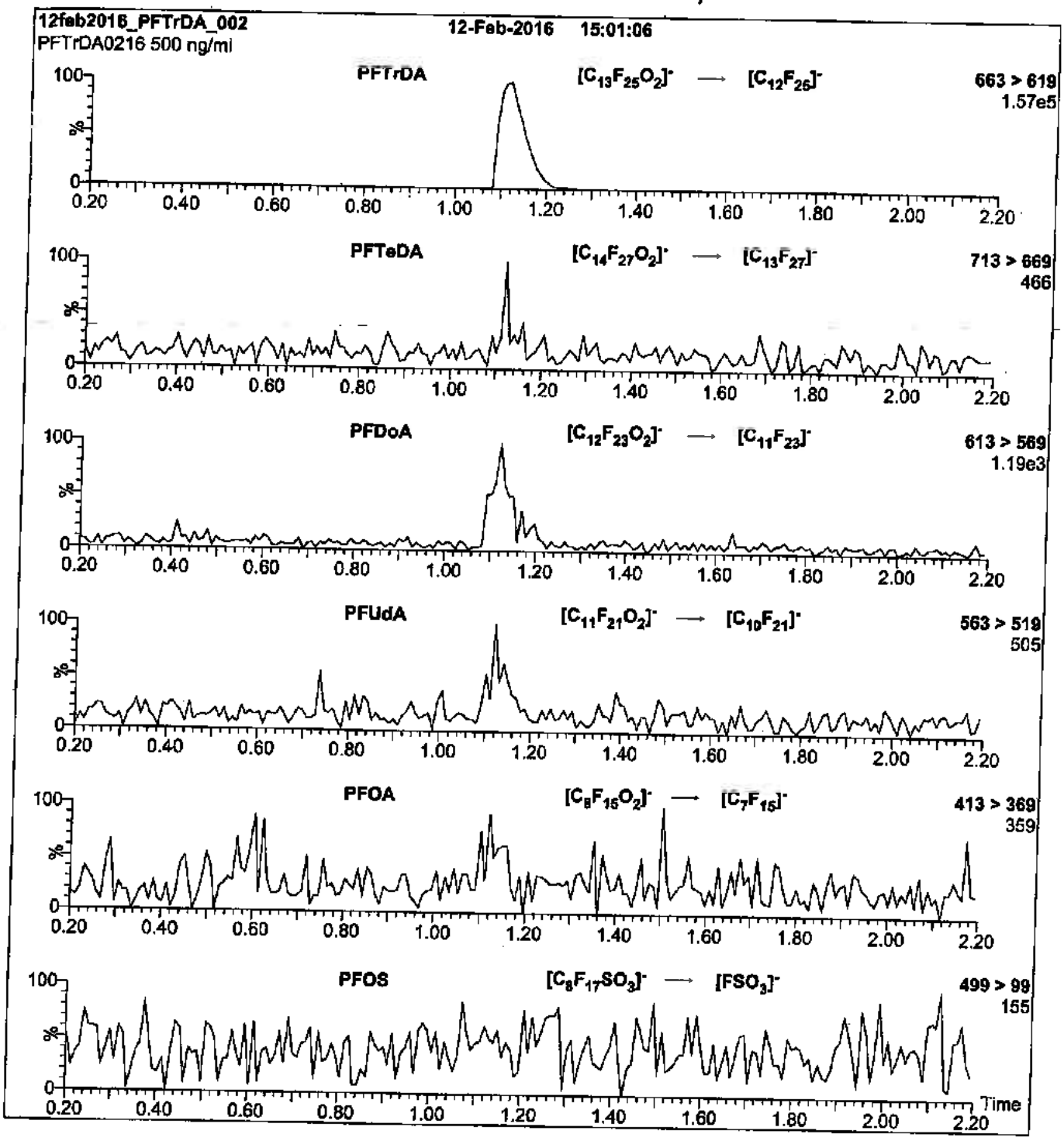
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

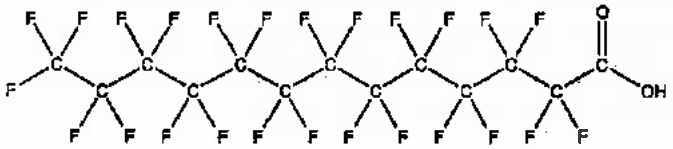
LCPFTrDA_00007

r: 12/29/16 SGJ

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFTrDA	**LOT NUMBER:**	PFTrDA0216
COMPOUND:	Perfluoro-n-tridecanoic acid		
STRUCTURE:		**CAS #:**	72629-94-8



MOLECULAR FORMULA:	$C_{13}HF_{25}O_2$	**MOLECULAR WEIGHT:**	664.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

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Certified By: B.G. Chittim **Date:** 02/16/2016 (mm/dd/yyyy)

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

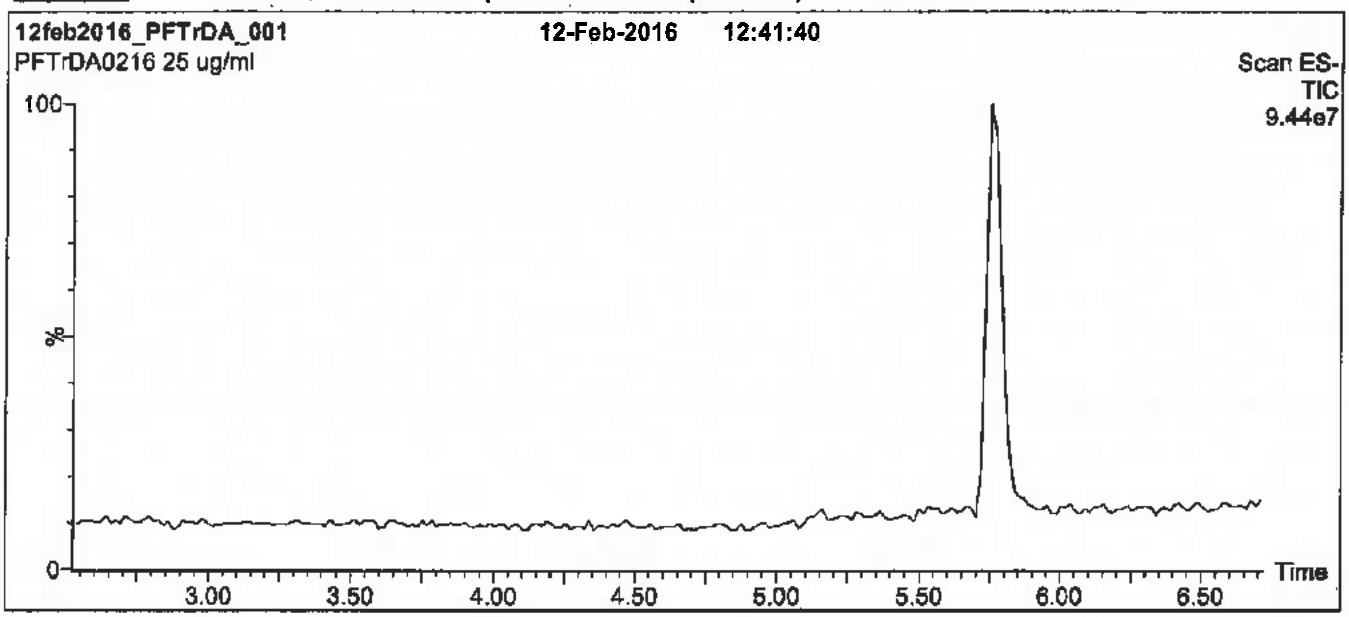
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

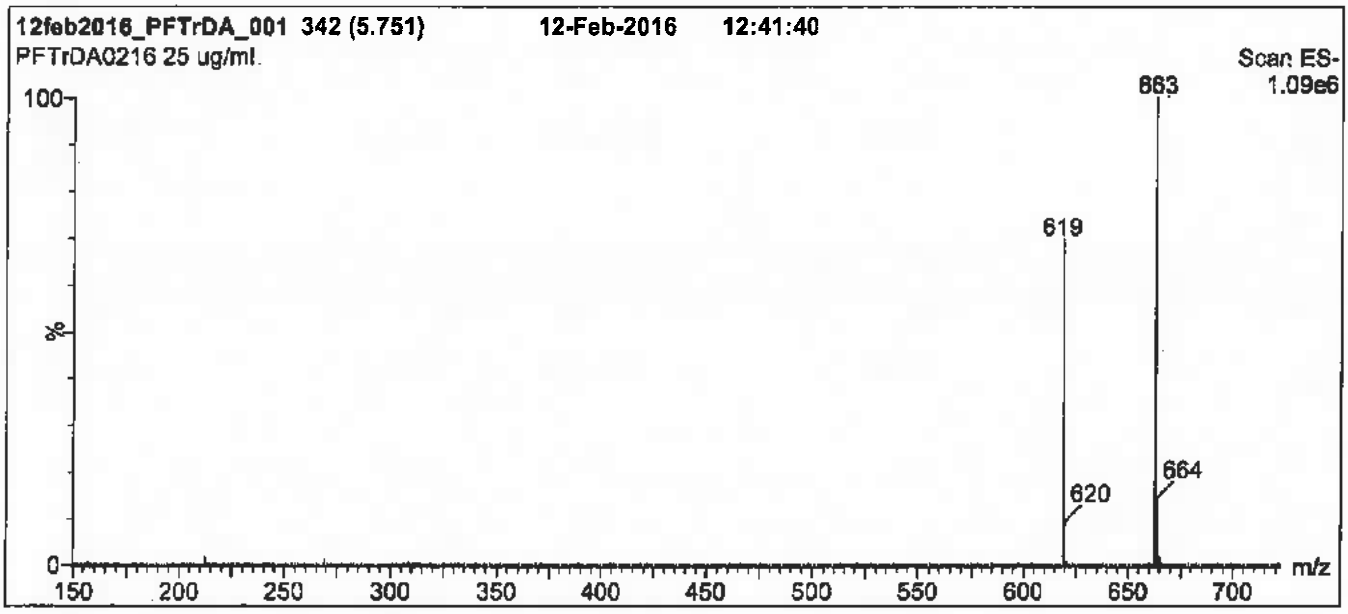
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

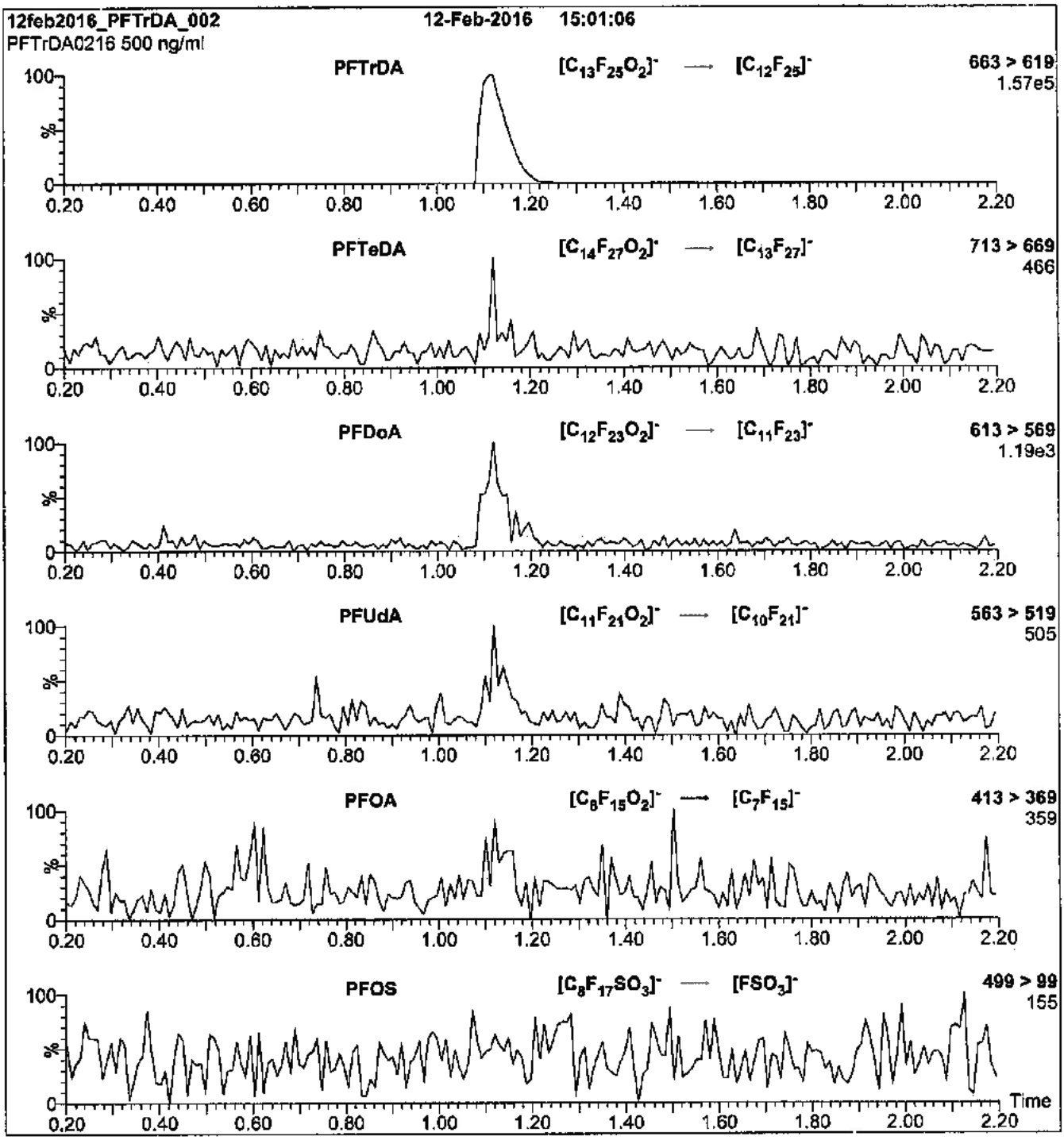
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

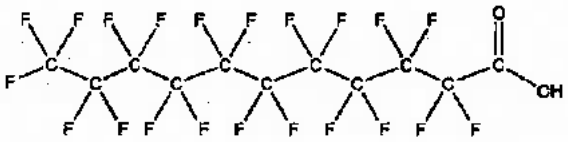
LCPFUdA_00007

r: 12/20/16 SK

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFUdA	**LOT NUMBER:**	PFUdA1016
COMPOUND:	Perfluoro-n-undecanoic acid		
STRUCTURE:		**CAS #:**	2058-94-8



MOLECULAR FORMULA:	$C_{11}HF_{21}O_2$	**MOLECULAR WEIGHT:**	564.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/18/2016		
EXPIRY DATE: (mm/dd/yyyy)	10/18/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/19/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

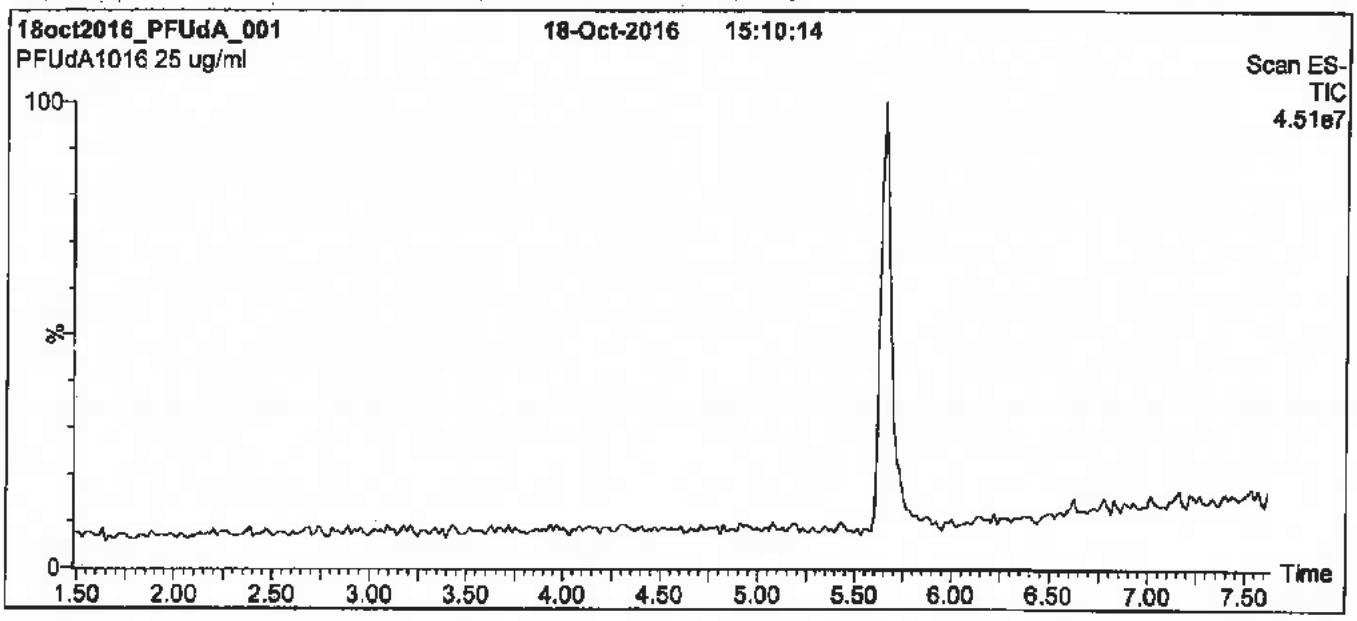
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

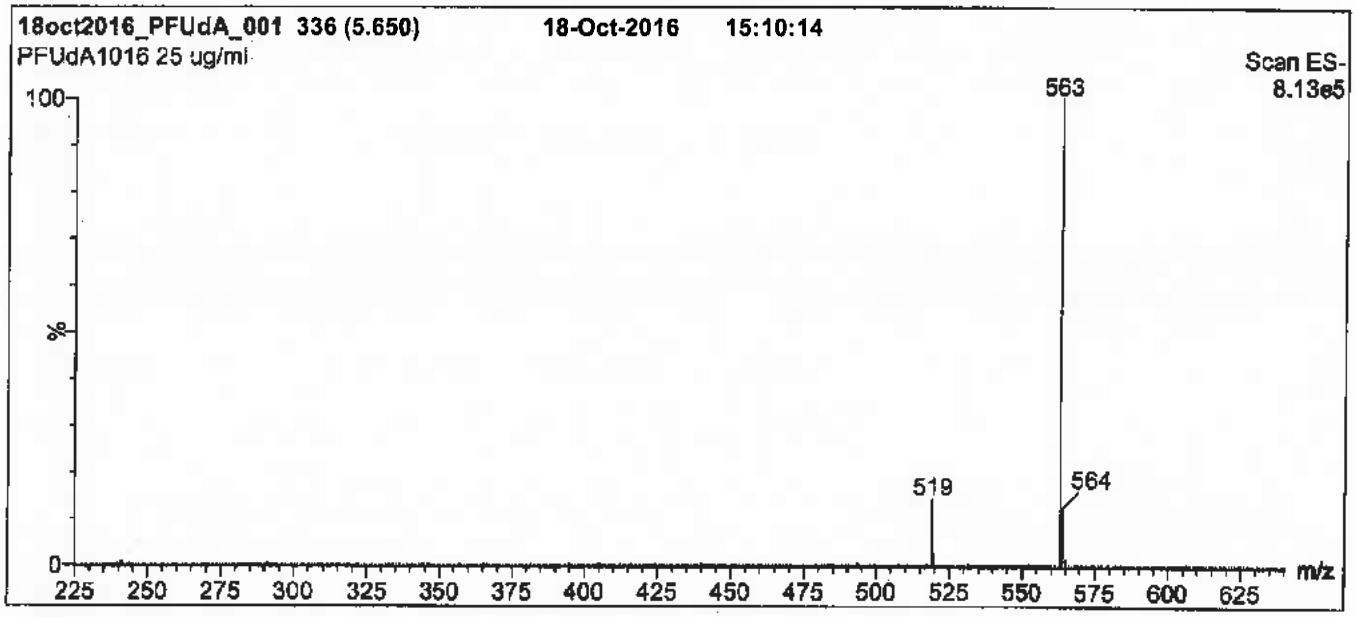
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

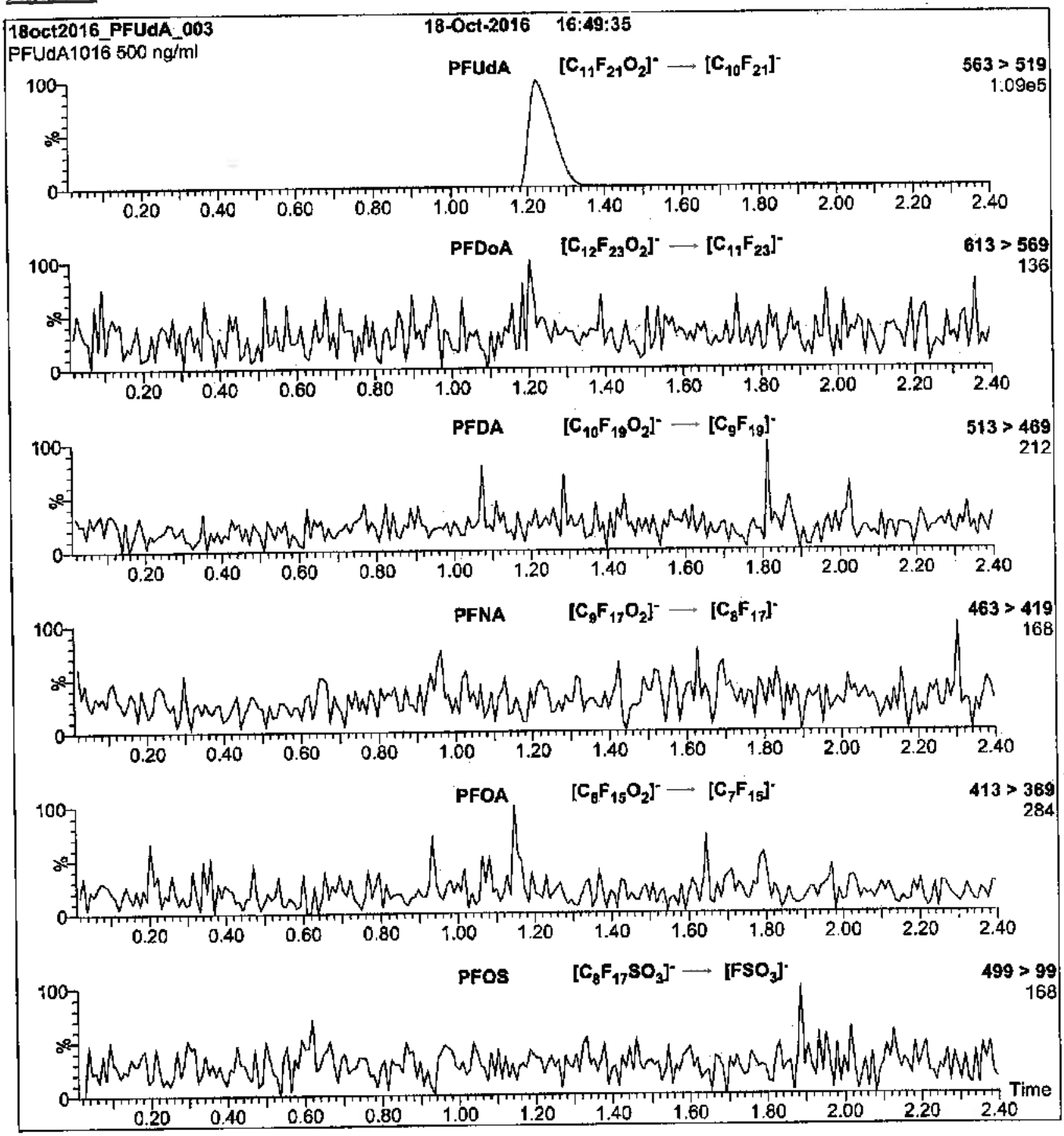
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFUdA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 11

Reagent

MV-567650_00027

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567650 **Lot No.:** A0124069

Description : 8260 Surrogate Standard

8260 Surrogate Standard 2,500 ug/ml, P&T Methanol, 5 ml/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : January 31, 2022 **Storage:** 0°C or colder

C E R T I F I E D V A L U E S

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dibromofluoromethane **CAS #** 1868-53-7 (Lot 0012016) **Purity** 99%	2,521.2 µg/mL	+/- 14.6582 µg/mL +/- 141.3584 µg/mL +/- 144.6660 µg/mL	Gravimetric Unstressed Stressed
2	1,2-Dichloroethane-d4 **CAS #** 17060-07-0 (Lot PR-25433) **Purity** 98%	2,513.8 µg/mL	+/- 14.6157 µg/mL +/- 140.9489 µg/mL +/- 144.2469 µg/mL	Gravimetric Unstressed Stressed
3	Toluene-d8 **CAS #** 2037-26-5 (Lot PR-27311) **Purity** 99%	2,519.4 µg/mL	+/- 14.6480 µg/mL +/- 141.2603 µg/mL +/- 144.5656 µg/mL	Gravimetric Unstressed Stressed
4	1-Bromo-4-fluorobenzene (BFB) **CAS #** 460-00-4 (Lot 20401KOV) **Purity** 99%	2,520.8 µg/mL	+/- 14.6559 µg/mL +/- 141.3360 µg/mL +/- 144.6430 µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

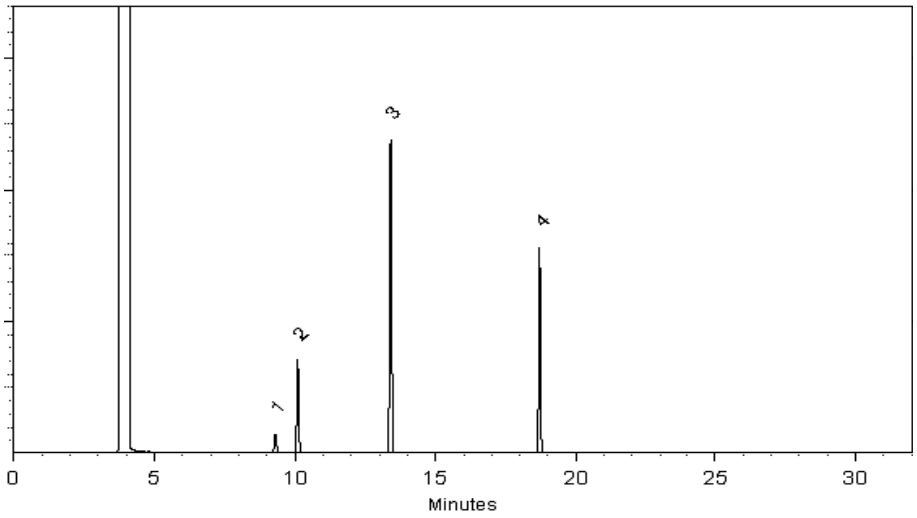
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Isaiah Harrison - Mix Technician

Date Mixed: 09-Jan-2017 **Balance:** 1128342314

Amanda Miller - Operations Tech-ARM QC

Date Passed: 11-Jan-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

MV-568718-D_00008

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3223.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 568718 **Lot No.:** A0118105

Description : 8260 Internal Standard 2014

8260 Internal Standard 2014 250-5,000 ug/ml, P&T Methanol, 5 ml/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : March 31, 2021 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	tert-Butyl-d9-alcohol **CAS #** 25725-11-5 **Purity** 99%	(Lot I201P6)	5,023.8 µg/mL	+/- 29.2073 +/- 107.5597 +/- 110.6867	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
2	2-Butanone-d5 **CAS #** 24313-50-6 **Purity** 99%	(Lot M276)	1,251.1 µg/mL	+/- 7.2740 +/- 26.7862 +/- 27.5649	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
3	Fluorobenzene **CAS #** 462-06-6 **Purity** 99%	(Lot BCBK8171V)	250.2 µg/mL	+/- 1.4578 +/- 5.3567 +/- 5.5123	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
4	1,4-Dioxane-d8 **CAS #** 17647-74-4 **Purity** 99%	(Lot I-19239)	5,005.7 µg/mL	+/- 29.1020 +/- 107.1722 +/- 110.2879	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
5	Chlorobenzene-d5 **CAS #** 3114-55-4 **Purity** 99%	(Lot PR-23926)	250.1 µg/mL	+/- 1.4575 +/- 5.3556 +/- 5.5112	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
6	1,4-Dichlorobenzene-d4 **CAS #** 3855-82-1 **Purity** 99%	(Lot PR-18488)	250.0 µg/mL	+/- 1.4566 +/- 5.3524 +/- 5.5079	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Reagent

MV-568718-D_00014

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.07

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

rec'd 3/1/18

Catalog No. : 568718 **Lot No.:** A0127975

Description : 8260 Internal Standard 2014

8260 Internal Standard 2014 250-5,000 ug/ml, P&T Methanol, 5 ml/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : May 31, 2022 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	tert-Butyl-d9-alcohol **CAS #** 25725-11-5 (Lot I-201) **Purity** 99%	5,022.1 µg/mL	+/- 29.1976 µg/mL +/- 107.5241 µg/mL +/- 110.6500 µg/mL	Gravimetric Unstressed Stressed
2	2-Butanone-d5 **CAS #** 24313-50-6 (Lot M-276) **Purity** 99%	1,257.5 µg/mL	+/- 7.3114 µg/mL +/- 26.9239 µg/mL +/- 27.7067 µg/mL	Gravimetric Unstressed Stressed
3	Fluorobenzene **CAS #** 462-06-6 (Lot BCBK8171V) **Purity** 99%	250.8 µg/mL	+/- 1.4613 µg/mL +/- 5.3699 µg/mL +/- 5.5259 µg/mL	Gravimetric Unstressed Stressed
4	1,4-Dioxane-d8 **CAS #** 17647-74-4 (Lot I-19942) **Purity** 99%	5,009.4 µg/mL	+/- 29.1236 µg/mL +/- 107.2514 µg/mL +/- 110.3694 µg/mL	Gravimetric Unstressed Stressed
5	Chlorobenzene-d5 **CAS #** 3114-55-4 (Lot PR-21944) **Purity** 99%	251.7 µg/mL	+/- 1.4666 µg/mL +/- 5.3891 µg/mL +/- 5.5458 µg/mL	Gravimetric Unstressed Stressed
6	1,4-Dichlorobenzene-d4 **CAS #** 3855-82-1 (Lot PR-18488) **Purity** 99%	251.3 µg/mL	+/- 1.4645 µg/mL +/- 5.3813 µg/mL +/- 5.5377 µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

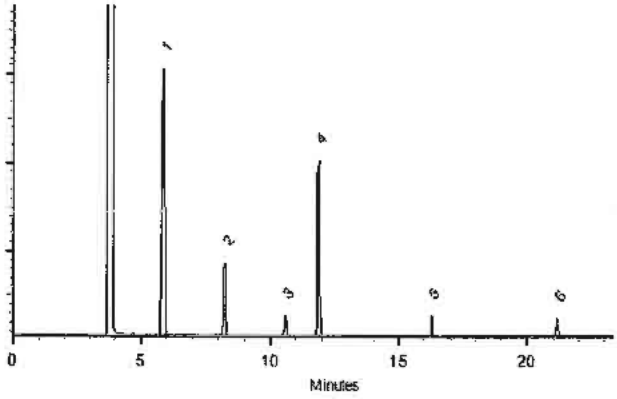
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



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Matt Fragassi - Mix Technician

Date Mixed: 30-May-2017 **Balance:** 1128342314

Justine Albertson - Operations Tech-ARM QC

Date Passed: 06-Jun-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

MV-568720_00019

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 568720 **Lot No.:** A0130770

Description : 8260 List 1/Std #5 Acrolein High

8260 List 1/Std #5 Acrolein High 19,750µg/mL, Water, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2018 **Storage:** 0°C or colder

Handling: This product is photosensitive.

C E R T I F I E D V A L U E S

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Acrolein	19,756.0 µg/mL	+/- 115.6757 µg/mL	Gravimetric
	CAS # 107-02-8 (Lot 170622JLM)		+/- 633.4395 µg/mL	Unstressed
	Purity 99%		+/- 736.3041 µg/mL	Stressed

Solvent: Water
CAS # 7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

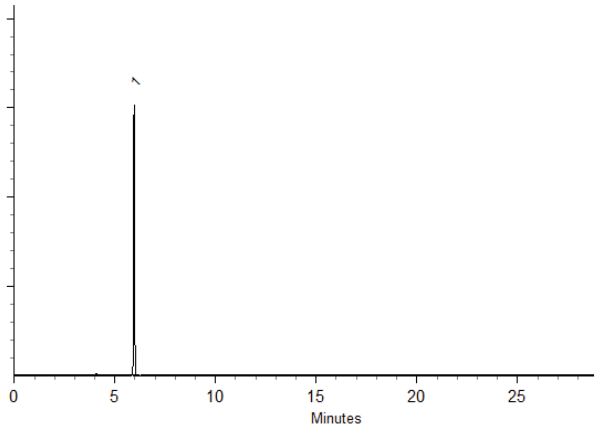
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 14-Sep-2017 **Balance:** B251644995

Justine Albertson - Operations Tech-ARM QC

Date Passed: 19-Sep-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

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- Purity values are rounded to the nearest whole number.

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$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
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- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
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- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569720.sec **Lot No.:** A0120604

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : July 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Diethyl ether (ethyl ether) **CAS #** 60-29-7.SEC (Lot F23X068) **Purity** 98%	2,501.1 µg/mL	+/- 14.5415 µg/mL +/- 150.9014 µg/mL +/- 151.2597 µg/mL	Gravimetric Unstressed Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113) **CAS #** 76-13-1.SEC (Lot 18342) **Purity** 99%	2,501.1 µg/mL	+/- 14.5418 µg/mL +/- 150.9040 µg/mL +/- 151.2622 µg/mL	Gravimetric Unstressed Stressed
3	1,1-Dichloroethene **CAS #** 75-35-4.SEC (Lot 2767000) **Purity** 99%	2,500.8 µg/mL	+/- 14.5396 µg/mL +/- 150.8813 µg/mL +/- 151.2395 µg/mL	Gravimetric Unstressed Stressed
4	tert-Butanol (TBA) **CAS #** 75-65-0.SEC (Lot XYXDO) **Purity** 98%	25,004.1 µg/mL	+/- 145.3683 µg/mL +/- 1,508.6067 µg/mL +/- 1,512.1884 µg/mL	Gravimetric Unstressed Stressed
5	Iodomethane (methyl iodide) **CAS #** 74-88-4.SEC (Lot Y25A027) **Purity** 99%	2,501.0 µg/mL	+/- 14.5410 µg/mL +/- 150.8964 µg/mL +/- 151.2547 µg/mL	Gravimetric Unstressed Stressed
6	Methyl acetate **CAS #** 79-20-9.SEC (Lot 6WOXM) **Purity** 99%	12,501.6 µg/mL	+/- 72.6817 µg/mL +/- 754.2781 µg/mL +/- 756.0689 µg/mL	Gravimetric Unstressed Stressed
7	Allyl chloride (3-chloropropene) **CAS #** 107-05-1.SEC (Lot VEBOC) **Purity** 98%	2,501.0 µg/mL	+/- 14.5408 µg/mL +/- 150.8940 µg/mL +/- 151.2522 µg/mL	Gravimetric Unstressed Stressed

8	Methylene chloride (dichloromethane)		2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 75-09-2.SEC	(Lot FGM02)			+/-	150.9040	µg/mL	Unstressed
	Purity 99%				+/-	151.2622	µg/mL	Stressed
9	Carbon disulfide		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 75-15-0.SEC	(Lot MKBL1376V)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed
10	Acrylonitrile		25,020.0	µg/mL	+/-	145.4608	µg/mL	Gravimetric
	CAS # 107-13-1.SEC	(Lot UERIL-DA)			+/-	1,509.5667	µg/mL	Unstressed
	Purity 99%				+/-	1,513.1507	µg/mL	Stressed
11	cis-1,2-Dichloroethene		2,500.8	µg/mL	+/-	14.5401	µg/mL	Gravimetric
	CAS # 156-59-2.SEC	(Lot HGC01-BLKT)			+/-	150.8866	µg/mL	Unstressed
	Purity 98%				+/-	151.2448	µg/mL	Stressed
12	n-Hexane (C6)		2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 110-54-3.SEC	(Lot 10188491)			+/-	150.9040	µg/mL	Unstressed
	Purity 99%				+/-	151.2622	µg/mL	Stressed
13	1,1-Dichloroethane		2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 75-34-3.SEC	(Lot 5035700)			+/-	150.9040	µg/mL	Unstressed
	Purity 99%				+/-	151.2622	µg/mL	Stressed
14	2,2-Dichloropropane		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 594-20-7.SEC	(Lot GI01)			+/-	150.8738	µg/mL	Unstressed
	Purity 99%				+/-	151.2320	µg/mL	Stressed
15	trans-1,2-Dichloroethene		2,501.3	µg/mL	+/-	14.5426	µg/mL	Gravimetric
	CAS # 156-60-5.SEC	(Lot TS5UB)			+/-	150.9125	µg/mL	Unstressed
	Purity 97%				+/-	151.2708	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)		62,503.0	µg/mL	+/-	363.3788	µg/mL	Gravimetric
	CAS # 78-83-1.SEC	(Lot 83NHH)			+/-	3,771.0811	µg/mL	Unstressed
	Purity 99%				+/-	3,780.0343	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS # 1634-04-4.SEC	(Lot ZAQTA-MS)			+/-	150.8964	µg/mL	Unstressed
	Purity 99%				+/-	151.2547	µg/mL	Stressed
18	Bromochloromethane		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 74-97-5.SEC	(Lot 1775400)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
19	Tetrahydrofuran		5,000.3	µg/mL	+/-	29.0719	µg/mL	Gravimetric
	CAS # 109-99-9.SEC	(Lot K3V7J-SJ)			+/-	301.6872	µg/mL	Unstressed
	Purity 99%				+/-	302.4035	µg/mL	Stressed
20	1,1,1-Trichloroethane		2,501.3	µg/mL	+/-	14.5429	µg/mL	Gravimetric
	CAS # 71-55-6.SEC	(Lot CS160712)			+/-	150.9162	µg/mL	Unstressed
	Purity 98%				+/-	151.2745	µg/mL	Stressed
21	Cyclohexane		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 110-82-7.SEC	(Lot YADRA)			+/-	150.8512	µg/mL	Unstressed
	Purity 99%				+/-	151.2093	µg/mL	Stressed
22	1,1-Dichloropropene		2,500.4	µg/mL	+/-	14.5378	µg/mL	Gravimetric
	CAS # 563-58-6.SEC	(Lot 4672600)			+/-	150.8626	µg/mL	Unstressed
	Purity 96%				+/-	151.2208	µg/mL	Stressed
23	Carbon tetrachloride		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 56-23-5.SEC	(Lot 11466)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed

24	n-Heptane (C7)		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 142-82-5.SEC	(Lot OGM01)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed
25	1,2-Dichloroethane		2,501.3	µg/mL	+/-	14.5425	µg/mL	Gravimetric
	CAS # 107-06-2.SEC	(Lot FO6PK)			+/-	150.9115	µg/mL	Unstressed
	Purity 99%				+/-	151.2698	µg/mL	Stressed
26	Benzene		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 71-43-2.SEC	(Lot B28Y008)			+/-	150.8738	µg/mL	Unstressed
	Purity 99%				+/-	151.2320	µg/mL	Stressed
27	Trichloroethene		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 79-01-6.SEC	(Lot H04X050)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
28	Methylcyclohexane		2,501.9	µg/mL	+/-	14.5461	µg/mL	Gravimetric
	CAS # 108-87-2.SEC	(Lot 24MSD-CD)			+/-	150.9492	µg/mL	Unstressed
	Purity 99%				+/-	151.3076	µg/mL	Stressed
29	1,2-Dichloropropane		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 78-87-5.SEC	(Lot OGG01)			+/-	150.8813	µg/mL	Unstressed
	Purity 99%				+/-	151.2395	µg/mL	Stressed
30	Bromodichloromethane		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 75-27-4.SEC	(Lot 10171168)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
31	1,4-Dioxane		50,014.8	µg/mL	+/-	290.7749	µg/mL	Gravimetric
	CAS # 123-91-1.SEC	(Lot CHA4A)			+/-	3,017.6100	µg/mL	Unstressed
	Purity 99%				+/-	3,024.7743	µg/mL	Stressed
32	Dibromomethane		2,501.4	µg/mL	+/-	14.5432	µg/mL	Gravimetric
	CAS # 74-95-3.SEC	(Lot FGI01-OICH)			+/-	150.9190	µg/mL	Unstressed
	Purity 99%				+/-	151.2773	µg/mL	Stressed
33	cis-1,3-Dichloropropene		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 10061-01-5.SEC	(Lot 7ZLXJ-TJ)			+/-	150.8813	µg/mL	Unstressed
	Purity 99%				+/-	151.2395	µg/mL	Stressed
34	Toluene		2,501.3	µg/mL	+/-	14.5425	µg/mL	Gravimetric
	CAS # 108-88-3.SEC	(Lot YND2B-BD)			+/-	150.9115	µg/mL	Unstressed
	Purity 99%				+/-	151.2698	µg/mL	Stressed
35	Ethyl methacrylate		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 97-63-2.SEC	(Lot MLWYK-LS)			+/-	150.9341	µg/mL	Unstressed
	Purity 99%				+/-	151.2925	µg/mL	Stressed
36	trans-1,3-Dichloropropene		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 10061-02-6.SEC	(Lot 2ECIC)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed
37	1,1,2-Trichloroethane		2,500.5	µg/mL	+/-	14.5379	µg/mL	Gravimetric
	CAS # 79-00-5.SEC	(Lot 3440900)			+/-	150.8644	µg/mL	Unstressed
	Purity 98%				+/-	151.2226	µg/mL	Stressed
38	1,3-Dichloropropane		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS # 142-28-9.SEC	(Lot AGN01-EFPC)			+/-	150.8964	µg/mL	Unstressed
	Purity 99%				+/-	151.2547	µg/mL	Stressed
39	Tetrachloroethene		2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS # 127-18-4.SEC	(Lot F09W014)			+/-	150.9266	µg/mL	Unstressed
	Purity 99%				+/-	151.2849	µg/mL	Stressed

40	Dibromochloromethane		2,501.9	µg/mL	+/-	14.5461	µg/mL	Gravimetric
	CAS # 124-48-1.SEC	(Lot 10181507)			+/-	150.9491	µg/mL	Unstressed
	Purity 97%				+/-	151.3074	µg/mL	Stressed
41	1,2-Dibromoethane (EDB)		2,500.1	µg/mL	+/-	14.5359	µg/mL	Gravimetric
	CAS # 106-93-4.SEC	(Lot 3505900)			+/-	150.8436	µg/mL	Unstressed
	Purity 99%				+/-	151.2017	µg/mL	Stressed
42	Chlorobenzene		2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS # 108-90-7.SEC	(Lot 1161936)			+/-	150.9266	µg/mL	Unstressed
	Purity 99%				+/-	151.2849	µg/mL	Stressed
43	1,1,1,2-Tetrachloroethane		2,501.0	µg/mL	+/-	14.5408	µg/mL	Gravimetric
	CAS # 630-20-6.SEC	(Lot GC01)			+/-	150.8940	µg/mL	Unstressed
	Purity 98%				+/-	151.2522	µg/mL	Stressed
44	Ethylbenzene		2,501.4	µg/mL	+/-	14.5432	µg/mL	Gravimetric
	CAS # 100-41-4.SEC	(Lot PI4SE)			+/-	150.9190	µg/mL	Unstressed
	Purity 99%				+/-	151.2773	µg/mL	Stressed
45	m-Xylene		1,250.9	µg/mL	+/-	7.2727	µg/mL	Gravimetric
	CAS # 108-38-3.SEC	(Lot OUKMG-GB)			+/-	75.4708	µg/mL	Unstressed
	Purity 99%				+/-	75.6500	µg/mL	Stressed
46	p-Xylene		1,250.8	µg/mL	+/-	7.2720	µg/mL	Gravimetric
	CAS # 106-42-3.SEC	(Lot GM01)			+/-	75.4633	µg/mL	Unstressed
	Purity 99%				+/-	75.6425	µg/mL	Stressed
47	o-Xylene		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS # 95-47-6.SEC	(Lot FGL01-KTPK)			+/-	150.8964	µg/mL	Unstressed
	Purity 99%				+/-	151.2547	µg/mL	Stressed
48	Styrene		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 100-42-5.SEC	(Lot OFIOL-IA)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
49	Isopropylbenzene (cumene)		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 98-82-8.SEC	(Lot 2PHXG-IH)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
50	Bromoform		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 75-25-2.SEC	(Lot 5139000)			+/-	150.8512	µg/mL	Unstressed
	Purity 99%				+/-	151.2093	µg/mL	Stressed
51	1,1,2,2-Tetrachloroethane		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 79-34-5.SEC	(Lot CFA4D-AQ)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed
52	Chloroform		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 67-66-3.SEC	(Lot 1297547)			+/-	150.8738	µg/mL	Unstressed
	Purity 99%				+/-	151.2320	µg/mL	Stressed
53	1,2,3-Trichloropropane		2,501.5	µg/mL	+/-	14.5436	µg/mL	Gravimetric
	CAS # 96-18-4.SEC	(Lot OGI01)			+/-	150.9236	µg/mL	Unstressed
	Purity 98%				+/-	151.2819	µg/mL	Stressed
54	trans-1,4-Dichloro-2-butene		2,500.5	µg/mL	+/-	14.5379	µg/mL	Gravimetric
	CAS # 110-57-6.SEC	(Lot 100700-3)			+/-	150.8644	µg/mL	Unstressed
	Purity 98%				+/-	151.2226	µg/mL	Stressed
55	n-Propylbenzene		2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS # 103-65-1.SEC	(Lot T2HFC-IT)			+/-	150.8361	µg/mL	Unstressed
	Purity 99%				+/-	151.1942	µg/mL	Stressed

56	Bromobenzene		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS # 108-86-1.SEC	(Lot 2FUHG-EM)			+/-	150.8964	µg/mL	Unstressed
	Purity 99%				+/-	151.2547	µg/mL	Stressed
57	1,2,4-Trimethylbenzene		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 95-63-6.SEC	(Lot SC7LO-QA)			+/-	150.8738	µg/mL	Unstressed
	Purity 99%				+/-	151.2320	µg/mL	Stressed
58	2-Chlorotoluene		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 95-49-8.SEC	(Lot SW8QG-AO)			+/-	150.8738	µg/mL	Unstressed
	Purity 99%				+/-	151.2320	µg/mL	Stressed
59	4-Chlorotoluene		2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetric
	CAS # 106-43-4.SEC	(Lot P4XHJ-AO)			+/-	150.8889	µg/mL	Unstressed
	Purity 99%				+/-	151.2471	µg/mL	Stressed
60	tert-Butylbenzene		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 98-06-6.SEC	(Lot OGN01-CAI)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed
61	1,3,5-Trimethylbenzene		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 108-67-8.SEC	(Lot FGH02-CMLN)			+/-	150.8813	µg/mL	Unstressed
	Purity 99%				+/-	151.2395	µg/mL	Stressed
62	sec-Butylbenzene		2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetric
	CAS # 135-98-8.SEC	(Lot OGN01-IMA)			+/-	150.8889	µg/mL	Unstressed
	Purity 99%				+/-	151.2471	µg/mL	Stressed
63	4-Isopropyltoluene (p-cymene)		2,501.5	µg/mL	+/-	14.5441	µg/mL	Gravimetric
	CAS # 99-87-6.SEC	(Lot 1195000)			+/-	150.9278	µg/mL	Unstressed
	Purity 96%				+/-	151.2861	µg/mL	Stressed
64	1,3-Dichlorobenzene		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 541-73-1.SEC	(Lot FMDFD)			+/-	150.9341	µg/mL	Unstressed
	Purity 99%				+/-	151.2925	µg/mL	Stressed
65	1,4-Dichlorobenzene		2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 106-46-7.SEC	(Lot 4Y5DC)			+/-	150.9040	µg/mL	Unstressed
	Purity 99%				+/-	151.2622	µg/mL	Stressed
66	n-Butylbenzene		2,501.4	µg/mL	+/-	14.5432	µg/mL	Gravimetric
	CAS # 104-51-8.SEC	(Lot OGN01-PNP)			+/-	150.9190	µg/mL	Unstressed
	Purity 99%				+/-	151.2773	µg/mL	Stressed
67	1,2-Dichlorobenzene		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 95-50-1.SEC	(Lot 4NRGF-OT)			+/-	150.8512	µg/mL	Unstressed
	Purity 99%				+/-	151.2093	µg/mL	Stressed
68	1,2-Dibromo-3-chloropropane		2,500.3	µg/mL	+/-	14.5369	µg/mL	Gravimetric
	CAS # 96-12-8.SEC	(Lot LC00408V)			+/-	150.8539	µg/mL	Unstressed
	Purity 97%				+/-	151.2121	µg/mL	Stressed
69	1,2,4-Trichlorobenzene		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 120-82-1.SEC	(Lot 3LYYC)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
70	Hexachlorobutadiene		2,500.7	µg/mL	+/-	14.5394	µg/mL	Gravimetric
	CAS # 87-68-3.SEC	(Lot 497470099			+/-	150.8792	µg/mL	Unstressed
	Purity 98%				+/-	151.2374	µg/mL	Stressed
71	Naphthalene		2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS # 91-20-3.SEC	(Lot SKZ5N)			+/-	150.8361	µg/mL	Unstressed
	Purity 99%				+/-	151.1942	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2,501.6 µg/mL	+/-	14.5444	µg/mL	Gravimetric
	CAS # 87-61-6.SEC	(Lot A0043055)		+/-	150.9310	µg/mL	Unstressed
	Purity 98%			+/-	151.2893	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

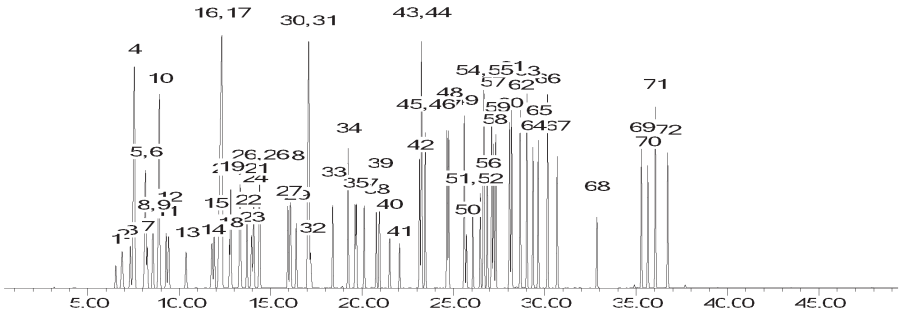
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Maye

Date Mixed: 25-Jul-2016 **Balance:** 1127510105

Jennifer L. Pollino - QC Analyst

Date Passed: 28-Jul-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

MV-569720_00003

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Reference Material Producer
Certificate #3222.01

Certificate of Analysis

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569720 **Lot No.:** A0118177

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Diethyl ether (ethyl ether)	2,503.5 µg/mL	+/- 14.5556 µg/mL	Gravimetric
	CAS # 60-29-7 (Lot SHBG1462V)		+/- 151.0472 µg/mL	Unstressed
	Purity 99%		+/- 151.4059 µg/mL	Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113)	2,500.0 µg/mL	+/- 14.5352 µg/mL	Gravimetric
	CAS # 76-13-1 (Lot 00004562)		+/- 150.8361 µg/mL	Unstressed
	Purity 99%		+/- 151.1942 µg/mL	Stressed
3	1,1-Dichloroethane	2,500.1 µg/mL	+/- 14.5359 µg/mL	Gravimetric
	CAS # 75-34-3 (Lot 00008621)		+/- 150.8436 µg/mL	Unstressed
	Purity 99%		+/- 151.2017 µg/mL	Stressed
4	tert-Butanol (TBA)	25,033.4 µg/mL	+/- 145.5386 µg/mL	Gravimetric
	CAS # 75-65-0 (Lot SHBD0362V)		+/- 1,510.3737 µg/mL	Unstressed
	Purity 99%		+/- 1,513.9596 µg/mL	Stressed
5	Iodomethane (methyl iodide)	2,502.9 µg/mL	+/- 14.5522 µg/mL	Gravimetric
	CAS # 74-88-4 (Lot SHBF2149V)		+/- 151.0123 µg/mL	Unstressed
	Purity 98%		+/- 151.3708 µg/mL	Stressed
6	Methyl acetate	12,508.6 µg/mL	+/- 72.7223 µg/mL	Gravimetric
	CAS # 79-20-9 (Lot SHBD7134V)		+/- 754.6987 µg/mL	Unstressed
	Purity 98%		+/- 756.4905 µg/mL	Stressed
7	Allyl chloride (3-chloropropene)	2,500.0 µg/mL	+/- 19.2743 µg/mL	Gravimetric
	CAS # 107-05-1 (Lot SHBF8133V)		+/- 151.3663 µg/mL	Unstressed
	Purity 99%		+/- 151.7231 µg/mL	Stressed

8	Methylene chloride (dichloromethane)		2,521.4	µg/mL	+/-	14.6595	µg/mL	Gravimetric
	CAS # 75-09-2	(Lot SHBF9870V)			+/-	152.1257	µg/mL	Unstressed
	Purity 99%				+/-	152.4869	µg/mL	Stressed
9	Carbon disulfide		2,516.0	µg/mL	+/-	14.6282	µg/mL	Gravimetric
	CAS # 75-15-0	(Lot S20A856)			+/-	151.8014	µg/mL	Unstressed
	Purity 99%				+/-	152.1618	µg/mL	Stressed
10	Acrylonitrile		25,001.3	µg/mL	+/-	145.3518	µg/mL	Gravimetric
	CAS # 107-13-1	(Lot J08Z057)			+/-	1,508.4355	µg/mL	Unstressed
	Purity 99%				+/-	1,512.0167	µg/mL	Stressed
11	cis-1,2-Dichloroethene		2,507.8	µg/mL	+/-	14.5807	µg/mL	Gravimetric
	CAS # 156-59-2	(Lot MKBV2831V)			+/-	151.3079	µg/mL	Unstressed
	Purity 98%				+/-	151.6671	µg/mL	Stressed
12	n-Hexane (C6)		2,512.4	µg/mL	+/-	14.6072	µg/mL	Gravimetric
	CAS # 110-54-3	(Lot SHBF7674V)			+/-	151.5827	µg/mL	Unstressed
	Purity 99%				+/-	151.9426	µg/mL	Stressed
13	1,1-dichloroethene		2,508.1	µg/mL	+/-	14.5825	µg/mL	Gravimetric
	CAS # 75-35-4	(Lot 73896KMV)			+/-	151.3263	µg/mL	Unstressed
	Purity 99%				+/-	151.6856	µg/mL	Stressed
14	2,2-Dichloropropane		2,507.6	µg/mL	+/-	14.5795	µg/mL	Gravimetric
	CAS # 594-20-7	(Lot BCBL9720V)			+/-	151.2961	µg/mL	Unstressed
	Purity 99%				+/-	151.6553	µg/mL	Stressed
15	trans-1,2-Dichloroethene		2,509.8	µg/mL	+/-	14.5919	µg/mL	Gravimetric
	CAS # 156-60-5	(Lot MKBH9850V)			+/-	151.4243	µg/mL	Unstressed
	Purity 99%				+/-	151.7838	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)		62,815.4	µg/mL	+/-	365.1949	µg/mL	Gravimetric
	CAS # 78-83-1	(Lot SHBD1647V)			+/-	3,789.9281	µg/mL	Unstressed
	Purity 99%				+/-	3,798.9260	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)		2,510.0	µg/mL	+/-	14.5934	µg/mL	Gravimetric
	CAS # 1634-04-4	(Lot MKBV2134V)			+/-	151.4394	µg/mL	Unstressed
	Purity 99%				+/-	151.7990	µg/mL	Stressed
18	Bromochloromethane		2,507.0	µg/mL	+/-	14.5759	µg/mL	Gravimetric
	CAS # 74-97-5	(Lot 00004559)			+/-	151.2584	µg/mL	Unstressed
	Purity 99%				+/-	151.6175	µg/mL	Stressed
19	Tetrahydrofuran		5,025.3	µg/mL	+/-	29.2172	µg/mL	Gravimetric
	CAS # 109-99-9	(Lot SHBG2910V)			+/-	303.1956	µg/mL	Unstressed
	Purity 99%				+/-	303.9154	µg/mL	Stressed
20	1,1,1-trichloroethane		2,508.9	µg/mL	+/-	14.5868	µg/mL	Gravimetric
	CAS # 71-55-6	(Lot B15MW0705)			+/-	151.3715	µg/mL	Unstressed
	Purity 99%				+/-	151.7309	µg/mL	Stressed
21	Cyclohexane		2,503.4	µg/mL	+/-	14.5548	µg/mL	Gravimetric
	CAS # 110-82-7	(Lot MKBV3194V)			+/-	151.0397	µg/mL	Unstressed
	Purity 99%				+/-	151.3983	µg/mL	Stressed
22	1,1-Dichloropropene		2,507.4	µg/mL	+/-	14.5781	µg/mL	Gravimetric
	CAS # 563-58-6	(Lot PR09161302)			+/-	151.2810	µg/mL	Unstressed
	Purity 99%				+/-	151.6402	µg/mL	Stressed
23	carbon tetrachloride		2,505.9	µg/mL	+/-	14.5694	µg/mL	Gravimetric
	CAS # 56-23-5	(Lot SHBG1763V)			+/-	151.1905	µg/mL	Unstressed
	Purity 99%				+/-	151.5495	µg/mL	Stressed

24	n-Heptane (C7)		2,510.8	µg/mL	+/-	14.5977	µg/mL	Gravimetric
	CAS # 142-82-5	(Lot MKBV6176V)			+/-	151.4847	µg/mL	Unstressed
	Purity 99%				+/-	151.8443	µg/mL	Stressed
25	1,2-Dichloroethane		2,511.1	µg/mL	+/-	14.5999	µg/mL	Gravimetric
	CAS # 107-06-2	(Lot MKBV4565V)			+/-	151.5073	µg/mL	Unstressed
	Purity 99%				+/-	151.8670	µg/mL	Stressed
26	Benzene		2,502.9	µg/mL	+/-	14.5519	µg/mL	Gravimetric
	CAS # 71-43-2	(Lot SHBG1169V)			+/-	151.0095	µg/mL	Unstressed
	Purity 99%				+/-	151.3681	µg/mL	Stressed
27	Trichloroethene		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 79-01-6	(Lot SHBF0943V)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
28	Methylcyclohexane		2,503.9	µg/mL	+/-	14.5577	µg/mL	Gravimetric
	CAS # 108-87-2	(Lot 50996APV)			+/-	151.0699	µg/mL	Unstressed
	Purity 99%				+/-	151.4285	µg/mL	Stressed
29	1,2-Dichloropropane		2,523.5	µg/mL	+/-	14.6718	µg/mL	Gravimetric
	CAS # 78-87-5	(Lot 01113D0V)			+/-	152.2539	µg/mL	Unstressed
	Purity 99%				+/-	152.6154	µg/mL	Stressed
30	bromodichloromethane		2,509.0	µg/mL	+/-	14.5878	µg/mL	Gravimetric
	CAS # 75-27-4	(Lot MKBL1617V)			+/-	151.3818	µg/mL	Unstressed
	Purity 98%				+/-	151.7412	µg/mL	Stressed
31	1,4-Dioxane		50,018.1	µg/mL	+/-	290.7945	µg/mL	Gravimetric
	CAS # 123-91-1	(Lot SHBG6312V)			+/-	3,017.8137	µg/mL	Unstressed
	Purity 99%				+/-	3,024.9785	µg/mL	Stressed
32	Dibromomethane		2,511.4	µg/mL	+/-	14.6013	µg/mL	Gravimetric
	CAS # 74-95-3	(Lot 10183283)			+/-	151.5222	µg/mL	Unstressed
	Purity 98%				+/-	151.8820	µg/mL	Stressed
33	cis-1,3-Dichloropropene		2,506.0	µg/mL	+/-	14.5701	µg/mL	Gravimetric
	CAS # 10061-01-5	(Lot 22622)			+/-	151.1981	µg/mL	Unstressed
	Purity 99%				+/-	151.5571	µg/mL	Stressed
34	Toluene		2,515.5	µg/mL	+/-	14.6253	µg/mL	Gravimetric
	CAS # 108-88-3	(Lot MKBV5601V)			+/-	151.7713	µg/mL	Unstressed
	Purity 99%				+/-	152.1316	µg/mL	Stressed
35	Ethyl methacrylate		2,503.1	µg/mL	+/-	14.5534	µg/mL	Gravimetric
	CAS # 97-63-2	(Lot SHBD9190V)			+/-	151.0246	µg/mL	Unstressed
	Purity 99%				+/-	151.3832	µg/mL	Stressed
36	trans-1,3-Dichloropropene		2,508.0	µg/mL	+/-	14.5817	µg/mL	Gravimetric
	CAS # 10061-02-6	(Lot C584177)			+/-	151.3188	µg/mL	Unstressed
	Purity 99%				+/-	151.6780	µg/mL	Stressed
37	1,1,2-Trichloroethane		2,508.4	µg/mL	+/-	14.5839	µg/mL	Gravimetric
	CAS # 79-00-5	(Lot FGB01)			+/-	151.3414	µg/mL	Unstressed
	Purity 99%				+/-	151.7007	µg/mL	Stressed
38	1,3-Dichloropropane		2,522.8	µg/mL	+/-	14.6675	µg/mL	Gravimetric
	CAS # 142-28-9	(Lot BCBG2162V)			+/-	152.2087	µg/mL	Unstressed
	Purity 99%				+/-	152.5701	µg/mL	Stressed
39	Tetrachloroethene		2,518.9	µg/mL	+/-	14.6450	µg/mL	Gravimetric
	CAS # 127-18-4	(Lot SHBD9374V)			+/-	151.9749	µg/mL	Unstressed
	Purity 99%				+/-	152.3357	µg/mL	Stressed

40	dibromochloromethane		2,505.4	µg/mL	+/-	14.5664	µg/mL	Gravimetric
	CAS # 124-48-1	(Lot MKBQ6577V)			+/-	151.1601	µg/mL	Unstressed
	Purity 98%				+/-	151.5190	µg/mL	Stressed
41	1,2-Dibromoethane (EDB)		2,505.1	µg/mL	+/-	14.5650	µg/mL	Gravimetric
	CAS # 106-93-4	(Lot BCBH3877V)			+/-	151.1453	µg/mL	Unstressed
	Purity 99%				+/-	151.5041	µg/mL	Stressed
42	Chlorobenzene		2,505.6	µg/mL	+/-	14.5679	µg/mL	Gravimetric
	CAS # 108-90-7	(Lot SHBF0505V)			+/-	151.1755	µg/mL	Unstressed
	Purity 99%				+/-	151.5344	µg/mL	Stressed
43	1,1,2,2-Tetrachloroethane		2,505.1	µg/mL	+/-	14.5650	µg/mL	Gravimetric
	CAS # 79-34-5	(Lot CFA4D)			+/-	151.1453	µg/mL	Unstressed
	Purity 99%				+/-	151.5041	µg/mL	Stressed
44	Ethylbenzene		2,506.1	µg/mL	+/-	14.5708	µg/mL	Gravimetric
	CAS # 100-41-4	(Lot SHBG5920V)			+/-	151.2056	µg/mL	Unstressed
	Purity 99%				+/-	151.5646	µg/mL	Stressed
45	m-Xylene		1,254.4	µg/mL	+/-	7.2930	µg/mL	Gravimetric
	CAS # 108-38-3	(Lot SHBF8095V)			+/-	75.6820	µg/mL	Unstressed
	Purity 99%				+/-	75.8617	µg/mL	Stressed
46	p-Xylene		1,250.0	µg/mL	+/-	7.2676	µg/mL	Gravimetric
	CAS # 106-42-3	(Lot SHBF3427V)			+/-	75.4180	µg/mL	Unstressed
	Purity 99%				+/-	75.5971	µg/mL	Stressed
47	o-Xylene		2,506.3	µg/mL	+/-	14.5716	µg/mL	Gravimetric
	CAS # 95-47-6	(Lot SHBF7003V)			+/-	151.2132	µg/mL	Unstressed
	Purity 99%				+/-	151.5722	µg/mL	Stressed
48	Styrene		2,503.9	µg/mL	+/-	14.5577	µg/mL	Gravimetric
	CAS # 100-42-5	(Lot MKBS7097V)			+/-	151.0699	µg/mL	Unstressed
	Purity 99%				+/-	151.4285	µg/mL	Stressed
49	Isopropylbenzene (cumene)		2,509.4	µg/mL	+/-	14.5897	µg/mL	Gravimetric
	CAS # 98-82-8	(Lot 10185056)			+/-	151.4017	µg/mL	Unstressed
	Purity 99%				+/-	151.7612	µg/mL	Stressed
50	bromoform		2,503.3	µg/mL	+/-	14.5541	µg/mL	Gravimetric
	CAS # 75-25-2	(Lot SHBC3410V)			+/-	151.0322	µg/mL	Unstressed
	Purity 99%				+/-	151.3907	µg/mL	Stressed
51	1,1,1,2-Tetrachloroethane		2,505.0	µg/mL	+/-	14.5643	µg/mL	Gravimetric
	CAS # 630-20-6	(Lot MKBS3769V)			+/-	151.1378	µg/mL	Unstressed
	Purity 99%				+/-	151.4966	µg/mL	Stressed
52	chloroform		2,507.8	µg/mL	+/-	14.5803	µg/mL	Gravimetric
	CAS # 67-66-3	(Lot MKBV2089V)			+/-	151.3037	µg/mL	Unstressed
	Purity 99%				+/-	151.6629	µg/mL	Stressed
53	1,2,3-Trichloropropane		2,504.8	µg/mL	+/-	14.5628	µg/mL	Gravimetric
	CAS # 96-18-4	(Lot BCBH8722V)			+/-	151.1227	µg/mL	Unstressed
	Purity 99%				+/-	151.4815	µg/mL	Stressed
54	trans-1,4-dichloro-2-butene		2,499.7	µg/mL	+/-	14.5334	µg/mL	Gravimetric
	CAS # 110-57-6	(Lot MKBP6041V)			+/-	150.8172	µg/mL	Unstressed
	Purity 95%				+/-	151.1753	µg/mL	Stressed
55	n-Propylbenzene		2,507.5	µg/mL	+/-	14.5788	µg/mL	Gravimetric
	CAS # 103-65-1	(Lot MKBJ0332V)			+/-	151.2886	µg/mL	Unstressed
	Purity 99%				+/-	151.6478	µg/mL	Stressed

56	Bromobenzene		2,515.1	µg/mL	+/-	14.6232	µg/mL	Gravimetric
	CAS # 108-86-1	(Lot MKBD4032V)			+/-	151.7486	µg/mL	Unstressed
	Purity 99%				+/-	152.1089	µg/mL	Stressed
57	1,2,4-Trimethylbenzene		2,503.7	µg/mL	+/-	14.5565	µg/mL	Gravimetric
	CAS # 95-63-6	(Lot MKBJ6229V)			+/-	151.0566	µg/mL	Unstressed
	Purity 98%				+/-	151.4152	µg/mL	Stressed
58	2-Chlorotoluene		2,502.1	µg/mL	+/-	14.5476	µg/mL	Gravimetric
	CAS # 95-49-8	(Lot MKBH8892V)			+/-	150.9643	µg/mL	Unstressed
	Purity 99%				+/-	151.3227	µg/mL	Stressed
59	4-Chlorotoluene		2,512.6	µg/mL	+/-	14.6086	µg/mL	Gravimetric
	CAS # 106-43-4	(Lot MKBL7753V)			+/-	151.5978	µg/mL	Unstressed
	Purity 99%				+/-	151.9577	µg/mL	Stressed
60	tert-Butylbenzene		2,507.8	µg/mL	+/-	14.5803	µg/mL	Gravimetric
	CAS # 98-06-6	(Lot S52237V)			+/-	151.3037	µg/mL	Unstressed
	Purity 99%				+/-	151.6629	µg/mL	Stressed
61	1,3,5-Trimethylbenzene		2,502.5	µg/mL	+/-	14.5498	µg/mL	Gravimetric
	CAS # 108-67-8	(Lot BCBJ6245V)			+/-	150.9869	µg/mL	Unstressed
	Purity 99%				+/-	151.3454	µg/mL	Stressed
62	sec-Butylbenzene		2,521.8	µg/mL	+/-	14.6617	µg/mL	Gravimetric
	CAS # 135-98-8	(Lot MKBK3151V)			+/-	152.1484	µg/mL	Unstressed
	Purity 99%				+/-	152.5096	µg/mL	Stressed
63	p-Isopropyltoluene (p-Cymene)		2,502.6	µg/mL	+/-	14.5505	µg/mL	Gravimetric
	CAS # 99-87-6	(Lot MKBK4439V)			+/-	150.9945	µg/mL	Unstressed
	Purity 99%				+/-	151.3529	µg/mL	Stressed
64	1,3-Dichlorobenzene		2,505.8	µg/mL	+/-	14.5686	µg/mL	Gravimetric
	CAS # 541-73-1	(Lot BCBM5751V)			+/-	151.1830	µg/mL	Unstressed
	Purity 99%				+/-	151.5419	µg/mL	Stressed
65	1,4-Dichlorobenzene		2,504.1	µg/mL	+/-	14.5592	µg/mL	Gravimetric
	CAS # 106-46-7	(Lot MKBS1350V)			+/-	151.0850	µg/mL	Unstressed
	Purity 99%				+/-	151.4437	µg/mL	Stressed
66	n-Butylbenzene		2,503.3	µg/mL	+/-	14.5541	µg/mL	Gravimetric
	CAS # 104-51-8	(Lot 09418JJV)			+/-	151.0322	µg/mL	Unstressed
	Purity 99%				+/-	151.3907	µg/mL	Stressed
67	1,2-Dichlorobenzene		2,505.5	µg/mL	+/-	14.5672	µg/mL	Gravimetric
	CAS # 95-50-1	(Lot SHBD7331V)			+/-	151.1679	µg/mL	Unstressed
	Purity 99%				+/-	151.5268	µg/mL	Stressed
68	1,2-Dibromo-3-chloropropane		2,508.6	µg/mL	+/-	14.5854	µg/mL	Gravimetric
	CAS # 96-12-8	(Lot FBL01-JM)			+/-	151.3565	µg/mL	Unstressed
	Purity 99%				+/-	151.7158	µg/mL	Stressed
69	1,2,4-Trichlorobenzene		2,518.6	µg/mL	+/-	14.6435	µg/mL	Gravimetric
	CAS # 120-82-1	(Lot 26896BM)			+/-	151.9598	µg/mL	Unstressed
	Purity 99%				+/-	152.3206	µg/mL	Stressed
70	Hexachlorobutadiene		2,499.9	µg/mL	+/-	14.5344	µg/mL	Gravimetric
	CAS # 87-68-3	(Lot J31X013)			+/-	150.8275	µg/mL	Unstressed
	Purity 98%				+/-	151.1856	µg/mL	Stressed
71	Naphthalene		2,514.9	µg/mL	+/-	14.6217	µg/mL	Gravimetric
	CAS # 91-20-3	(Lot MKBH4351V)			+/-	151.7336	µg/mL	Unstressed
	Purity 99%				+/-	152.0938	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2,502.0 µg/mL	+/-	14.5468	µg/mL	Gravimetric
	CAS # 87-61-6	(Lot MKBS4859V)		+/-	150.9567	µg/mL	Unstressed
	Purity 99%			+/-	151.3151	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

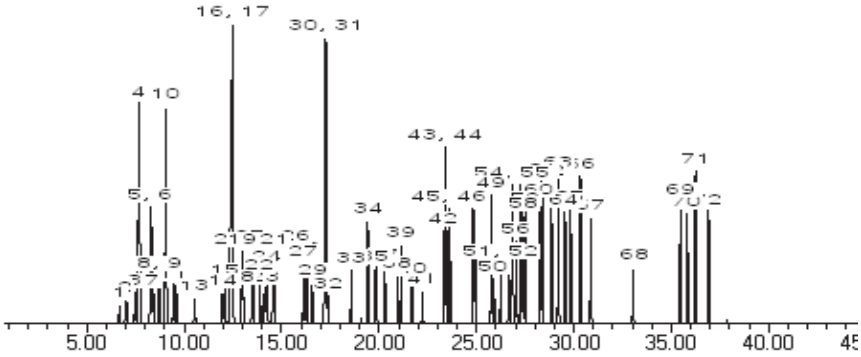
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Rebecca Sawver

Date Mixed: 21-Mar-2016 **Balance:** 1125113331

Jodi E. Breon

Jodi E. Breon - QA Analyst

Date Passed: 28-Mar-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

MV-569721.sec_00005

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569721.sec **Lot No.:** A0123880

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500 µg/ml, P&T Methanol/Water (90:10), 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2020 **Storage:** 0°C or colder

C E R T I F I E D V A L U E S

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Acetone	12,501.6 µg/mL	+/- 73.1996 µg/mL	Gravimetric
	CAS # 67-64-1.SEC (Lot P14A572)		+/- 754.3267 µg/mL	Unstressed
	Purity 99%		+/- 756.1173 µg/mL	Stressed
2	2-Butanone (MEK)	12,503.6 µg/mL	+/- 73.2113 µg/mL	Gravimetric
	CAS # 78-93-3.SEC (Lot RA58J)		+/- 754.4473 µg/mL	Unstressed
	Purity 99%		+/- 756.2383 µg/mL	Stressed
3	4-Methyl-2-pentanone (MIBK)	12,506.0 µg/mL	+/- 73.2254 µg/mL	Gravimetric
	CAS # 108-10-1.SEC (Lot E29T040)		+/- 754.5921 µg/mL	Unstressed
	Purity 99%		+/- 756.3834 µg/mL	Stressed
4	2-Hexanone	12,504.0 µg/mL	+/- 73.2137 µg/mL	Gravimetric
	CAS # 591-78-6.SEC (Lot V3NRA)		+/- 754.4715 µg/mL	Unstressed
	Purity 99%		+/- 756.2625 µg/mL	Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

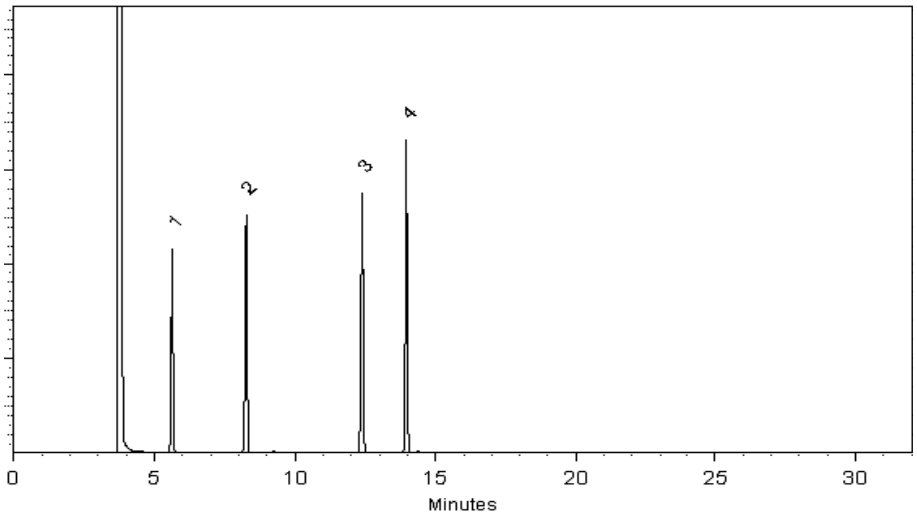
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Maye

Date Mixed: 03-Jan-2017 **Balance:** 1127510105

Jennifer L Pollino

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 05-Jan-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

MV-569721_00004

Rec 7/10/17 MB
6 x 1 mL vials

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569721 **Lot No.:** A0123890

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500 µg/ml, P&T Methanol/Water (90:10), 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Acetone		12,517.5 µg/mL	+/- 72.7778	µg/mL	Gravimetric
	CAS # 67-64-1	(Lot SHBH0922V)		+/- 755.2362	µg/mL	Unstressed
	Purity 99%			+/- 757.0293	µg/mL	Stressed
2	2-Butanone (MEK)		12,521.8 µg/mL	+/- 72.8025	µg/mL	Gravimetric
	CAS # 78-93-3	(Lot SHBF2461V)		+/- 755.4927	µg/mL	Unstressed
	Purity 99%			+/- 757.2863	µg/mL	Stressed
3	4-Methyl-2-pentanone (MIBK)		12,519.8 µg/mL	+/- 72.7909	µg/mL	Gravimetric
	CAS # 108-10-1	(Lot SHBG3630V)		+/- 755.3720	µg/mL	Unstressed
	Purity 99%			+/- 757.1654	µg/mL	Stressed
4	2-Hexanone		12,508.5 µg/mL	+/- 72.7255	µg/mL	Gravimetric
	CAS # 591-78-6	(Lot MKBW0198V)		+/- 754.6932	µg/mL	Unstressed
	Purity 99%			+/- 756.4850	µg/mL	Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Reagent

MV-569722.sec_00004

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569722.SEC **Lot No.:** A0124116

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dichlorodifluoromethane (CFC-12)	2,503.4 µg/mL	+/- 19.5506 µg/mL	Gravimetric
	CAS # 75-71-8.SEC (Lot 23586)		+/- 140.9699 µg/mL	Unstressed
	Purity 99%		+/- 144.2404 µg/mL	Stressed
2	Chloromethane (methyl chloride)	2,508.1 µg/mL	+/- 21.1963 µg/mL	Gravimetric
	CAS # 74-87-3.SEC (Lot 18343)		+/- 141.4639 µg/mL	Unstressed
	Purity 99%		+/- 144.7353 µg/mL	Stressed
3	Vinyl chloride	2,518.6 µg/mL	+/- 19.4186 µg/mL	Gravimetric
	CAS # 75-01-4.SEC (Lot MKBK6872V)		+/- 141.7924 µg/mL	Unstressed
	Purity 99%		+/- 145.0836 µg/mL	Stressed
4	1,3-Butadiene	2,504.0 µg/mL	+/- 20.5722 µg/mL	Gravimetric
	CAS # 106-99-0.SEC (Lot 22331)		+/- 141.1450 µg/mL	Unstressed
	Purity 99%		+/- 144.4130 µg/mL	Stressed
5	Bromomethane (methyl bromide)	2,498.5 µg/mL	+/- 19.9806 µg/mL	Gravimetric
	CAS # 74-83-9.SEC (Lot Q119-46)		+/- 140.7602 µg/mL	Unstressed
	Purity 99%		+/- 144.0229 µg/mL	Stressed
6	Chloroethane (ethyl chloride)	2,494.9 µg/mL	+/- 17.8868 µg/mL	Gravimetric
	CAS # 75-00-3.SEC (Lot 00004202)		+/- 140.2786 µg/mL	Unstressed
	Purity 99%		+/- 143.5429 µg/mL	Stressed
7	Dichlorofluoromethane (CFC-21)	2,503.4 µg/mL	+/- 20.0421 µg/mL	Gravimetric
	CAS # 75-43-4.SEC (Lot SHBC0858V)		+/- 141.0350 µg/mL	Unstressed
	Purity 99%		+/- 144.3039 µg/mL	Stressed

8	Trichlorofluoromethane (CFC-11)		2,503.2	µg/mL	+/-	18.7037	µg/mL	Gravimetric
	CAS # 75-69-4.SEC	(Lot Q12B-59)			+/-	140.8450	µg/mL	Unstressed
	Purity 99%				+/-	144.1179	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

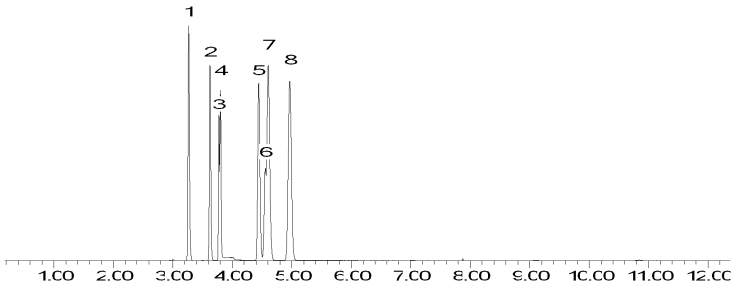
Carrier Gas:
helium-constant flow 2.0 mL/min.

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Brandon Reish - Mix Technician

Date Mixed: 12-Jan-2017 **Balance:** 1127510105

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 17-Jan-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

MV-569722_00006

Rec 7/10/17 mg
6x 1 mL vials

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Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569722 **Lot No.:** A0124278

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Dichlorodifluoromethane (CFC-12)		2,500.5 µg/mL	+/- 16.7232 µg/mL		Gravimetric
	CAS # 75-71-8	(Lot Q167-08)		+/- 140.4412 µg/mL		Unstressed
	Purity 99%			+/- 143.7161 µg/mL		Stressed
2	Chloromethane (methyl chloride)		2,498.7 µg/mL	+/- 17.4998 µg/mL		Gravimetric
	CAS # 74-87-3	(Lot SHBG7976V)		+/- 140.4406 µg/mL		Unstressed
	Purity 99%			+/- 143.7111 µg/mL		Stressed
3	Vinyl chloride		2,498.4 µg/mL	+/- 16.6753 µg/mL		Gravimetric
	CAS # 75-01-4	(Lot 1026101231B1)		+/- 140.3203 µg/mL		Unstressed
	Purity 99%			+/- 143.5926 µg/mL		Stressed
4	1,3-Butadiene		2,496.9 µg/mL	+/- 17.0619 µg/mL		Gravimetric
	CAS # 106-99-0	(Lot SHBF3387V)		+/- 140.2843 µg/mL		Unstressed
	Purity 99%			+/- 143.5535 µg/mL		Stressed
5	Bromomethane (methyl bromide)		2,500.5 µg/mL	+/- 17.3456 µg/mL		Gravimetric
	CAS # 74-83-9	(Lot 101604)		+/- 140.5211 µg/mL		Unstressed
	Purity 99%			+/- 143.7944 µg/mL		Stressed
6	Chloroethane (ethyl chloride)		2,500.5 µg/mL	+/- 16.8189 µg/mL		Gravimetric
	CAS # 75-00-3	(Lot 23593)		+/- 140.4526 µg/mL		Unstressed
	Purity 99%			+/- 143.7272 µg/mL		Stressed
7	Dichlorofluoromethane (CFC-21)		2,500.0 µg/mL	+/- 10.0499 µg/mL		Gravimetric
	CAS # 75-43-4	(Lot 4938100)		+/- 139.7786 µg/mL		Unstressed
	Purity 99%			+/- 143.0675 µg/mL		Stressed

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Catalog No. : 569723 **Lot No.:** A0123891

Description : 8260 List 1 / Std #4 2-CEVE (2015)

8260 List 1 / Std #4 2-CEVE (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2020 **Storage:** 0°C or colder

C E R T I F I E D V A L U E S

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Chloroethyl vinyl ether	2,503.5 µg/mL	+/- 14.5556 µg/mL	Gravimetric
	CAS # 110-75-8 (Lot MKBS6526V)		+/- 53.6004 µg/mL	Unstressed
	Purity 98%		+/- 55.1587 µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Degradation of tetrachloroethylene to pentachloroethane may occur if solutions containing 2-chloroethyl vinyl ether are combined with solutions that contain tetrachloroethylene.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

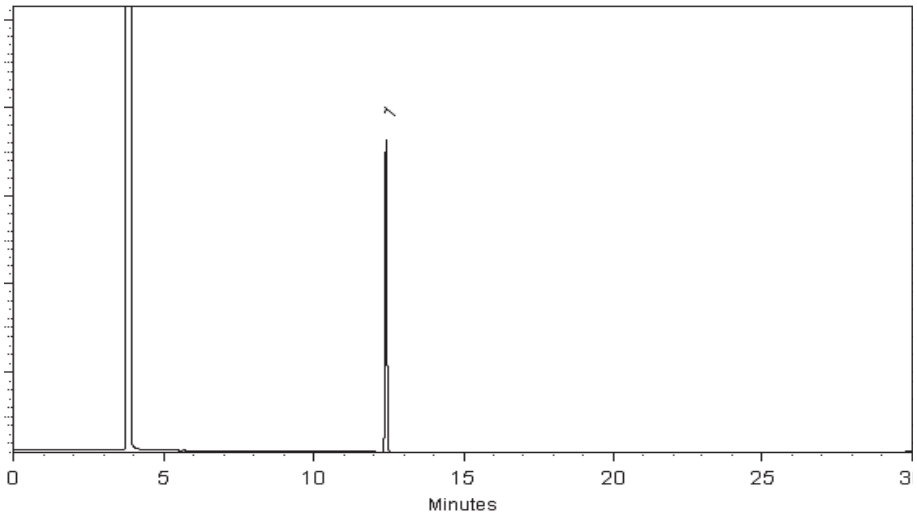
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cathleen Soltis - Mix Technician

Date Mixed: 03-Jan-2017 **Balance:** 1125113331

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 05-Jan-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

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Catalog No. : 569724 **Lot No.:** A0131948

Description : 8260 List 1 / Std #6 Vinyl Acetate (2015)

8260 List 1 / Std #6 Vinyl Acetate (2015) 5,000µg/mL, P&T Methanol, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : April 30, 2018 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Vinyl acetate	5,022.0 µg/mL	+/- 29.4049 µg/mL	Gravimetric
	CAS # 108-05-4 (Lot STBD7333V)		+/- 303.0195 µg/mL	Unstressed
	Purity 99%		+/- 303.7388 µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods. Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

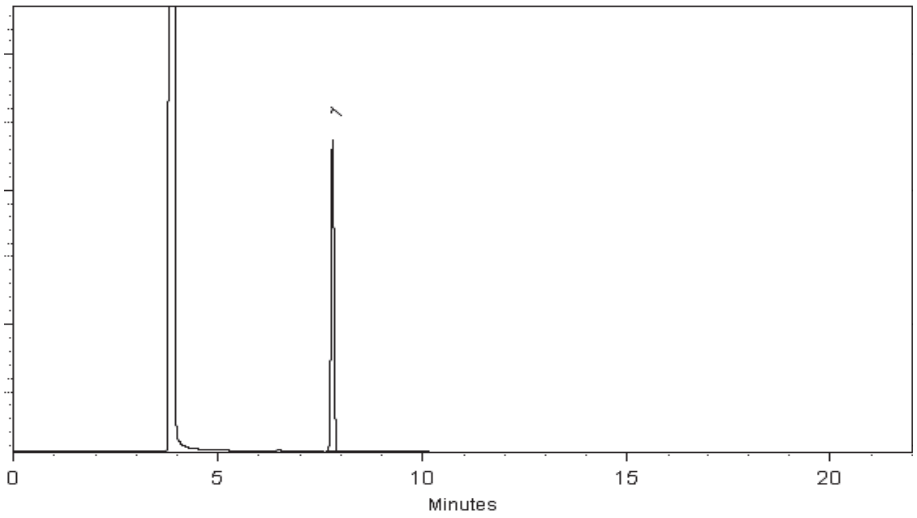
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 30-Oct-2017 **Balance:** B251644995

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 01-Nov-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

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Catalog No. : 569727 **Lot No.:** A0118487

Description : 8260 List 2/ Std #3 Cyclohexanone (2015)

8260 List 2/ Std #3 Cyclohexanone (2015) 25,000 µg/ml, Water, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2019 **Storage:** 10°C or colder

C E R T I F I E D V A L U E S

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Cyclohexanone	25,000.4 µg/mL	+/- 146.3826 µg/mL	Gravimetric
	CAS # 108-94-1 (Lot MKBN5282V)		+/- 1,508.4819 µg/mL	Unstressed
	Purity 99%		+/- 1,512.0629 µg/mL	Stressed

Solvent: Water
CAS # 7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

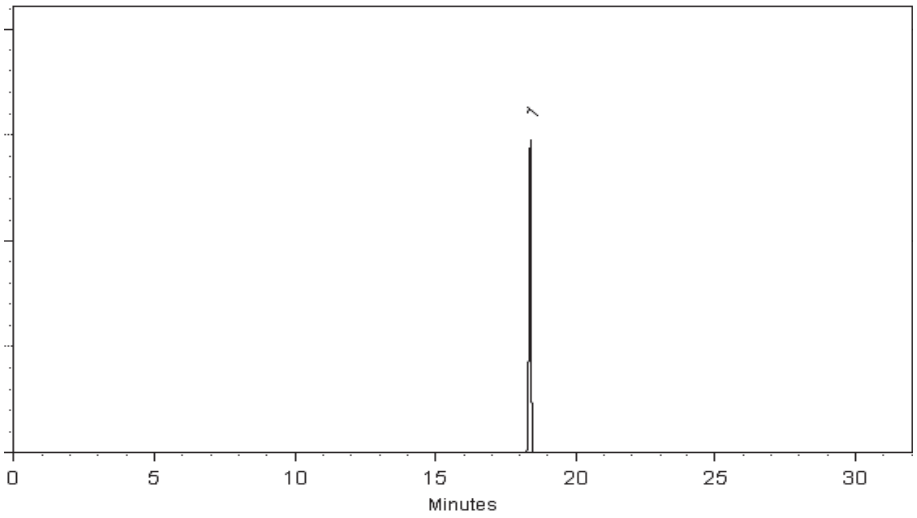
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Joseph Jaglowski - Mix Technician

Date Mixed: 31-Mar-2016 **Balance:** B442140311

Jodi E. Breon - QA Analyst

Date Passed: 04-Apr-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570808 **Lot No.:** A0123685

Description : 8260 List 2 / Std #6

8260 List 2 / Std #6 2500-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)			
1	2-Propanol (isopropanol)		25,022.0	µg/mL	+/-	145.4725	µg/mL	Gravimetric
	CAS # 67-63-0	(Lot SHBG8138V)			+/-	1,237.7836	µg/mL	Unstressed
	Purity 99%				+/-	1,268.5622	µg/mL	Stressed
2	Chloroprene (2-chloro-1,3-butadiene)		2,515.5	µg/mL	+/-	14.6253	µg/mL	Gravimetric
	CAS # 126-99-8	(Lot 161201JLM)			+/-	124.4364	µg/mL	Unstressed
	Purity 99%				+/-	127.5306	µg/mL	Stressed
3	Methacrylonitrile		25,000.0	µg/mL	+/-	145.3446	µg/mL	Gravimetric
	CAS # 126-98-7	(Lot 1012014)			+/-	1,236.6953	µg/mL	Unstressed
	Purity 99%				+/-	1,267.4469	µg/mL	Stressed
4	2,2,4-Trimethylpentane (isooctane)		2,508.0	µg/mL	+/-	14.5817	µg/mL	Gravimetric
	CAS # 540-84-1	(Lot SHBD2922V)			+/-	124.0654	µg/mL	Unstressed
	Purity 99%				+/-	127.1504	µg/mL	Stressed
5	1-Butanol		62,715.5	µg/mL	+/-	364.6143	µg/mL	Gravimetric
	CAS # 71-36-3	(Lot SHBF9309V)			+/-	3,102.3986	µg/mL	Unstressed
	Purity 99%				+/-	3,179.5425	µg/mL	Stressed
6	2-Nitropropane		5,007.8	µg/mL	+/-	29.1158	µg/mL	Gravimetric
	CAS # 79-46-9	(Lot BCBL0537V)			+/-	247.7251	µg/mL	Unstressed
	Purity 98%				+/-	253.8850	µg/mL	Stressed
7	1-Chlorohexane		2,501.5	µg/mL	+/-	14.5436	µg/mL	Gravimetric
	CAS # 544-10-5	(Lot 05107LK)			+/-	123.7413	µg/mL	Unstressed
	Purity 98%				+/-	126.8183	µg/mL	Stressed

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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570809 **Lot No.:** A0123728

Description : 8260 List 2 / Std #7

8260 List 2 / Std #7 2500-5000 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)		
1	Ethyl acetate **CAS #** 141-78-6 **Purity** 99%	(Lot SHBG6401V)	5,003.0	µg/mL	+/- 29.2937 +/- 301.8731 +/- 302.5897	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
2	Ethyl acrylate **CAS #** 140-88-5 **Purity** 99%	(Lot 10129902)	2,508.0	µg/mL	+/- 14.7183 +/- 151.3320 +/- 151.6912	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
3	Methyl methacrylate **CAS #** 80-62-6 **Purity** 99%	(Lot 160830A-BL1)	5,011.5	µg/mL	+/- 29.3434 +/- 302.3859 +/- 303.1038	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
4	Butyl acetate **CAS #** 123-86-4 **Purity** 99%	(Lot SHBF4442V)	2,505.5	µg/mL	+/- 14.7037 +/- 151.1811 +/- 151.5400	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Reagent

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Catalog No. : 571993 **Lot No.:** A0123796

Description : 8260 List 3/ Std#1 Polar Additions (2017)

8260 List 3/ Std#1 Polar Additions (2017) 2500-25,000 µg/ml, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : December 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Acetonitrile **CAS #** 75-05-8 **Purity** 98%	(Lot SHBB3177V)	25,004.5 µg/mL	+/- 145.3705 µg/mL +/- 1,236.9157 µg/mL +/- 1,267.6727 µg/mL	Gravimetric Unstressed Stressed
2	Diisopropyl ether (DIPE) **CAS #** 108-20-3 **Purity** 99%	(Lot SHBC0391V)	2,505.0 µg/mL	+/- 14.5643 µg/mL +/- 123.9170 µg/mL +/- 126.9983 µg/mL	Gravimetric Unstressed Stressed
3	Ethyl-tert-butyl ether (ETBE) **CAS #** 637-92-3 **Purity** 99%	(Lot MKBT8400V)	2,501.5 µg/mL	+/- 14.5439 µg/mL +/- 123.7438 µg/mL +/- 126.8208 µg/mL	Gravimetric Unstressed Stressed
4	Propionitrile **CAS #** 107-12-0 **Purity** 99%	(Lot BCBM6569V)	25,003.8 µg/mL	+/- 145.3664 µg/mL +/- 1,236.8808 µg/mL +/- 1,267.6370 µg/mL	Gravimetric Unstressed Stressed
5	tert-Amyl alcohol **CAS #** 75-85-4 **Purity** 99%	(Lot STBB1898V)	25,006.0 µg/mL	+/- 145.3794 µg/mL +/- 1,236.9921 µg/mL +/- 1,267.7510 µg/mL	Gravimetric Unstressed Stressed
6	tert-Amyl methyl ether (TAME) **CAS #** 994-05-8 **Purity** 98%	(Lot HMBD8698V)	2,505.4 µg/mL	+/- 14.5664 µg/mL +/- 123.9353 µg/mL +/- 127.0170 µg/mL	Gravimetric Unstressed Stressed

Reagent

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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 571994 **Lot No.:** A0128797

Description : 8260 Ethanol Standard

8260 Ethanol Standard 100,000 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Ethanol	100,127.0 µg/mL	+/- 586.2354 µg/mL	Gravimetric
	CAS # 64-17-5 (Lot PG0219)		+/- 2,144.8448 µg/mL	Unstressed
	Purity 99%		+/- 2,207.1354 µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Reagent

MV-CUS17739_00002

Certificate of Analysis

Custom Standard

Product Number: CUS-17739 **Page:** 1 of 1

Lot Number: CR-2819 **Lot Issue Date:** 19-Jun-2017 **Expiration Date:** 31-Jul-2019

This ISO Guide 34 Reference Material (RM) was manufactured and verified in accordance with ULTRA Scientific's ISO 9001 registered quality system. A review of the gravimetric preparation data by our ISO 17025 accredited laboratory serves to verify the concentration of each analyte. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
1-chlorohexane	000544-10-5	RM04263	998.8 ± 5.0 µg/mL
2-pentanone	000107-87-9	RM03775	4020 ± 20 µg/mL
sec-butanol	000078-92-2	RM01299	30116 ± 151 µg/mL

Matrix: methanol (purge & trap grade)

Storage: Store Frozen (-25° to -10°C).

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

John Russo
President

Monica Bourgeois
Director of QA/RA

ISO 9001
Registered
TUV USA, Inc.

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Reagent

MV-STS110N1_00066

Certificate of Analysis

4-Bromofluorobenzene Solution

Product Number: STS-110N **Page:** 1 of 1

Lot Number: CH-3248Z **Lot Issue Date:** 31-Aug-2016 **Expiration Date:** 31-Oct-2019

This ISO Guide 34 Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
4-bromofluorobenzene	000460-00-4	RM03365	2005 ± 10 µg/mL

Matrix: methanol (methyl alcohol)

Storage: Store Frozen (-25° to -10°C).

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

John Russo
President

Vincent Wang, Ph.D.
Director of QA/RA

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Reagent

---

mv-VO-TAOH-5_00004

Reference Materials Producer
Cert #2495.01

SPEXertificate®
Certificate of Reference Material

Chemical Testing
Cert #2495.02

Catalog Number: VO-TAOH-5 **Lot No.** TS180220004

Description: Custom Organic Standard

Matrix: Methanol (Purge & Trap Grade)

Manufactured Date: 2-20-2018
Expiration Date: 8-19-2018

This **SPEXOrganics®** Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality contrc standard for organic chromatography instrumentation such as GC, GC-MS, LC, and LC-MS. It can be employed in USEPA, ASTI and other methods relevant to the certified properties listed below.

Certified Compounds:

Compound	CAS #	Labeled	Purity	Certified†	Uncertainty
Propylene oxide	75-56-9	50000 µg/mL	99%	50009 µg/mL	± 1750 µg/mL
Ethylene oxide	75-21-8	50000 µg/mL	99.8%	50027 µg/mL	± 1751 µg/mL
cis-1,4-Dichloro-2-butene	1476-11-5	1000 µg/mL	95%	1010 µg/mL	± 35 µg/mL
Tetrahydrothiophene	110-01-0	1000 µg/mL	99%	998 µg/mL	± 35 µg/mL

Final Solution Verification:

Final solution integrity verified by Gas Chromatography/Mass Spectrometry. The mass spectrum of each compound was confirmed against the NIST mass spectral database.

† Certified concentration based on gravimetric weights and corrected for the purity of the compound(s) used to prepare the standard. Analytical balance calibration is verified daily with C1 weight set #23-190006 which is registered with Atlantic Scale, traceable to NIST and NJ Division of Weights and Measures.

This CRM is guaranteed stable and accurate to within the uncertainty listed for the certified value. This includes uncertainty components due to preparation, homogeneity, short term and long term stability. During the stated period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution. For further information, contact the Sales Support Department at crmsales@spexcsp.com.

Date of Certification: 2-20-2018 Certifying Officer: Shannon Nace

Report of Certification

Catalog Number: VO-TAOH-5 **Lot No.** TS180220004

Description: Custom Organic Standard

Matrix: Methanol (Purge & Trap Grade)

Manufactured Date: 2-20-2018

Expiration Date: 8-19-2018

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001:2008, ISO 17025:2005, and ISO Guide 34:2009 Quality System consistent with the following standards:

- ISO 9001:2008: Quality management systems - Requirements - Certified by UL-DQS
- ISO 17025:2005: General Requirements for the Competence of Testing and Calibration Laboratories - Accredited by A2LA
- ISO Guide 34:2009: General Requirements for the Competence of Reference Material Producers - Accredited by A2LA
- ISO Guide 31:2000: Reference Materials - Contents of Certificates and Labels
- ISO Guide 35:2006: Reference Materials - General and statistical principals for certification
- Guide to the Expression of Uncertainty in Measurement 1997
- EURACHEM/CITAC Guide: Qualifying Uncertainty in Analytical Measurements - Second Edition
- ASTM Guide D6362-98
- NIST Technical Note 1297
- ILAC-G12-2000: Guidelines for the requirements for the competence of reference material producers
- ISO/REMCO N280

Storage Requirements:

To ensure the stability of the product once it arrives in your laboratory, please store this product in a freezer (-35°C to -10°C). Note: Shipping condit may differ from storage conditions. The EXPIRATION DATE is calculated from the MANUFACTURED DATE using our stability data and is applicab only if the product is unopened and stored under the prescribed conditions.

Instructions for Use:

Let material come to room temperature before use. Check for precipitate and if necessary sonicate for one minute. If compounds do not dissolve a one minute then sonicate further until the product is dissolved. A clear appearance is acceptable. The minimum recommended amount that shoulc removed from this vial is 5µL with a 25µL gas tight syringe. All solutions should be thoroughly mixed, by shaking, prior to use. All surfaces that cor in contact with the solution must be thoroughly cleaned prior to use. Dilutions should be performed only with Class A volumetric glassware.

Material Source:

All analytes and matrix materials are obtained and verified by SPEX CertiPrep from pre-qualified vendors as per ISO guidelines. Vendor identificati are proprietary, however sources of all materials used in the preparation and testing of SPEX CertiPrep CRMs are tracked and documented. For assistance, please contact sales support at crmsales@spexcsp.com.

Method of Preparation:

Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, and analytical instrumentation h been qualified prior to use. The highest purity solvents and Class A / calibrated volumetrics have been used in all preparations.

Homogeneity:

The homogeneity of this CRM has been confirmed by procedures consistent with ISO 17025:2005, ISO Guide 34:2009, and ASTM D6362-98 Appe X2. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with our internal procedur 4300-HOMOGEN-1A. This is consistent with the intended use of this CRM. The Degree of Homogeneity, as expressed as maximum between-bott variation, is 1.2%

Statistical Estimator and Confidence Limits:

The Certified value 'X' as listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

- $X = x \pm U$ where X=certified value, U=expanded uncertainty, x=property value
- $U = ku_c$ where k=2 is the coverage factor at the 95% confidence level
- u_c = combined standard uncertainty obtained by combining the individual compound standard uncertainty components u_i, where $u_c = \sqrt{\sum u_i^2}$

Legal Notice:

SPEX CertiPrep Certified Reference Materials are not for any cosmetic, drug, or household application and are to be used only by qualified individu who are trained in appropriate procedures. No claims against SPEX CertiPrep of any kind whatsoever, whether based on breech of warranty, allegi negligence, or otherwise, with respect to this Reference Material shall be greater than the purchase price. In no event shall SPEX CertiPrep be liab for any loss of profits or any incidental, special, or consequential damages.

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Phone: 1-732-549-7144 • Fax 1-732-603-9647

Accredited to 17025 & Guide 34 ISO Certified to 9001

Reagent

8260 L2/S7_00009

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Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570809 **Lot No.:** A0131668

Description : 8260 List 2 / Std #7

8260 List 2 / Std #7 2,500-5,000µg/mL, P&T Methanol, 1mL/ampul

2099911
ID: 8260 L2/S7_00009
Exp:04/30/19 Prpd:JSM Opn:01/31/18
8260 List 2 / Stds #7

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : April 30, 2019 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Ethyl acetate **CAS #** 141-78-6 **Purity** 99%	(Lot SHBG6401V)	5,019.0 µg/mL	+/- 29.3873 µg/mL +/- 302.8385 µg/mL +/- 303.5574 µg/mL		Gravimetric Unstressed Stressed
2	Ethyl acrylate **CAS #** 140-88-5 **Purity** 99%	(Lot 10129902)	2,521.0 µg/mL	+/- 14.7946 µg/mL +/- 152.1164 µg/mL +/- 152.4775 µg/mL		Gravimetric Unstressed Stressed
3	Methyl methacrylate **CAS #** 80-62-6 **Purity** 99%	(Lot MKBV3172V)	5,027.5 µg/mL	+/- 29.4371 µg/mL +/- 303.3514 µg/mL +/- 304.0715 µg/mL		Gravimetric Unstressed Stressed
4	Butyl acetate **CAS #** 123-86-4 **Purity** 99%	(Lot SHBH0056V)	2,512.0 µg/mL	+/- 14.7418 µg/mL +/- 151.5733 µg/mL +/- 151.9331 µg/mL		Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

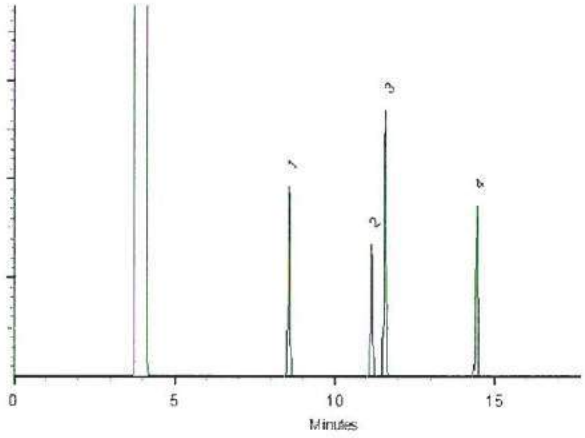
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Dawn Brownson - Mix Technician

Date Mixed: 16-Oct-2017 **Balance:** B707717271

Justine Albertson - Operations Tech-ARM QC

Date Passed: 20-Oct-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

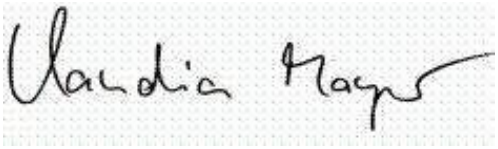
TFTneat_00013

3050 Spruce Street, Saint Louis, MO 63103 USA
Email USA: techserv@sial.com Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:	α,α,α-TRIFLUOROTOLUENE
	>= 99 %
Product Number:	T63703
Batch Number:	STBG2214V
Brand:	Sigma-Aldrich
CAS Number:	98-08-8
Formula:	$C_6H_5CF_3$
Formula Weight:	146.11
Quality Release Date:	31 MAR 2016

TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	COLORLESS	COLORLESS
APPEARANCE (FORM)	LIQUID	LIQUID
PURITY (GC AREA %)	≥ 99.0 %	> 99.9 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS



Claudia Mayer
Manager Quality Control
Steinheim, Germany

Reagent

V-TFTStk_00032

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

V-TFTStk_00032

Reagent ID: V-TFTStk_00032

Description:	10000 ppm TFT Surrogate Stock	Expiration Date:	03/26/2018
No. of Bottles:	1	Laboratory:	TestAmerica Seattle
Storage Location:	MSV Frzr#21: S.wall	Prepared By:	Brennan, Richard S
Reagent Volume:	50.000 mL	Solvent:	methanol
Creation Date:	09/26/2017	Solvent Lot:	177891
Open Date:			
Container(s):	2026495		
Comment:			

2026495
ID: V-TFTStk_00032
Exp: 03/26/18 Prpd: RSB Crt: 09/26/17
10000 ppm TFT Surrogate S

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Methanol	Methanol 1L_00008	06/23/2019	100.00000	%	991600.00000	mg/L
a,a,a-Trifluorotoluene	TFTneat_00013	03/31/2019	1190000.00000	mg/L	9996.00000	mg/L
a,a,a-Trifluorotoluene (fid)	TFTneat_00013	03/31/2019	1190000.00000	mg/L	9996.00000	mg/L
a,a,a-Trifluorotoluene (pid)	TFTneat_00013	03/31/2019	1190000.00000	mg/L	9996.00000	mg/L
Trifluorotoluene (Surr)	TFTneat_00013	03/31/2019	1190000.00000	mg/L	9996.00000	mg/L

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Methanol 1L_00008	Methanol Lot0000177891	Other	06/23/19	JT baker	0000177891	9077-02	49.58000	mL
TFTneat_00013	a,a,a-Trifluorotoluene neat soln	ASTD	03/31/19	Sigma-Aldrich	STBG2214V	T63703-500G	420.00000	uL

Reagent

VOAR2CEVE__00013

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569723 **Lot No.:** A0123891

Description : 8260 List 1 / Std #4 2-CEVE (2015)

8260 List 1 / Std #4 2-CEVE (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

2092429
ID: VOAR2CEVE_00013
Exp: 01/31/20 Prpd: DSO
8260List1/Std#4 2-Chloroe

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	2-Chloroethyl vinyl ether	2,503.5 µg/mL	+/- 14.5556	µg/mL	Gravimetric
	CAS # 110-75-8 (Lot MKBS6526V)		+/- 53.6004	µg/mL	Unstressed
	Purity 98%		+/- 55.1587	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:
Degradation of tetrachloroethylene to pentachloroethane may occur if solutions containing 2-chloroethyl vinyl ether are combined with solutions that contain tetrachloroethylene.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

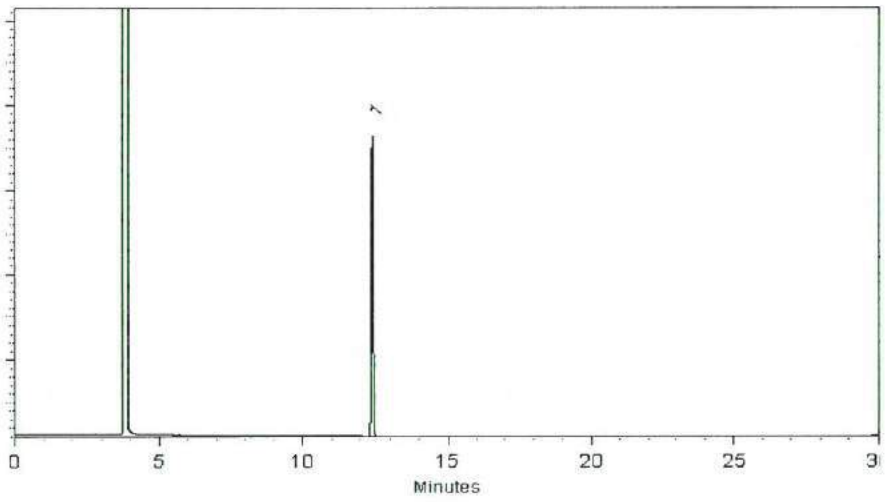
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cathleen Soltis - Mix Technician

Date Mixed: 03-Jan-2017 **Balance:** 1125113331

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 05-Jan-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

VOARAcrolein_00040

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Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 568720 **Lot No.:** A0130770

Description : 8260 List 1/Std #5 Acrolein High

8260 List 1/Std #5 Acrolein High 19,750µg/mL, Water, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2018 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Acrolein	19,756.0 µg/mL	+/- 115.6757	µg/mL	Gravimetric
	CAS # 107-02-8 (Lot 170622JLM)		+/- 633.4395	µg/mL	Unstressed
	Purity 99%		+/- 736.3041	µg/mL	Stressed

Solvent: Water
CAS # 7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

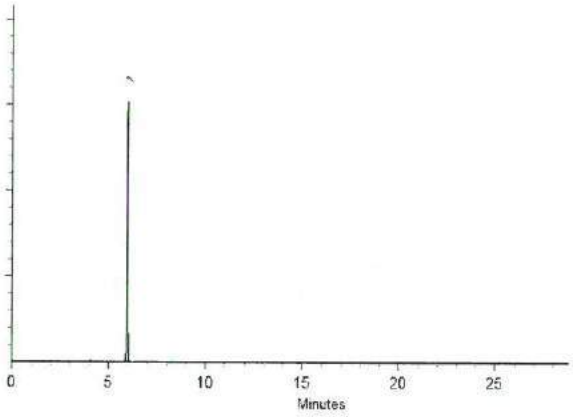
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 14-Sep-2017 **Balance:** B251644995

Justine Albertson - Operations Tech-ARM QC

Date Passed: 19-Sep-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

VOARADDCOM__00017

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Certificate #3222.01

ilac-MRA

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570808 **Lot No.:** A0132816

Description : 8260 List 2 / Std #6

8260 List 2 / Std #6 2,500-62,500µg/mL, P&T Methanol, 1mL/ampul

2099918
ID: VOARADDCOM_00017
Exp 05/31/19 Prpd:JSM Opn:01/31/18
8260 List 2/ Std #6

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : May 31, 2019 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Propanol (isopropanol) **CAS #** 67-63-0 (Lot SHBG8138V) **Purity** 99%	25,038.4 µg/mL	+/- 146.6053 µg/mL +/- 1,238.7172 µg/mL +/- 1,269.5131 µg/mL	Gravimetric Unstressed Stressed
2	Chloroprene (2-chloro-1,3-butadiene) **CAS #** 126-99-8 (Lot 170628JLM) **Purity** 99%	2,522.0 µg/mL	+/- 14.8005 µg/mL +/- 124.7741 µg/mL +/- 127.8760 µg/mL	Gravimetric Unstressed Stressed
3	Methacrylonitrile **CAS #** 126-98-7 (Lot 1012014) **Purity** 99%	25,034.4 µg/mL	+/- 146.5819 µg/mL +/- 1,238.5193 µg/mL +/- 1,269.3102 µg/mL	Gravimetric Unstressed Stressed
4	2,2,4-Trimethylpentane (isooctane) **CAS #** 540-84-1 (Lot SHBF8066V) **Purity** 99%	2,512.8 µg/mL	+/- 14.7465 µg/mL +/- 124.3190 µg/mL +/- 127.4095 µg/mL	Gravimetric Unstressed Stressed
5	1-Butanol **CAS #** 71-36-3 (Lot SHBH5137V) **Purity** 98%	62,503.6 µg/mL	+/- 365.9535 µg/mL +/- 3,092.2204 µg/mL +/- 3,169.0963 µg/mL	Gravimetric Unstressed Stressed
6	2-Nitropropane **CAS #** 79-46-9 (Lot BCBL0537V) **Purity** 98%	5,015.6 µg/mL	+/- 29.3677 µg/mL +/- 248.1373 µg/mL +/- 254.3062 µg/mL	Gravimetric Unstressed Stressed
7	1-Chlorohexane **CAS #** 544-10-5 (Lot 05107LK) **Purity** 98%	2,502.5 µg/mL	+/- 14.6862 µg/mL +/- 123.8108 µg/mL +/- 126.8886 µg/mL	Gravimetric Unstressed Stressed

8	1,2,3-Trimethylbenzene		2,505.7 µg/mL	+/-	14.7049	µg/mL	Gravimetric
	CAS # 526-73-8	(Lot 877605-14)		+/-	123.9679	µg/mL	Unstressed
	Purity 97%			+/-	127.0497	µg/mL	Stressed
9	Benzyl chloride		2,507.2 µg/mL	+/-	14.7137	µg/mL	Gravimetric
	CAS # 100-44-7	(Lot SHBB7346V)		+/-	124.0419	µg/mL	Unstressed
	Purity 99%			+/-	127.1255	µg/mL	Stressed
10	1,3,5-Trichlorobenzene		2,502.4 µg/mL	+/-	14.6855	µg/mL	Gravimetric
	CAS # 108-70-3	(Lot 11319AS)		+/-	123.8044	µg/mL	Unstressed
	Purity 99%			+/-	126.8822	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

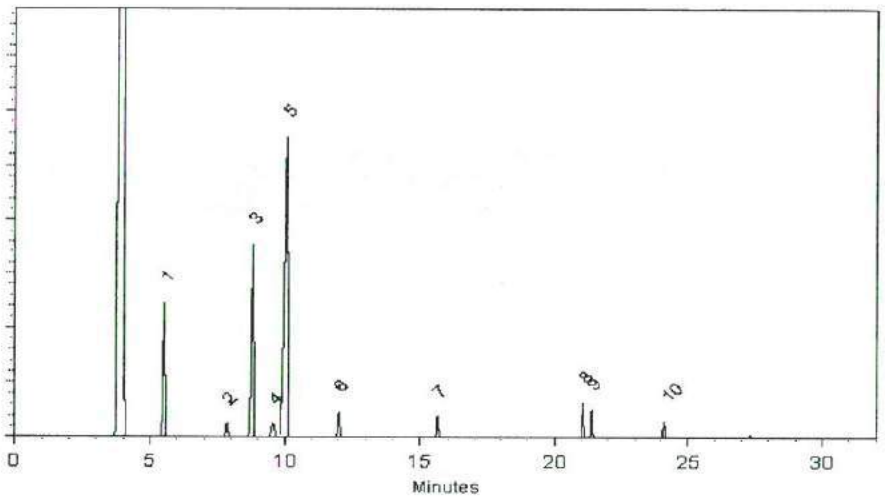
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cydnei L. Crust
Cydnei L. Crust - Mix Technician

Date Mixed: 29-Nov-2017 **Balance:** B707717271

Amanda Miller - Operations Tech-ARM QC

Date Passed: 01-Dec-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

VOARGAS__00015

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569722 **Lot No.:** A0131502

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500µg/mL, P&T Methanol, 1mL/ampul

2092427
ID: VOARGAS_00015
Exp: 10/31/20 Prpd: DSO
50PPM 8260 Gases L1/S3 (2

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dichlorodifluoromethane (CFC-12) **CAS #** 75-71-8 (Lot Q167-08) **Purity** 99%	2,501.3 µg/mL	+/- 20.2137 µg/mL +/- 140.9452 µg/mL +/- 144.2108 µg/mL	Gravimetric Unstressed Stressed
2	Chloromethane (methyl chloride) **CAS #** 74-87-3 (Lot SHBG9707V) **Purity** 99%	2,504.9 µg/mL	+/- 24.8531 µg/mL +/- 141.8827 µg/mL +/- 145.1364 µg/mL	Gravimetric Unstressed Stressed
3	Vinyl chloride **CAS #** 75-01-4 (Lot 1026101231B1) **Purity** 99%	2,498.3 µg/mL	+/- 21.7258 µg/mL +/- 141.0069 µg/mL +/- 144.2635 µg/mL	Gravimetric Unstressed Stressed
4	1,3-Butadiene **CAS #** 106-99-0 (Lot SHBH7966) **Purity** 99%	2,499.9 µg/mL	+/- 19.8572 µg/mL +/- 140.8167 µg/mL +/- 144.0816 µg/mL	Gravimetric Unstressed Stressed
5	Bromomethane (methyl bromide) **CAS #** 74-83-9 (Lot 101604) **Purity** 99%	2,500.4 µg/mL	+/- 24.9675 µg/mL +/- 141.6590 µg/mL +/- 144.9064 µg/mL	Gravimetric Unstressed Stressed
6	Chloroethane (ethyl chloride) **CAS #** 75-00-3 (Lot 23593) **Purity** 99%	2,500.1 µg/mL	+/- 25.2649 µg/mL +/- 141.6931 µg/mL +/- 144.9388 µg/mL	Gravimetric Unstressed Stressed
7	Dichlorofluoromethane (CFC-21) **CAS #** 75-43-4 (Lot 4938100) **Purity** 99%	2,500.0 µg/mL	+/- 16.7114 µg/mL +/- 140.4149 µg/mL +/- 143.6892 µg/mL	Gravimetric Unstressed Stressed

8	Trichlorofluoromethane (CFC-11)		2,499.5	µg/mL	+/-	20.7085	µg/mL	Gravimetric
	CAS # 75-69-4	(Lot SHBH4155V)			+/-	140.9189	µg/mL	Unstressed
	Purity 99%				+/-	144.1805	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:
Raw material may contain trace amounts of tert-Butanol.

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

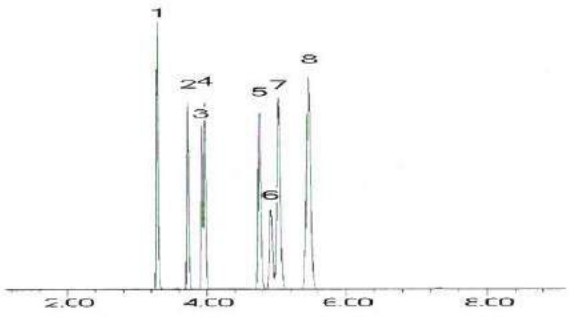
Carrier Gas:
helium-constant flow 2.0 mL/min.

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



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F. Joseph Tallon - Mix Technician **Date Mixed:** 10-Oct-2017 **Balance:** B251644995

Jennifer Pollino - Operations Tech-ARM QC **Date Passed:** 12-Oct-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

VOARKETON__00013

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Catalog No. : 569721 **Lot No.:** A0131486

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500µg/mL, P&T Methanol/Water (90:10), 1mL/ampul

2092425
ID VOARKETON_00013
Exp: 10/31/20 Prpd: DSO
8260 List 1 / Std #2 Keto

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Acetone		12,466.0 µg/mL	+/- 72.9912	µg/mL	Gravimetric
	CAS # 67-64-1	(Lot SHBG8398V)		+/- 752.1786	µg/mL	Unstressed
	Purity 99%			+/- 753.9642	µg/mL	Stressed
2	2-Butanone (MEK)		12,475.5 µg/mL	+/- 73.0468	µg/mL	Gravimetric
	CAS # 78-93-3	(Lot SHBF2461V)		+/- 752.7518	µg/mL	Unstressed
	Purity 99%			+/- 754.5387	µg/mL	Stressed
3	4-Methyl-2-pentanone (MIBK)		12,539.0 µg/mL	+/- 73.4186	µg/mL	Gravimetric
	CAS # 108-10-1	(Lot SHBG7318V)		+/- 756.5833	µg/mL	Unstressed
	Purity 99%			+/- 758.3793	µg/mL	Stressed
4	2-Hexanone		12,496.0 µg/mL	+/- 73.1668	µg/mL	Gravimetric
	CAS # 591-78-6	(Lot MKBW0198V)		+/- 753.9888	µg/mL	Unstressed
	Purity 99%			+/- 755.7786	µg/mL	Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

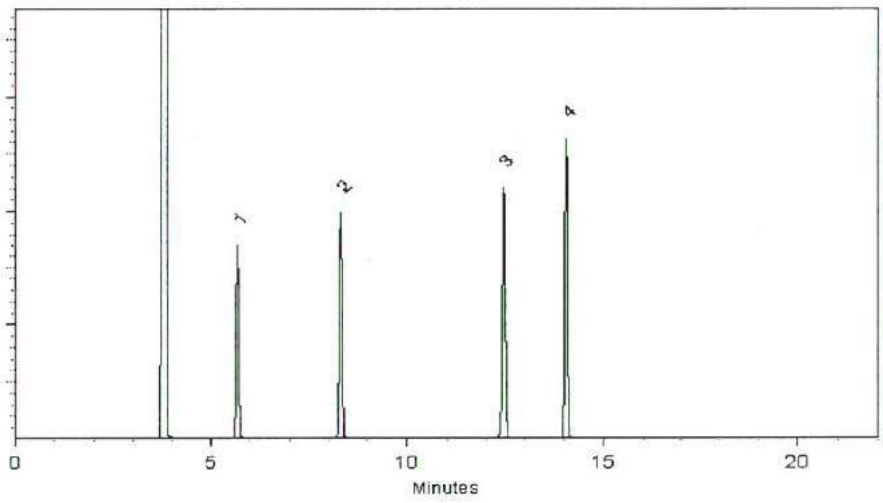
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



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Cydnei L. Crust
Cydnei L. Crust - Mix Technician

Date Mixed: 09-Oct-2017 **Balance:** B707717271

Jennifer J Pollino
Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 11-Oct-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

VOARMegMix__00022

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569720 **Lot No.:** A0118177

2092422
ID: VOARMegMix__00022
Exp: 03/31/18 Prpd: DSO
8260 List 1/ Std #1 MegaM

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Diethyl ether (ethyl ether) **CAS #** 60-29-7 (Lot SHBG1462V) **Purity** 99%	2,503.5 µg/mL	+/- 14.5556 µg/mL +/- 151.0472 µg/mL +/- 151.4059 µg/mL	Gravimetric Unstressed Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113) **CAS #** 76-13-1 (Lot 00004562) **Purity** 99%	2,500.0 µg/mL	+/- 14.5352 µg/mL +/- 150.8361 µg/mL +/- 151.1942 µg/mL	Gravimetric Unstressed Stressed
3	1,1-Dichloroethane **CAS #** 75-34-3 (Lot 00008621) **Purity** 99%	2,500.1 µg/mL	+/- 14.5359 µg/mL +/- 150.8436 µg/mL +/- 151.2017 µg/mL	Gravimetric Unstressed Stressed
4	tert-Butanol (TBA) **CAS #** 75-65-0 (Lot SHBD0362V) **Purity** 99%	25,033.4 µg/mL	+/- 145.5386 µg/mL +/- 1,510.3737 µg/mL +/- 1,513.9596 µg/mL	Gravimetric Unstressed Stressed
5	Iodomethane (methyl iodide) **CAS #** 74-88-4 (Lot SHBF2149V) **Purity** 98%	2,502.9 µg/mL	+/- 14.5522 µg/mL +/- 151.0123 µg/mL +/- 151.3708 µg/mL	Gravimetric Unstressed Stressed
6	Methyl acetate **CAS #** 79-20-9 (Lot SHBD7134V) **Purity** 98%	12,508.6 µg/mL	+/- 72.7223 µg/mL +/- 754.6987 µg/mL +/- 756.4905 µg/mL	Gravimetric Unstressed Stressed
7	Allyl chloride (3-chloropropene) **CAS #** 107-05-1 (Lot SHBF8133V) **Purity** 99%	2,500.0 µg/mL	+/- 19.2743 µg/mL +/- 151.3663 µg/mL +/- 151.7231 µg/mL	Gravimetric Unstressed Stressed

8	Methylene chloride (dichloromethane)		2,521.4	µg/mL	+/-	14.6595	µg/mL	Gravimetric
	CAS # 75-09-2	(Lot SHBF9870V)			+/-	152.1257	µg/mL	Unstressed
	Purity 99%				+/-	152.4869	µg/mL	Stressed
9	Carbon disulfide		2,516.0	µg/mL	+/-	14.6282	µg/mL	Gravimetric
	CAS # 75-15-0	(Lot S20A856)			+/-	151.8014	µg/mL	Unstressed
	Purity 99%				+/-	152.1618	µg/mL	Stressed
10	Acrylonitrile		25,001.3	µg/mL	+/-	145.3518	µg/mL	Gravimetric
	CAS # 107-13-1	(Lot J08Z057)			+/-	1,508.4355	µg/mL	Unstressed
	Purity 99%				+/-	1,512.0167	µg/mL	Stressed
11	cis-1,2-Dichloroethene		2,507.8	µg/mL	+/-	14.5807	µg/mL	Gravimetric
	CAS # 156-59-2	(Lot MKBV2831V)			+/-	151.3079	µg/mL	Unstressed
	Purity 98%				+/-	151.6671	µg/mL	Stressed
12	n-Hexane (C6)		2,512.4	µg/mL	+/-	14.6072	µg/mL	Gravimetric
	CAS # 110-54-3	(Lot SHBF7674V)			+/-	151.5827	µg/mL	Unstressed
	Purity 99%				+/-	151.9426	µg/mL	Stressed
13	1,1-dichloroethene		2,508.1	µg/mL	+/-	14.5825	µg/mL	Gravimetric
	CAS # 75-35-4	(Lot 73896KMV)			+/-	151.3263	µg/mL	Unstressed
	Purity 99%				+/-	151.6856	µg/mL	Stressed
14	2,2-Dichloropropane		2,507.6	µg/mL	+/-	14.5795	µg/mL	Gravimetric
	CAS # 594-20-7	(Lot BCBL9720V)			+/-	151.2961	µg/mL	Unstressed
	Purity 99%				+/-	151.6553	µg/mL	Stressed
15	trans-1,2-Dichloroethene		2,509.8	µg/mL	+/-	14.5919	µg/mL	Gravimetric
	CAS # 156-60-5	(Lot MKBH9850V)			+/-	151.4243	µg/mL	Unstressed
	Purity 99%				+/-	151.7838	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)		62,815.4	µg/mL	+/-	365.1949	µg/mL	Gravimetric
	CAS # 78-83-1	(Lot SHBD1647V)			+/-	3,789.9281	µg/mL	Unstressed
	Purity 99%				+/-	3,798.9260	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)		2,510.0	µg/mL	+/-	14.5934	µg/mL	Gravimetric
	CAS # 1634-04-4	(Lot MKBV2134V)			+/-	151.4394	µg/mL	Unstressed
	Purity 99%				+/-	151.7990	µg/mL	Stressed
18	Bromochloromethane		2,507.0	µg/mL	+/-	14.5759	µg/mL	Gravimetric
	CAS # 74-97-5	(Lot 00004559)			+/-	151.2584	µg/mL	Unstressed
	Purity 99%				+/-	151.6175	µg/mL	Stressed
19	Tetrahydrofuran		5,025.3	µg/mL	+/-	29.2172	µg/mL	Gravimetric
	CAS # 109-99-9	(Lot SHBG2910V)			+/-	303.1956	µg/mL	Unstressed
	Purity 99%				+/-	303.9154	µg/mL	Stressed
20	1,1,1-trichloroethane		2,508.9	µg/mL	+/-	14.5868	µg/mL	Gravimetric
	CAS # 71-55-6	(Lot B15MW0705)			+/-	151.3715	µg/mL	Unstressed
	Purity 99%				+/-	151.7309	µg/mL	Stressed
21	Cyclohexane		2,503.4	µg/mL	+/-	14.5548	µg/mL	Gravimetric
	CAS # 110-82-7	(Lot MKBV3194V)			+/-	151.0397	µg/mL	Unstressed
	Purity 99%				+/-	151.3983	µg/mL	Stressed
22	1,1-Dichloropropene		2,507.4	µg/mL	+/-	14.5781	µg/mL	Gravimetric
	CAS # 563-58-6	(Lot PR09161302)			+/-	151.2810	µg/mL	Unstressed
	Purity 99%				+/-	151.6402	µg/mL	Stressed
23	carbon tetrachloride		2,505.9	µg/mL	+/-	14.5694	µg/mL	Gravimetric
	CAS # 56-23-5	(Lot SHBG1763V)			+/-	151.1905	µg/mL	Unstressed
	Purity 99%				+/-	151.5495	µg/mL	Stressed

24	n-Heptane (C7) **CAS #** 142-82-5 **Purity** 99%	(Lot MKBV6176V)	2,510.8	µg/mL	+/- 14.5977 +/- 151.4847 +/- 151.8443	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
25	1,2-Dichloroethane **CAS #** 107-06-2 **Purity** 99%	(Lot MKBV4565V)	2,511.1	µg/mL	+/- 14.5999 +/- 151.5073 +/- 151.8670	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
26	Benzene **CAS #** 71-43-2 **Purity** 99%	(Lot SHBG1169V)	2,502.9	µg/mL	+/- 14.5519 +/- 151.0095 +/- 151.3681	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
27	Trichloroethene **CAS #** 79-01-6 **Purity** 99%	(Lot SHBF0943V)	2,500.4	µg/mL	+/- 14.5374 +/- 150.8587 +/- 151.2169	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
28	Methylcyclohexane **CAS #** 108-87-2 **Purity** 99%	(Lot 50996APV)	2,503.9	µg/mL	+/- 14.5577 +/- 151.0699 +/- 151.4285	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
29	1,2-Dichloropropane **CAS #** 78-87-5 **Purity** 99%	(Lot 01113D0V)	2,523.5	µg/mL	+/- 14.6718 +/- 152.2539 +/- 152.6154	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
30	bromodichloromethane **CAS #** 75-27-4 **Purity** 98%	(Lot MKBL1617V)	2,509.0	µg/mL	+/- 14.5878 +/- 151.3818 +/- 151.7412	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
31	1,4-Dioxane **CAS #** 123-91-1 **Purity** 99%	(Lot SHBG6312V)	50,018.1	µg/mL	+/- 290.7945 +/- 3,017.8137 +/- 3,024.9785	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
32	Dibromomethane **CAS #** 74-95-3 **Purity** 98%	(Lot 10183283)	2,511.4	µg/mL	+/- 14.6013 +/- 151.5222 +/- 151.8820	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
33	cis-1,3-Dichloropropene **CAS #** 10061-01-5 **Purity** 99%	(Lot 22622)	2,506.0	µg/mL	+/- 14.5701 +/- 151.1981 +/- 151.5571	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
34	Toluene **CAS #** 108-88-3 **Purity** 99%	(Lot MKBV5601V)	2,515.5	µg/mL	+/- 14.6253 +/- 151.7713 +/- 152.1316	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
35	Ethyl methacrylate **CAS #** 97-63-2 **Purity** 99%	(Lot SHBD9190V)	2,503.1	µg/mL	+/- 14.5534 +/- 151.0246 +/- 151.3832	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
36	trans-1,3-Dichloropropene **CAS #** 10061-02-6 **Purity** 99%	(Lot C584177)	2,508.0	µg/mL	+/- 14.5817 +/- 151.3188 +/- 151.6780	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
37	1,1,2-Trichloroethane **CAS #** 79-00-5 **Purity** 99%	(Lot FGB01)	2,508.4	µg/mL	+/- 14.5839 +/- 151.3414 +/- 151.7007	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
38	1,3-Dichloropropane **CAS #** 142-28-9 **Purity** 99%	(Lot BCBG2162V)	2,522.8	µg/mL	+/- 14.6675 +/- 152.2087 +/- 152.5701	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
39	Tetrachloroethene **CAS #** 127-18-4 **Purity** 99%	(Lot SHBD9374V)	2,518.9	µg/mL	+/- 14.6450 +/- 151.9749 +/- 152.3357	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

40	dibromochloromethane		2,505.4	µg/mL	+/-	14.5664	µg/mL	Gravimetric
	CAS # 124-48-1	(Lot MKBQ6577V)			+/-	151.1601	µg/mL	Unstressed
	Purity 98%				+/-	151.5190	µg/mL	Stressed
41	1,2-Dibromoethane (EDB)		2,505.1	µg/mL	+/-	14.5650	µg/mL	Gravimetric
	CAS # 106-93-4	(Lot BCBH3877V)			+/-	151.1453	µg/mL	Unstressed
	Purity 99%				+/-	151.5041	µg/mL	Stressed
42	Chlorobenzene		2,505.6	µg/mL	+/-	14.5679	µg/mL	Gravimetric
	CAS # 108-90-7	(Lot SHBF0505V)			+/-	151.1755	µg/mL	Unstressed
	Purity 99%				+/-	151.5344	µg/mL	Stressed
43	1,1,2,2-Tetrachloroethane		2,505.1	µg/mL	+/-	14.5650	µg/mL	Gravimetric
	CAS # 79-34-5	(Lot CFA4D)			+/-	151.1453	µg/mL	Unstressed
	Purity 99%				+/-	151.5041	µg/mL	Stressed
44	Ethylbenzene		2,506.1	µg/mL	+/-	14.5708	µg/mL	Gravimetric
	CAS # 100-41-4	(Lot SHBG5920V)			+/-	151.2056	µg/mL	Unstressed
	Purity 99%				+/-	151.5646	µg/mL	Stressed
45	m-Xylene		1,254.4	µg/mL	+/-	7.2930	µg/mL	Gravimetric
	CAS # 108-38-3	(Lot SHBF8095V)			+/-	75.6820	µg/mL	Unstressed
	Purity 99%				+/-	75.8617	µg/mL	Stressed
46	p-Xylene		1,250.0	µg/mL	+/-	7.2676	µg/mL	Gravimetric
	CAS # 106-42-3	(Lot SHBF3427V)			+/-	75.4180	µg/mL	Unstressed
	Purity 99%				+/-	75.5971	µg/mL	Stressed
47	o-Xylene		2,506.3	µg/mL	+/-	14.5716	µg/mL	Gravimetric
	CAS # 95-47-6	(Lot SHBF7003V)			+/-	151.2132	µg/mL	Unstressed
	Purity 99%				+/-	151.5722	µg/mL	Stressed
48	Styrene		2,503.9	µg/mL	+/-	14.5577	µg/mL	Gravimetric
	CAS # 100-42-5	(Lot MKBS7097V)			+/-	151.0699	µg/mL	Unstressed
	Purity 99%				+/-	151.4285	µg/mL	Stressed
49	Isopropylbenzene (cumene)		2,509.4	µg/mL	+/-	14.5897	µg/mL	Gravimetric
	CAS # 98-82-8	(Lot 10185056)			+/-	151.4017	µg/mL	Unstressed
	Purity 99%				+/-	151.7612	µg/mL	Stressed
50	bromoform		2,503.3	µg/mL	+/-	14.5541	µg/mL	Gravimetric
	CAS # 75-25-2	(Lot SHBC3410V)			+/-	151.0322	µg/mL	Unstressed
	Purity 99%				+/-	151.3907	µg/mL	Stressed
51	1,1,1,2-Tetrachloroethane		2,505.0	µg/mL	+/-	14.5643	µg/mL	Gravimetric
	CAS # 630-20-6	(Lot MKBS3769V)			+/-	151.1378	µg/mL	Unstressed
	Purity 99%				+/-	151.4966	µg/mL	Stressed
52	chloroform		2,507.8	µg/mL	+/-	14.5803	µg/mL	Gravimetric
	CAS # 67-66-3	(Lot MKBV2089V)			+/-	151.3037	µg/mL	Unstressed
	Purity 99%				+/-	151.6629	µg/mL	Stressed
53	1,2,3-Trichloropropane		2,504.8	µg/mL	+/-	14.5628	µg/mL	Gravimetric
	CAS # 96-18-4	(Lot BCBH8722V)			+/-	151.1227	µg/mL	Unstressed
	Purity 99%				+/-	151.4815	µg/mL	Stressed
54	trans-1,4-dichloro-2-butene		2,499.7	µg/mL	+/-	14.5334	µg/mL	Gravimetric
	CAS # 110-57-6	(Lot MKBP6041V)			+/-	150.8172	µg/mL	Unstressed
	Purity 95%				+/-	151.1753	µg/mL	Stressed
55	n-Propylbenzene		2,507.5	µg/mL	+/-	14.5788	µg/mL	Gravimetric
	CAS # 103-65-1	(Lot MKBJ0332V)			+/-	151.2886	µg/mL	Unstressed
	Purity 99%				+/-	151.6478	µg/mL	Stressed

56	Bromobenzene		2,515.1	µg/mL	+/-	14.6232	µg/mL	Gravimetric
	CAS # 108-86-1	(Lot MKBD4032V)			+/-	151.7486	µg/mL	Unstressed
	Purity 99%				+/-	152.1089	µg/mL	Stressed
57	1,2,4-Trimethylbenzene		2,503.7	µg/mL	+/-	14.5565	µg/mL	Gravimetric
	CAS # 95-63-6	(Lot MKBJ6229V)			+/-	151.0566	µg/mL	Unstressed
	Purity 98%				+/-	151.4152	µg/mL	Stressed
58	2-Chlorotoluene		2,502.1	µg/mL	+/-	14.5476	µg/mL	Gravimetric
	CAS # 95-49-8	(Lot MKBH8892V)			+/-	150.9643	µg/mL	Unstressed
	Purity 99%				+/-	151.3227	µg/mL	Stressed
59	4-Chlorotoluene		2,512.6	µg/mL	+/-	14.6086	µg/mL	Gravimetric
	CAS # 106-43-4	(Lot MKBL7753V)			+/-	151.5978	µg/mL	Unstressed
	Purity 99%				+/-	151.9577	µg/mL	Stressed
60	tert-Butylbenzene		2,507.8	µg/mL	+/-	14.5803	µg/mL	Gravimetric
	CAS # 98-06-6	(Lot S52237V)			+/-	151.3037	µg/mL	Unstressed
	Purity 99%				+/-	151.6629	µg/mL	Stressed
61	1,3,5-Trimethylbenzene		2,502.5	µg/mL	+/-	14.5498	µg/mL	Gravimetric
	CAS # 108-67-8	(Lot BCBJ6245V)			+/-	150.9869	µg/mL	Unstressed
	Purity 99%				+/-	151.3454	µg/mL	Stressed
62	sec-Butylbenzene		2,521.8	µg/mL	+/-	14.6617	µg/mL	Gravimetric
	CAS # 135-98-8	(Lot MKBK3151V)			+/-	152.1484	µg/mL	Unstressed
	Purity 99%				+/-	152.5096	µg/mL	Stressed
63	p-Isopropyltoluene (p-Cymene)		2,502.6	µg/mL	+/-	14.5505	µg/mL	Gravimetric
	CAS # 99-87-6	(Lot MKBK4439V)			+/-	150.9945	µg/mL	Unstressed
	Purity 99%				+/-	151.3529	µg/mL	Stressed
64	1,3-Dichlorobenzene		2,505.8	µg/mL	+/-	14.5686	µg/mL	Gravimetric
	CAS # 541-73-1	(Lot BCBM5751V)			+/-	151.1830	µg/mL	Unstressed
	Purity 99%				+/-	151.5419	µg/mL	Stressed
65	1,4-Dichlorobenzene		2,504.1	µg/mL	+/-	14.5592	µg/mL	Gravimetric
	CAS # 106-46-7	(Lot MKBS1350V)			+/-	151.0850	µg/mL	Unstressed
	Purity 99%				+/-	151.4437	µg/mL	Stressed
66	n-Butylbenzene		2,503.3	µg/mL	+/-	14.5541	µg/mL	Gravimetric
	CAS # 104-51-8	(Lot 09418JJV)			+/-	151.0322	µg/mL	Unstressed
	Purity 99%				+/-	151.3907	µg/mL	Stressed
67	1,2-Dichlorobenzene		2,505.5	µg/mL	+/-	14.5672	µg/mL	Gravimetric
	CAS # 95-50-1	(Lot SHBD7331V)			+/-	151.1679	µg/mL	Unstressed
	Purity 99%				+/-	151.5268	µg/mL	Stressed
68	1,2-Dibromo-3-chloropropane		2,508.6	µg/mL	+/-	14.5854	µg/mL	Gravimetric
	CAS # 96-12-8	(Lot FBL01-JM)			+/-	151.3565	µg/mL	Unstressed
	Purity 99%				+/-	151.7158	µg/mL	Stressed
69	1,2,4-Trichlorobenzene		2,518.6	µg/mL	+/-	14.6435	µg/mL	Gravimetric
	CAS # 120-82-1	(Lot 26896BM)			+/-	151.9598	µg/mL	Unstressed
	Purity 99%				+/-	152.3206	µg/mL	Stressed
70	Hexachlorobutadiene		2,499.9	µg/mL	+/-	14.5344	µg/mL	Gravimetric
	CAS # 87-68-3	(Lot J31X013)			+/-	150.8275	µg/mL	Unstressed
	Purity 98%				+/-	151.1856	µg/mL	Stressed
71	Naphthalene		2,514.9	µg/mL	+/-	14.6217	µg/mL	Gravimetric
	CAS # 91-20-3	(Lot MKBH4351V)			+/-	151.7336	µg/mL	Unstressed
	Purity 99%				+/-	152.0938	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2,502.0 µg/mL	+/-	14.5468	µg/mL	Gravimetric
	CAS # 87-61-6	(Lot MKBS4859V)		+/-	150.9567	µg/mL	Unstressed
	Purity 99%			+/-	151.3151	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

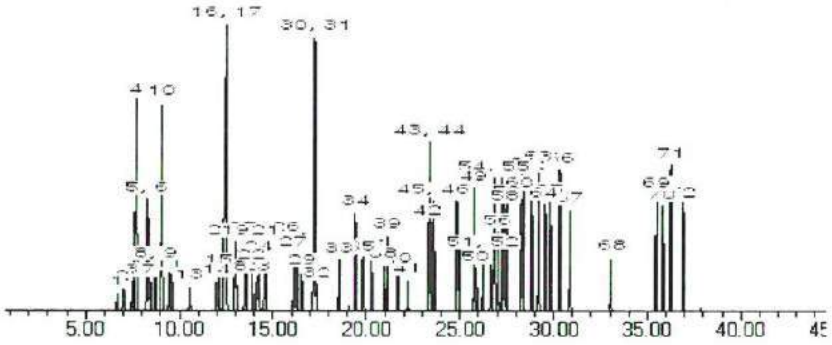
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Rebecca Hauver

Date Mixed: 21-Mar-2016 **Balance:** 1125113331

Jodi E. Breon

Jodi E. Breon - QA Analyst

Date Passed: 28-Mar-2016

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570808 **Lot No.:** A0123685

Description : 8260 List 2 / Std #6

8260 List 2 / Std #6 2500-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2018 **Storage:** 0°C or colder

2081948
ID: VOARADDCOM__00016
Exp: 06/30/18 Prpd: JCV
8260 List 2/ Std #6

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Propanol (isopropanol) **CAS #** 67-63-0 (Lot SHBG8138V) **Purity** 99%	25,022.0 µg/mL	+/- 145.4725 µg/mL +/- 1,237.7836 µg/mL +/- 1,268.5622 µg/mL	Gravimetric Unstressed Stressed
2	Chloroprene (2-chloro-1,3-butadiene) **CAS #** 126-99-8 (Lot 161201JLM) **Purity** 99%	2,515.5 µg/mL	+/- 14.6253 µg/mL +/- 124.4364 µg/mL +/- 127.5306 µg/mL	Gravimetric Unstressed Stressed
3	Methacrylonitrile **CAS #** 126-98-7 (Lot 1012014) **Purity** 99%	25,000.0 µg/mL	+/- 145.3446 µg/mL +/- 1,236.6953 µg/mL +/- 1,267.4469 µg/mL	Gravimetric Unstressed Stressed
4	2,2,4-Trimethylpentane (isooctane) **CAS #** 540-84-1 (Lot SHBD2922V) **Purity** 99%	2,508.0 µg/mL	+/- 14.5817 µg/mL +/- 124.0654 µg/mL +/- 127.1504 µg/mL	Gravimetric Unstressed Stressed
5	1-Butanol **CAS #** 71-36-3 (Lot SHBF9309V) **Purity** 99%	62,715.5 µg/mL	+/- 364.6143 µg/mL +/- 3,102.3986 µg/mL +/- 3,179.5425 µg/mL	Gravimetric Unstressed Stressed
6	2-Nitropropane **CAS #** 79-46-9 (Lot BCBL0537V) **Purity** 98%	5,007.8 µg/mL	+/- 29.1158 µg/mL +/- 247.7251 µg/mL +/- 253.8850 µg/mL	Gravimetric Unstressed Stressed
7	1-Chlorohexane **CAS #** 544-10-5 (Lot 05107LK) **Purity** 98%	2,501.5 µg/mL	+/- 14.5436 µg/mL +/- 123.7413 µg/mL +/- 126.8183 µg/mL	Gravimetric Unstressed Stressed

8	1,2,3-Trimethylbenzene		2,516.2	µg/mL	+/-	14.6291	µg/mL	Gravimetric
	CAS # 526-73-8	(Lot 877605-15)			+/-	124.4685	µg/mL	Unstressed
	Purity 98%				+/-	127.5635	µg/mL	Stressed
9	Benzyl chloride		2,508.3	µg/mL	+/-	14.5832	µg/mL	Gravimetric
	CAS # 100-44-7	(Lot SHBB7346V)			+/-	124.0777	µg/mL	Unstressed
	Purity 99%				+/-	127.1630	µg/mL	Stressed
10	1,3,5-Trichlorobenzene		2,508.0	µg/mL	+/-	14.5817	µg/mL	Gravimetric
	CAS # 108-70-3	(Lot 11319AS)			+/-	124.0654	µg/mL	Unstressed
	Purity 99%				+/-	127.1504	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

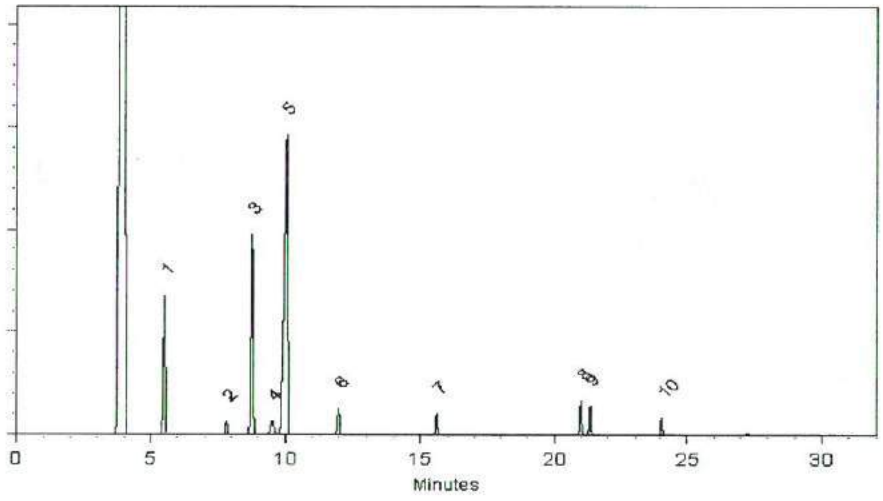
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Rebecca Sawyer

Date Mixed: 21-Dec-2016 **Balance:** 1125113331

Amanda Miller - Operations Tech-ARM QC

Date Passed: 27-Dec-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570812 **Lot No.:** A0126559

Description : 8260 IS/Surrogate Mix (2016)

8260 IS/Surrogate Mix (2016) 250-5000 µg/ml, P&T Methanol, 5 ml/ampul

2036314
ID: VOARSURR/IS_00046
Exp: 04/30/22 Prpd: RSB
8260 IS/Surrogate Mix (20

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : April 30, 2022 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	tert-Butyl-d9-alcohol **CAS #** 25725-11-5 (Lot I-201) **Purity** 99%	5,011.4 µg/mL	+/- 29.1349 µg/mL +/- 107.2932 µg/mL +/- 110.4124 µg/mL	Gravimetric Unstressed Stressed
2	Dibromofluoromethane **CAS #** 1868-53-7 (Lot 0012016) **Purity** 99%	252.5 µg/mL	+/- 1.4714 µg/mL +/- 5.4070 µg/mL +/- 5.5641 µg/mL	Gravimetric Unstressed Stressed
3	1,2-Dichloroethane-d4 **CAS #** 17060-07-0 (Lot PR-26748) **Purity** 99%	251.7 µg/mL	+/- 1.4665 µg/mL +/- 5.3888 µg/mL +/- 5.5454 µg/mL	Gravimetric Unstressed Stressed
4	1,4-Dioxane-d8 **CAS #** 17647-74-4 (Lot I-19942) **Purity** 99%	5,009.9 µg/mL	+/- 29.1265 µg/mL +/- 107.2621 µg/mL +/- 110.3805 µg/mL	Gravimetric Unstressed Stressed
5	Fluorobenzene **CAS #** 462-06-6 (Lot BCBK8171V) **Purity** 99%	251.0 µg/mL	+/- 1.4624 µg/mL +/- 5.3738 µg/mL +/- 5.5300 µg/mL	Gravimetric Unstressed Stressed
6	Toluene-d8 **CAS #** 2037-26-5 (Lot PR-27311) **Purity** 99%	250.9 µg/mL	+/- 1.4618 µg/mL +/- 5.3716 µg/mL +/- 5.5278 µg/mL	Gravimetric Unstressed Stressed
7	Chlorobenzene-d5 **CAS #** 3114-55-4 (Lot PR-23926) **Purity** 99%	251.4 µg/mL	+/- 1.4647 µg/mL +/- 5.3824 µg/mL +/- 5.5388 µg/mL	Gravimetric Unstressed Stressed

8	1-Bromo-4-fluorobenzene (BFB) **CAS #** 460-00-4 **Purity** 99%	(Lot 20401KOV)	251.4	µg/mL	+/- 1.4647 +/- 5.3824 +/- 5.5388	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	1,4-Dichlorobenzene-d4 **CAS #** 3855-82-1 **Purity** 99%	(Lot PR-18488)	251.2	µg/mL	+/- 1.4639 +/- 5.3791 +/- 5.5355	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

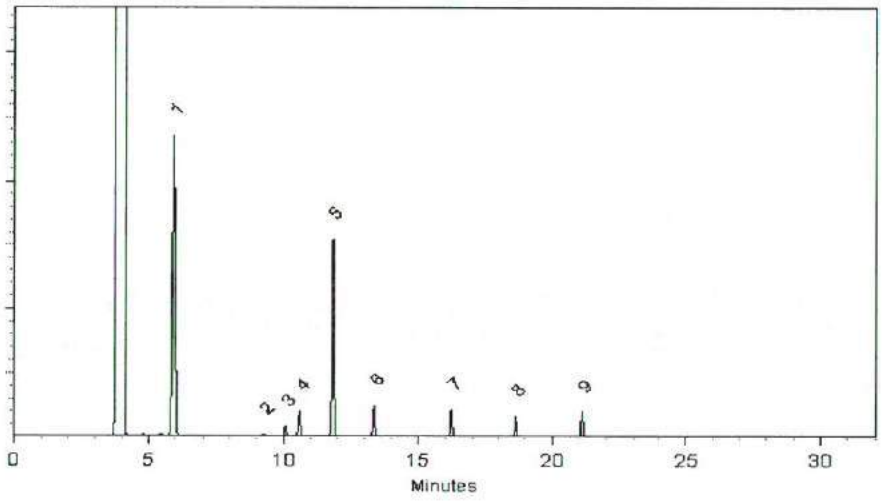
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Lane Kibe - Mix Technician

Date Mixed: 06-Apr-2017 **Balance:** 1128342314

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 19-Apr-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

VOARSURR / IS _ 00046

Reagent ID: VOARSURR/IS_00046

Type:	ASTD	Expiration Date:	04/30/2022
Description:	8260 IS/Surrogate Mix (2016)	Laboratory:	TestAmerica Seattle
No. of Bottles:	10	Prepared By:	Brennan, Richard S
Storage Location:	MSV Frzr#21: S.wall	Vendor:	Restek
Reagent Volume:	5.000 mL	Vendor Lot #:	A0126559
Creation Date:	10/10/2017	Vendor Cat #:	570812
Open Date:			
Container(s):	2036314, 2036315, 2036316, 2036317, 2036318, 2036319, 2036320, 2036321, 2036322, 203632		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
1,2-Dichloroethane-d4 (Surr)					250.00000	ug/mL
1,4-Dichlorobenzene-d4					250.00000	ug/mL
1,4-Dioxane-d8					5000.00000	ug/mL
4-Bromofluorobenzene (Surr)					250.00000	ug/mL
Chlorobenzene-d5					250.00000	ug/mL
Dibromofluoromethane (Surr)					250.00000	ug/mL
Fluorobenzene (IS)					250.00000	ug/mL
TBA-d9 (IS)					5000.00000	ug/mL
Toluene-d8 (Surr)					250.00000	ug/mL

Reagent

VOARVA__00032

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569724 **Lot No.:** A0131948

Description : 8260 List 1 / Std #6 Vinyl Acetate (2015)

8260 List 1 / Std #6 Vinyl Acetate (2015) 5,000µg/mL, P&T Methanol, 1mL/ampul

2099920
ID: VOARVA_00032
Exp 04/30/18 Prpd:JSM Opn:01/31/18
8260 List 1/ Std #6 Vinyl

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : April 30, 2018 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Vinyl acetate	5,022.0 µg/mL	+/- 29.4049	µg/mL	Gravimetric
	CAS # 108-05-4 (Lot STBD7333V)		+/- 303.0195	µg/mL	Unstressed
	Purity 99%		+/- 303.7388	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods. Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

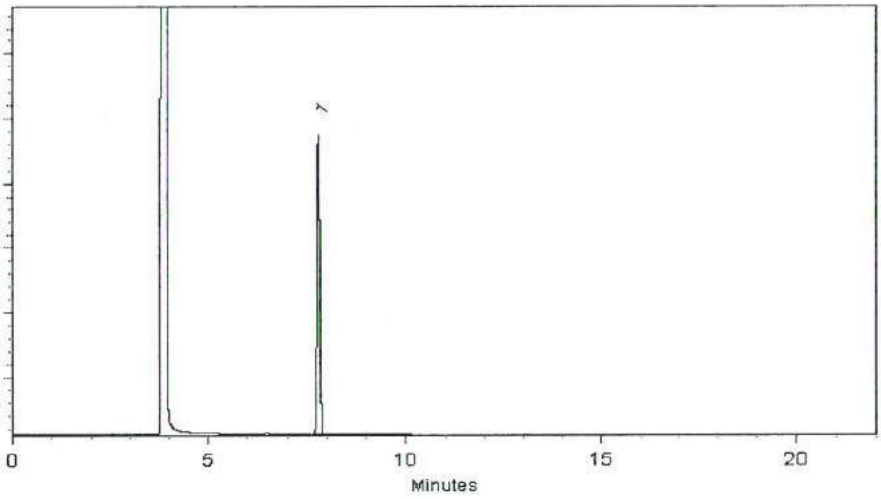
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician **Date Mixed:** 30-Oct-2017 **Balance:** B251644995

Jennifer Pollino - Operations Tech-ARM QC **Date Passed:** 01-Nov-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

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Catalog No. : 569722.SEC **Lot No.:** A0128832

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

2067139
ID: VOASGAS2__00015
Exp: 06/30/20 Prpd: HDK
8260 List 1/Std #3 Gases

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2020 **Storage:** 0°C or colder

approved
11-24-17 HDK

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dichlorodifluoromethane (CFC-12) **CAS #** 75-71-8.SEC (Lot 23586) **Purity** 99%	2,505.9 µg/mL	+/- 22.3986 µg/mL +/- 141.5312 µg/mL +/- 144.7955 µg/mL	Gravimetric Unstressed Stressed
2	Chloromethane (methyl chloride) **CAS #** 74-87-3.SEC (Lot 18343) **Purity** 99%	2,503.7 µg/mL	+/- 24.8413 µg/mL +/- 141.8153 µg/mL +/- 145.0675 µg/mL	Gravimetric Unstressed Stressed
3	Vinyl chloride **CAS #** 75-01-4.SEC (Lot MKBK6872V) **Purity** 99%	2,503.2 µg/mL	+/- 25.9197 µg/mL +/- 141.9813 µg/mL +/- 145.2285 µg/mL	Gravimetric Unstressed Stressed
4	1,3-Butadiene **CAS #** 106-99-0.SEC (Lot 24033) **Purity** 99%	2,508.9 µg/mL	+/- 20.6969 µg/mL +/- 141.4379 µg/mL +/- 144.7121 µg/mL	Gravimetric Unstressed Stressed
5	Bromomethane (methyl bromide) **CAS #** 74-83-9.SEC (Lot Q119-46) **Purity** 99%	2,502.6 µg/mL	+/- 26.2540 µg/mL +/- 142.0076 µg/mL +/- 145.2526 µg/mL	Gravimetric Unstressed Stressed
6	Chloroethane (ethyl chloride) **CAS #** 75-00-3.SEC (Lot 00004202) **Purity** 99%	2,510.6 µg/mL	+/- 24.9094 µg/mL +/- 142.2038 µg/mL +/- 145.4650 µg/mL	Gravimetric Unstressed Stressed
7	Dichlorofluoromethane (CFC-21) **CAS #** 75-43-4.SEC (Lot SHBC0858V) **Purity** 99%	2,510.9 µg/mL	+/- 25.6719 µg/mL +/- 142.3575 µg/mL +/- 145.6160 µg/mL	Gravimetric Unstressed Stressed

8	Trichlorofluoromethane (CFC-11)		2,504.9	µg/mL	+/-	18.9312	µg/mL	Gravimetric
	CAS # 75-69-4.SEC	(Lot 253600)			+/-	140.9660	µg/mL	Unstressed
	Purity 99%				+/-	144.2404	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

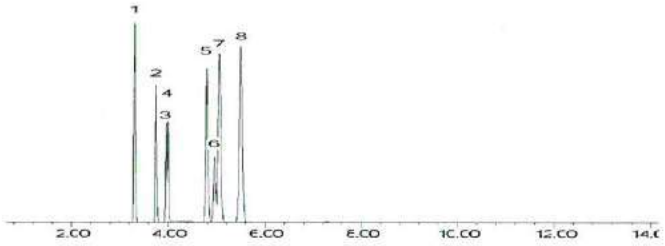
Carrier Gas:
helium-constant flow 2.0 mL/min.

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Brandon Reish - Mix Technician **Date Mixed:** 29-Jun-2017 **Balance:** 1127510105

Jennifer Pollino - Operations Tech-ARM QC **Date Passed:** 24-Jul-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

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Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569721.sec **Lot No.:** A0123880

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500 µg/ml, P&T Methanol/Water (90:10), 1 ml/ampul

2067142
ID: VOASKETON2_00012
Exp: 01/31/20 Prpd: HDK
8260 List 1 / Std #2 Keto

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2020 **Storage:** 0°C or colder

approved
11-24-17
HDK

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Acetone **CAS #** 67-64-1.SEC (Lot P14A572) **Purity** 99%	12,501.6 µg/mL	+/- 73.1996 µg/mL +/- 754.3267 µg/mL +/- 756.1173 µg/mL	Gravimetric Unstressed Stressed
2	2-Butanone (MEK) **CAS #** 78-93-3.SEC (Lot RA58J) **Purity** 99%	12,503.6 µg/mL	+/- 73.2113 µg/mL +/- 754.4473 µg/mL +/- 756.2383 µg/mL	Gravimetric Unstressed Stressed
3	4-Methyl-2-pentanone (MIBK) **CAS #** 108-10-1.SEC (Lot E29T040) **Purity** 99%	12,506.0 µg/mL	+/- 73.2254 µg/mL +/- 754.5921 µg/mL +/- 756.3834 µg/mL	Gravimetric Unstressed Stressed
4	2-Hexanone **CAS #** 591-78-6.SEC (Lot V3NRA) **Purity** 99%	12,504.0 µg/mL	+/- 73.2137 µg/mL +/- 754.4715 µg/mL +/- 756.2625 µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

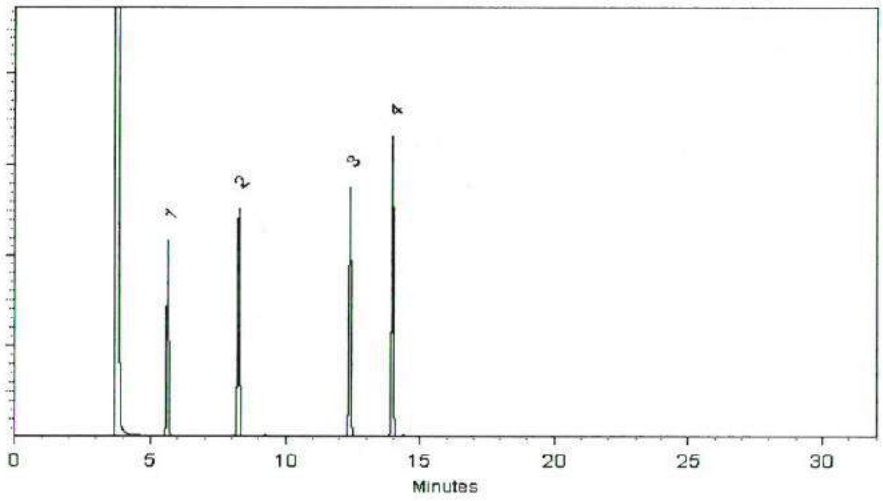
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Maye

Date Mixed: 03-Jan-2017 **Balance:** 1127510105

Jennifer L Pollino

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 05-Jan-2017

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

VOASMegMix2__00016

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

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CERTIFIED REFERENCE MATERIAL

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

Certificate of Analysis

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

2081626
ID: VOASMegMix2__00016
Exp 07/31/18 Prpd:JSM Opn:12/19/17
8260 List 1/ Std #1 MegaM

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569720.sec **Lot No.:** A0120604

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : July 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Diethyl ether (ethyl ether) **CAS #** 60-29-7.SEC (Lot F23X068) **Purity** 98%	2,501.1 µg/mL	+/- 14.5415 µg/mL +/- 150.9014 µg/mL +/- 151.2597 µg/mL	Gravimetric Unstressed Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113) **CAS #** 76-13-1.SEC (Lot 18342) **Purity** 99%	2,501.1 µg/mL	+/- 14.5418 µg/mL +/- 150.9040 µg/mL +/- 151.2622 µg/mL	Gravimetric Unstressed Stressed
3	1,1-Dichloroethene **CAS #** 75-35-4.SEC (Lot 2767000) **Purity** 99%	2,500.8 µg/mL	+/- 14.5396 µg/mL +/- 150.8813 µg/mL +/- 151.2395 µg/mL	Gravimetric Unstressed Stressed
4	tert-Butanol (TBA) **CAS #** 75-65-0.SEC (Lot XYXDO) **Purity** 98%	25,004.1 µg/mL	+/- 145.3683 µg/mL +/- 1,508.6067 µg/mL +/- 1,512.1884 µg/mL	Gravimetric Unstressed Stressed
5	Iodomethane (methyl iodide) **CAS #** 74-88-4.SEC (Lot Y25A027) **Purity** 99%	2,501.0 µg/mL	+/- 14.5410 µg/mL +/- 150.8964 µg/mL +/- 151.2547 µg/mL	Gravimetric Unstressed Stressed
6	Methyl acetate **CAS #** 79-20-9.SEC (Lot 6WOXM) **Purity** 99%	12,501.6 µg/mL	+/- 72.6817 µg/mL +/- 754.2781 µg/mL +/- 756.0689 µg/mL	Gravimetric Unstressed Stressed
7	Allyl chloride (3-chloropropene) **CAS #** 107-05-1.SEC (Lot VEBOC) **Purity** 98%	2,501.0 µg/mL	+/- 14.5408 µg/mL +/- 150.8940 µg/mL +/- 151.2522 µg/mL	Gravimetric Unstressed Stressed

8	Methylene chloride (dichloromethane)		2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 75-09-2.SEC	(Lot FGM02)			+/-	150.9040	µg/mL	Unstressed
	Purity 99%				+/-	151.2622	µg/mL	Stressed
9	Carbon disulfide		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 75-15-0.SEC	(Lot MKBL1376V)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed
10	Acrylonitrile		25,020.0	µg/mL	+/-	145.4608	µg/mL	Gravimetric
	CAS # 107-13-1.SEC	(Lot UERIL-DA)			+/-	1,509.5667	µg/mL	Unstressed
	Purity 99%				+/-	1,513.1507	µg/mL	Stressed
11	cis-1,2-Dichloroethene		2,500.8	µg/mL	+/-	14.5401	µg/mL	Gravimetric
	CAS # 156-59-2.SEC	(Lot HGC01-BLKT)			+/-	150.8866	µg/mL	Unstressed
	Purity 98%				+/-	151.2448	µg/mL	Stressed
12	n-Hexane (C6)		2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 110-54-3.SEC	(Lot 10188491)			+/-	150.9040	µg/mL	Unstressed
	Purity 99%				+/-	151.2622	µg/mL	Stressed
13	1,1-Dichloroethane		2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 75-34-3.SEC	(Lot 5035700)			+/-	150.9040	µg/mL	Unstressed
	Purity 99%				+/-	151.2622	µg/mL	Stressed
14	2,2-Dichloropropane		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 594-20-7.SEC	(Lot GI01)			+/-	150.8738	µg/mL	Unstressed
	Purity 99%				+/-	151.2320	µg/mL	Stressed
15	trans-1,2-Dichloroethene		2,501.3	µg/mL	+/-	14.5426	µg/mL	Gravimetric
	CAS # 156-60-5.SEC	(Lot TS5UB)			+/-	150.9125	µg/mL	Unstressed
	Purity 97%				+/-	151.2708	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)		62,503.0	µg/mL	+/-	363.3788	µg/mL	Gravimetric
	CAS # 78-83-1.SEC	(Lot 83NHH)			+/-	3,771.0811	µg/mL	Unstressed
	Purity 99%				+/-	3,780.0343	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS # 1634-04-4.SEC	(Lot ZAQTA-MS)			+/-	150.8964	µg/mL	Unstressed
	Purity 99%				+/-	151.2547	µg/mL	Stressed
18	Bromochloromethane		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 74-97-5.SEC	(Lot 1775400)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
19	Tetrahydrofuran		5,000.3	µg/mL	+/-	29.0719	µg/mL	Gravimetric
	CAS # 109-99-9.SEC	(Lot K3V7J-SJ)			+/-	301.6872	µg/mL	Unstressed
	Purity 99%				+/-	302.4035	µg/mL	Stressed
20	1,1,1-Trichloroethane		2,501.3	µg/mL	+/-	14.5429	µg/mL	Gravimetric
	CAS # 71-55-6.SEC	(Lot CS160712)			+/-	150.9162	µg/mL	Unstressed
	Purity 98%				+/-	151.2745	µg/mL	Stressed
21	Cyclohexane		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 110-82-7.SEC	(Lot YADRA)			+/-	150.8512	µg/mL	Unstressed
	Purity 99%				+/-	151.2093	µg/mL	Stressed
22	1,1-Dichloropropene		2,500.4	µg/mL	+/-	14.5378	µg/mL	Gravimetric
	CAS # 563-58-6.SEC	(Lot 4672600)			+/-	150.8626	µg/mL	Unstressed
	Purity 96%				+/-	151.2208	µg/mL	Stressed
23	Carbon tetrachloride		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 56-23-5.SEC	(Lot 11466)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed

24	n-Heptane (C7) **CAS #** 142-82-5.SEC **Purity** 99%	(Lot OGM01)	2,500.5	µg/mL	+/- +/- +/-	14.5381 150.8662 151.2244	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
25	1,2-Dichloroethane **CAS #** 107-06-2.SEC **Purity** 99%	(Lot FO6PK)	2,501.3	µg/mL	+/- +/- +/-	14.5425 150.9115 151.2698	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
26	Benzene **CAS #** 71-43-2.SEC **Purity** 99%	(Lot B28Y008)	2,500.6	µg/mL	+/- +/- +/-	14.5388 150.8738 151.2320	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
27	Trichloroethene **CAS #** 79-01-6.SEC **Purity** 99%	(Lot H04X050)	2,500.4	µg/mL	+/- +/- +/-	14.5374 150.8587 151.2169	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
28	Methylcyclohexane **CAS #** 108-87-2.SEC **Purity** 99%	(Lot 24MSD-CD)	2,501.9	µg/mL	+/- +/- +/-	14.5461 150.9492 151.3076	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
29	1,2-Dichloropropane **CAS #** 78-87-5.SEC **Purity** 99%	(Lot OGG01)	2,500.8	µg/mL	+/- +/- +/-	14.5396 150.8813 151.2395	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
30	Bromodichloromethane **CAS #** 75-27-4.SEC **Purity** 99%	(Lot 10171168)	2,500.4	µg/mL	+/- +/- +/-	14.5374 150.8587 151.2169	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
31	1,4-Dioxane **CAS #** 123-91-1.SEC **Purity** 99%	(Lot CHA4A)	50,014.8	µg/mL	+/- +/- +/-	290.7749 3,017.6100 3,024.7743	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
32	Dibromomethane **CAS #** 74-95-3.SEC **Purity** 99%	(Lot FGI01-OICH)	2,501.4	µg/mL	+/- +/- +/-	14.5432 150.9190 151.2773	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
33	cis-1,3-Dichloropropene **CAS #** 10061-01-5.SEC **Purity** 99%	(Lot 7ZLXJ-TJ)	2,500.8	µg/mL	+/- +/- +/-	14.5396 150.8813 151.2395	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
34	Toluene **CAS #** 108-88-3.SEC **Purity** 99%	(Lot YND2B-BD)	2,501.3	µg/mL	+/- +/- +/-	14.5425 150.9115 151.2698	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
35	Ethyl methacrylate **CAS #** 97-63-2.SEC **Purity** 99%	(Lot MLWYK-LS)	2,501.6	µg/mL	+/- +/- +/-	14.5447 150.9341 151.2925	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
36	trans-1,3-Dichloropropene **CAS #** 10061-02-6.SEC **Purity** 99%	(Lot 2ECIC)	2,500.5	µg/mL	+/- +/- +/-	14.5381 150.8662 151.2244	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
37	1,1,2-Trichloroethane **CAS #** 79-00-5.SEC **Purity** 98%	(Lot 3440900)	2,500.5	µg/mL	+/- +/- +/-	14.5379 150.8644 151.2226	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
38	1,3-Dichloropropane **CAS #** 142-28-9.SEC **Purity** 99%	(Lot AGN01-EFPC)	2,501.0	µg/mL	+/- +/- +/-	14.5410 150.8964 151.2547	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
39	Tetrachloroethene **CAS #** 127-18-4.SEC **Purity** 99%	(Lot F09W014)	2,501.5	µg/mL	+/- +/- +/-	14.5439 150.9266 151.2849	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

40	Dibromochloromethane **CAS #** 124-48-1.SEC **Purity** 97%	(Lot 10181507)	2,501.9	µg/mL	+/- 14.5461 +/- 150.9491 +/- 151.3074	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
41	1,2-Dibromoethane (EDB) **CAS #** 106-93-4.SEC **Purity** 99%	(Lot 3505900)	2,500.1	µg/mL	+/- 14.5359 +/- 150.8436 +/- 151.2017	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
42	Chlorobenzene **CAS #** 108-90-7.SEC **Purity** 99%	(Lot 1161936)	2,501.5	µg/mL	+/- 14.5439 +/- 150.9266 +/- 151.2849	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
43	1,1,1,2-Tetrachloroethane **CAS #** 630-20-6.SEC **Purity** 98%	(Lot GC01)	2,501.0	µg/mL	+/- 14.5408 +/- 150.8940 +/- 151.2522	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
44	Ethylbenzene **CAS #** 100-41-4.SEC **Purity** 99%	(Lot PI4SE)	2,501.4	µg/mL	+/- 14.5432 +/- 150.9190 +/- 151.2773	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
45	m-Xylene **CAS #** 108-38-3.SEC **Purity** 99%	(Lot OUKMG-GB)	1,250.9	µg/mL	+/- 7.2727 +/- 75.4708 +/- 75.6500	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
46	p-Xylene **CAS #** 106-42-3.SEC **Purity** 99%	(Lot GM01)	1,250.8	µg/mL	+/- 7.2720 +/- 75.4633 +/- 75.6425	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
47	o-Xylene **CAS #** 95-47-6.SEC **Purity** 99%	(Lot FGL01-KTPK)	2,501.0	µg/mL	+/- 14.5410 +/- 150.8964 +/- 151.2547	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
48	Styrene **CAS #** 100-42-5.SEC **Purity** 99%	(Lot OFIOL-IA)	2,500.4	µg/mL	+/- 14.5374 +/- 150.8587 +/- 151.2169	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
49	Isopropylbenzene (cumene) **CAS #** 98-82-8.SEC **Purity** 99%	(Lot 2PHXG-IH)	2,500.4	µg/mL	+/- 14.5374 +/- 150.8587 +/- 151.2169	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
50	Bromoform **CAS #** 75-25-2.SEC **Purity** 99%	(Lot 5139000)	2,500.3	µg/mL	+/- 14.5367 +/- 150.8512 +/- 151.2093	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
51	1,1,2,2-Tetrachloroethane **CAS #** 79-34-5.SEC **Purity** 99%	(Lot CFA4D-AQ)	2,500.5	µg/mL	+/- 14.5381 +/- 150.8662 +/- 151.2244	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
52	Chloroform **CAS #** 67-66-3.SEC **Purity** 99%	(Lot 1297547)	2,500.6	µg/mL	+/- 14.5388 +/- 150.8738 +/- 151.2320	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
53	1,2,3-Trichloropropane **CAS #** 96-18-4.SEC **Purity** 98%	(Lot OGI01)	2,501.5	µg/mL	+/- 14.5436 +/- 150.9236 +/- 151.2819	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
54	trans-1,4-Dichloro-2-butene **CAS #** 110-57-6.SEC **Purity** 98%	(Lot 100700-3)	2,500.5	µg/mL	+/- 14.5379 +/- 150.8644 +/- 151.2226	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
55	n-Propylbenzene **CAS #** 103-65-1.SEC **Purity** 99%	(Lot T2HFC-IT)	2,500.0	µg/mL	+/- 14.5352 +/- 150.8361 +/- 151.1942	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

56	Bromobenzene		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS # 108-86-1.SEC	(Lot 2FUHG-EM)			+/-	150.8964	µg/mL	Unstressed
	Purity 99%				+/-	151.2547	µg/mL	Stressed
57	1,2,4-Trimethylbenzene		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 95-63-6.SEC	(Lot SC7LO-QA)			+/-	150.8738	µg/mL	Unstressed
	Purity 99%				+/-	151.2320	µg/mL	Stressed
58	2-Chlorotoluene		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 95-49-8.SEC	(Lot SW8QG-AO)			+/-	150.8738	µg/mL	Unstressed
	Purity 99%				+/-	151.2320	µg/mL	Stressed
59	4-Chlorotoluene		2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetric
	CAS # 106-43-4.SEC	(Lot P4XHJ-AO)			+/-	150.8889	µg/mL	Unstressed
	Purity 99%				+/-	151.2471	µg/mL	Stressed
60	tert-Butylbenzene		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 98-06-6.SEC	(Lot OGN01-CAI)			+/-	150.8662	µg/mL	Unstressed
	Purity 99%				+/-	151.2244	µg/mL	Stressed
61	1,3,5-Trimethylbenzene		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 108-67-8.SEC	(Lot FGH02-CMLN)			+/-	150.8813	µg/mL	Unstressed
	Purity 99%				+/-	151.2395	µg/mL	Stressed
62	sec-Butylbenzene		2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetric
	CAS # 135-98-8.SEC	(Lot OGN01-IMA)			+/-	150.8889	µg/mL	Unstressed
	Purity 99%				+/-	151.2471	µg/mL	Stressed
63	4-Isopropyltoluene (p-cymene)		2,501.5	µg/mL	+/-	14.5441	µg/mL	Gravimetric
	CAS # 99-87-6.SEC	(Lot 1195000)			+/-	150.9278	µg/mL	Unstressed
	Purity 96%				+/-	151.2861	µg/mL	Stressed
64	1,3-Dichlorobenzene		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 541-73-1.SEC	(Lot FMDFD)			+/-	150.9341	µg/mL	Unstressed
	Purity 99%				+/-	151.2925	µg/mL	Stressed
65	1,4-Dichlorobenzene		2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 106-46-7.SEC	(Lot 4Y5DC)			+/-	150.9040	µg/mL	Unstressed
	Purity 99%				+/-	151.2622	µg/mL	Stressed
66	n-Butylbenzene		2,501.4	µg/mL	+/-	14.5432	µg/mL	Gravimetric
	CAS # 104-51-8.SEC	(Lot OGN01-PNP)			+/-	150.9190	µg/mL	Unstressed
	Purity 99%				+/-	151.2773	µg/mL	Stressed
67	1,2-Dichlorobenzene		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 95-50-1.SEC	(Lot 4NRGF-OT)			+/-	150.8512	µg/mL	Unstressed
	Purity 99%				+/-	151.2093	µg/mL	Stressed
68	1,2-Dibromo-3-chloropropane		2,500.3	µg/mL	+/-	14.5369	µg/mL	Gravimetric
	CAS # 96-12-8.SEC	(Lot LC00408V)			+/-	150.8539	µg/mL	Unstressed
	Purity 97%				+/-	151.2121	µg/mL	Stressed
69	1,2,4-Trichlorobenzene		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 120-82-1.SEC	(Lot 3LYYC)			+/-	150.8587	µg/mL	Unstressed
	Purity 99%				+/-	151.2169	µg/mL	Stressed
70	Hexachlorobutadiene		2,500.7	µg/mL	+/-	14.5394	µg/mL	Gravimetric
	CAS # 87-68-3.SEC	(Lot 4974700)			+/-	150.8792	µg/mL	Unstressed
	Purity 98%				+/-	151.2374	µg/mL	Stressed
71	Naphthalene		2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS # 91-20-3.SEC	(Lot SKZ5N)			+/-	150.8361	µg/mL	Unstressed
	Purity 99%				+/-	151.1942	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2,501.6 µg/mL	+/-	14.5444	µg/mL	Gravimetric
	CAS # 87-61-6.SEC	(Lot A0043055)		+/-	150.9310	µg/mL	Unstressed
	Purity 98%			+/-	151.2893	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

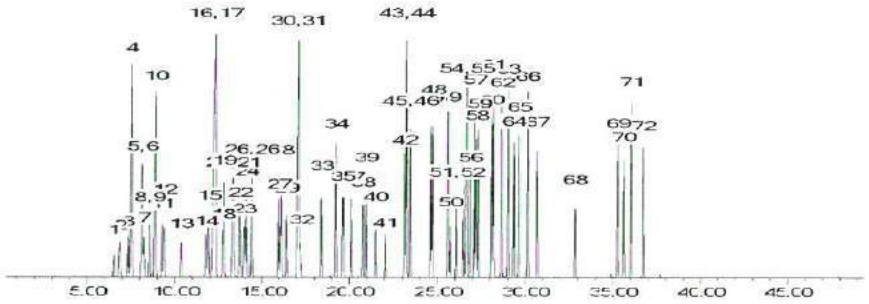
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Maye

Date Mixed: 25-Jul-2016 **Balance:** 1127510105

Jennifer L Pollino

Jennifer L. Pollino - QC Analyst

Date Passed: 28-Jul-2016

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Method 8260B

Volatile Organic Compounds (GC/MS) by Method 8260B

FORM II
GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Matrix: Water (TCLP) Level: Low

GC Column (1): DB-624 (60. ID: 0.25(mm)

Client Sample ID	Lab Sample ID	DBFM #	DCA #	TOL #	BFB #
BNA-IDW-W-01	320-36960-26	97	88	100	97
	LB3 280-408888/1-A	95	86	100	102
	LCS 280-408888/2-A	95	84	100	97

	QC LIMITS
DBFM = Dibromofluoromethane (Surr)	79-119
DCA = 1,2-Dichloroethane-d4 (Surr)	64-129
TOL = Toluene-d8 (Surr)	78-120
BFB = 4-Bromofluorobenzene (Surr)	78-121

Column to be used to flag recovery values

FORM II 8260B

FORM II
GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Matrix: Solid (TCLP) Level: Low

GC Column (1): DB-VRX ID: 0.25(mm)

Client Sample ID	Lab Sample ID	DBFM #	DCA #	TOL #	BFB #
BNA-IDW-5-01	320-36960-21	99	104	101	94
	MB 580-269508/1-A	98	103	101	95
	LCS 580-269508/2-A	98	102	103	97
	LCSD 580-269508/3-A	98	101	102	96

	QC LIMITS
DBFM = Dibromofluoromethane (Surr)	77-120
DCA = 1,2-Dichloroethane-d4 (Surr)	80-126
TOL = Toluene-d8 (Surr)	80-122
BFB = 4-Bromofluorobenzene (Surr)	75-125

Column to be used to flag recovery values

FORM II 8260B

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Matrix: Water (TCLP) Level: Low Lab File ID: R7874.D

Lab ID: LCS 280-408888/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC	QC LIMITS REC	#
Benzene	0.0500	0.0458	92	74-135	
2-Butanone (MEK)	0.200	0.163	81	44-150	
Carbon tetrachloride	0.0500	0.0480	96	67-135	
Chlorobenzene	0.0500	0.0458	92	76-135	
Chloroform	0.0500	0.0452	90	76-120	
1,2-Dichloroethane	0.0500	0.0418	84	70-135	
1,1-Dichloroethene	0.0500	0.0447	89	71-136	
Tetrachloroethene	0.0500	0.0469	94	70-135	
Trichloroethene	0.0500	0.0440	88	73-135	
Vinyl chloride	0.0500	0.0551	110	40-144	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Matrix: Solid (TCLP) Level: Low Lab File ID: C241831.D

Lab ID: LCS 580-269508/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Benzene	1000	1090	109	75-120	D
2-Butanone (MEK)	5000	6150	123	58-135	D
Carbon tetrachloride	1000	1190	119	72-124	D
Chlorobenzene	1000	1040	104	80-120	D
Chloroform	1000	1040	104	80-119	D
1,2-Dichloroethane	1000	1070	107	76-131	D
1,1-Dichloroethene	1000	1150	115	70-129	D
Tetrachloroethene	1000	1000	100	76-124	D
Trichloroethene	1000	1040	104	70-125	D
Vinyl chloride	1000	1370	137	20-150	D

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM III
GC/MS VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Matrix: Solid (TCLP) Level: Low Lab File ID: C241832.D

Lab ID: LCSD 580-269508/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Benzene	1000	1200	120	9	14	75-120	D
2-Butanone (MEK)	5000	5840	117	5	35	58-135	D
Carbon tetrachloride	1000	1220	122	3	19	72-124	D
Chlorobenzene	1000	1100	110	5	15	80-120	D
Chloroform	1000	1120	112	7	15	80-119	D
1,2-Dichloroethane	1000	1110	111	3	11	76-131	D
1,1-Dichloroethene	1000	1230	123	7	27	70-129	D
Tetrachloroethene	1000	1070	107	7	20	76-124	D
Trichloroethene	1000	1100	110	6	15	70-125	D
Vinyl chloride	1000	1520	152	10	35	20-150	Q D

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab File ID: C241830.D Lab Sample ID: MB 580-269508/1-A

Matrix: Solid (TCLP) Heated Purge:(Y/N) N

Instrument ID: SEA102 Date Analyzed: 03/25/2018 03:49

GC Column: DB-VRX ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 580-269508/2-A	C241831.D	03/25/2018 04:17
	LCSD 580-269508/3-A	C241832.D	03/25/2018 04:45
BNA-IDW-5-01	320-36960-21	C241833.D	03/25/2018 05:14

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab File ID: R6827.D BFB Injection Date: 03/05/2018

Instrument ID: VMS_R1 BFB Injection Time: 06:53

Analysis Batch No.: 406767

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	18.2	
75	30.0 - 60.0 % of mass 95	48.0	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	8.2	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	70.5	
175	5.0 - 9.0 % of mass 174	5.0	(7.0) 1
176	95.0 - 101.0 % of mass 174	69.1	(98.0) 1
177	5.0 - 9.0 % of mass 176	4.8	(6.9) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	STD 280-406767/10	R6830.D	03/05/2018	07:47
	STD 280-406767/11	R6831.D	03/05/2018	08:06
	STD 280-406767/12	R6832.D	03/05/2018	08:25
	ICIS 280-406767/13	R6833.D	03/05/2018	08:44
	STD 280-406767/14	R6834.D	03/05/2018	09:03
	STD 280-406767/15	R6835.D	03/05/2018	09:22
	ICV 280-406767/16	R6836.D	03/05/2018	09:41

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab File ID: R7050.D BFB Injection Date: 03/08/2018

Instrument ID: VMS_R1 BFB Injection Time: 18:35

Analysis Batch No.: 407291

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	17.8	
75	30.0 - 60.0 % of mass 95	48.2	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	7.8	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	71.4	
175	5.0 - 9.0 % of mass 174	5.1	(7.2) 1
176	95.0 - 101.0 % of mass 174	68.2	(95.5) 1
177	5.0 - 9.0 % of mass 176	4.8	(7.1) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	STD003 280-407291/11	R7052.D	03/08/2018	19:13
	STD01 280-407291/12	R7053.D	03/08/2018	19:33
	STD02 280-407291/13	R7054.D	03/08/2018	19:52
	STD05 280-407291/14	R7055.D	03/08/2018	20:11
	ICIS 280-407291/15	R7056.D	03/08/2018	20:30
	STD30 280-407291/16	R7057.D	03/08/2018	20:49
	STD60 280-407291/17	R7058.D	03/08/2018	21:08
	ICV 280-407291/18	R7060.D	03/08/2018	21:47

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab File ID: R7378.D BFB Injection Date: 03/15/2018

Instrument ID: VMS_R1 BFB Injection Time: 17:35

Analysis Batch No.: 408044

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	19.2	
75	30.0 - 60.0 % of mass 95	50.4	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	7.7	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	74.4	
175	5.0 - 9.0 % of mass 174	5.3	(7.1) 1
176	95.0 - 101.0 % of mass 174	71.5	(96.2) 1
177	5.0 - 9.0 % of mass 176	4.6	(6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	STD2 280-408044/10	R7382.D	03/15/2018	18:53
	STD5 280-408044/11	R7383.D	03/15/2018	19:12
	STD10 280-408044/12	R7384.D	03/15/2018	19:31
	STD30 280-408044/13	R7385.D	03/15/2018	19:50
	STD60 280-408044/14	R7386.D	03/15/2018	20:09
	ICV 280-408044/15	R7387.D	03/15/2018	20:28

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab File ID: R7858.D BFB Injection Date: 03/27/2018

Instrument ID: VMS_R1 BFB Injection Time: 06:23

Analysis Batch No.: 409141

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	19.5	
75	30.0 - 60.0 % of mass 95	49.2	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	7.7	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	70.6	
175	5.0 - 9.0 % of mass 174	5.1	(7.2) 1
176	95.0 - 101.0 % of mass 174	68.0	(96.3) 1
177	5.0 - 9.0 % of mass 176	5.1	(7.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCV 280-409141/2	R7860.D	03/27/2018	07:07
	CCV 280-409141/3	R7861.D	03/27/2018	07:26
	LCS 280-408888/2-A	R7874.D	03/27/2018	12:21
	LB3 280-408888/1-A	R7875.D	03/27/2018	12:40
BNA-IDW-W-01	320-36960-26	R7879.D	03/27/2018	13:56
	CCVC 280-409141/28	R7881.D	03/27/2018	14:35

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab File ID: C211802.D BFB Injection Date: 03/21/2018

Instrument ID: SEA102 BFB Injection Time: 11:40

Analysis Batch No.: 269589

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	22.2	
75	30.0 - 60.0 % of mass 95	48.5	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.6	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	88.8	
175	5.0 - 9.0 % of mass 174	6.4	(7.2) 1
176	95.0 - 101.0 % of mass 174	88.5	(99.7) 1
177	5.0 - 9.0 % of mass 176	5.9	(6.7) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 580-269589/3	C211803.D	03/21/2018	12:09
	IC 580-269589/4	C211804.D	03/21/2018	12:37
	IC 580-269589/5	C211805.D	03/21/2018	13:07
	IC 580-269589/6	C211806.D	03/21/2018	13:35
	ICIS 580-269589/7	C211807.D	03/21/2018	14:04
	IC 580-269589/8	C211808.D	03/21/2018	14:32
	IC 580-269589/9	C211809.D	03/21/2018	15:01
	IC 580-269589/10	C211810.D	03/21/2018	15:30
	ICV 580-269589/12	C211812.D	03/21/2018	16:28

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab File ID: C241827.D BFB Injection Date: 03/25/2018

Instrument ID: SEA102 BFB Injection Time: 02:23

Analysis Batch No.: 269828

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	22.8	
75	30.0 - 60.0 % of mass 95	48.9	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.6	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	86.7	
175	5.0 - 9.0 % of mass 174	6.3	(7.3) 1
176	95.0 - 101.0 % of mass 174	86.2	(99.5) 1
177	5.0 - 9.0 % of mass 176	5.5	(6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 580-269828/3	C241828.D	03/25/2018	02:52
	MB 580-269508/1-A	C241830.D	03/25/2018	03:49
	LCS 580-269508/2-A	C241831.D	03/25/2018	04:17
	LCSD 580-269508/3-A	C241832.D	03/25/2018	04:45
BNA-IDW-5-01	320-36960-21	C241833.D	03/25/2018	05:14
	CCVC 580-269828/13	C241837.D	03/25/2018	07:07

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Sample No.: ICIS 280-406767/13 Date Analyzed: 03/05/2018 08:44

Instrument ID: VMS_R1 GC Column: DB-624 (60.25) ID: 0.25(mm)

Lab File ID (Standard): R6833.D Heated Purge: (Y/N) N

Calibration ID: 31802

		TBAd9		FB		CBNZd5	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		103940	5.22	1511639	7.15	317032	9.45
UPPER LIMIT		207880	5.72	3023278	7.65	634064	9.95
LOWER LIMIT		51970	4.72	755820	6.65	158516	8.95
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 280-406767/16		110667	5.22	1571960	7.15	329540	9.45

TBAd9 = TBA-d9 (IS)
FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Sample No.: ICIS 280-406767/13 Date Analyzed: 03/05/2018 08:44

Instrument ID: VMS_R1 GC Column: DB-624 (60.25) ID: 0.25(mm)

Lab File ID (Standard): R6833.D Heated Purge: (Y/N) N

Calibration ID: 31802

		DCBd4					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		424751	11.22				
UPPER LIMIT		849502	11.72				
LOWER LIMIT		212376	10.72				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 280-406767/16		436197	11.22				

DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Sample No.: ICIS 280-407291/15 Date Analyzed: 03/08/2018 20:30

Instrument ID: VMS_R1 GC Column: DB-624 (60.25) ID: 0.25(mm)

Lab File ID (Standard): R7056.D Heated Purge: (Y/N) N

Calibration ID: 31836

		TBAd9		FB		CBNZd5	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		144888	5.22	1471333	7.15	319333	9.45
UPPER LIMIT		289776	5.72	2942666	7.65	638666	9.95
LOWER LIMIT		72444	4.72	735667	6.65	159667	8.95
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 280-407291/18		160509	5.22	1588225	7.15	340508	9.45
CCV 280-409141/2		118362	5.22	1754614	7.15	385901	9.45
CCV 280-409141/3		128231	5.22	1815335	7.15	389499	9.45
LCS 280-408888/2-A		154706	5.22	2020733	7.15	438067	9.45
LB3 280-408888/1-A		145732	5.22	1891184	7.15	405557	9.45
320-36960-26	BNA-IDW-W-01	142315	5.22	1794456	7.15	389248	9.45
CCVC 280-409141/28		153976	5.22	1905895	7.15	421476	9.45

TBAd9 = TBA-d9 (IS)
FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Sample No.: ICIS 280-407291/15 Date Analyzed: 03/08/2018 20:30

Instrument ID: VMS_R1 GC Column: DB-624 (60.25) ID: 0.25(mm)

Lab File ID (Standard): R7056.D Heated Purge: (Y/N) N

Calibration ID: 31836

		DCBd4					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		461607	11.22				
UPPER LIMIT		923214	11.72				
LOWER LIMIT		230804	10.72				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 280-407291/18		482264	11.22				
CCV 280-409141/2		552122	11.22				
CCV 280-409141/3		500198	11.22				
LCS 280-408888/2-A		618423	11.22				
LB3 280-408888/1-A		544295	11.22				
320-36960-26	BNA-IDW-W-01	527069	11.22				
CCVC 280-409141/28		605028	11.22				

DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Sample No.: ICIS 580-269589/7 Date Analyzed: 03/21/2018 14:04

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm)

Lab File ID (Standard): C211807.D Heated Purge: (Y/N) N

Calibration ID: 26096

		TBAd9		FB		CBNZd5	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		811907	6.41	1364764	9.33	548520	12.28
UPPER LIMIT		1623814	6.91	2729528	9.83	1097040	12.78
LOWER LIMIT		405954	5.91	682382	8.83	274260	11.78
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 580-269589/12		904804	6.42	1346028	9.34	541184	12.27

TBAd9 = TBA-d9 (IS)
FB = Fluorobenzene (IS)
CBNZd5 = Chlorobenzene-d5

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Sample No.: ICIS 580-269589/7 Date Analyzed: 03/21/2018 14:04

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm)

Lab File ID (Standard): C211807.D Heated Purge: (Y/N) N

Calibration ID: 26096

		DCBd4					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		664680	14.57				
UPPER LIMIT		1329360	15.07				
LOWER LIMIT		332340	14.07				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 580-269589/12		662768	14.57				

DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Sample No.: CCVIS 580-269828/3 Date Analyzed: 03/25/2018 02:52

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm)

Lab File ID (Standard): C241828.D Heated Purge: (Y/N) N

Calibration ID: 26096

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1353433	9.34	592446	12.27	616711	14.57
UPPER LIMIT		2706866	9.84	1184892	12.77	1233422	15.07
LOWER LIMIT		676717	8.84	296223	11.77	308356	14.07
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 580-269508/1-A		1340120	9.34	562755	12.27	589641	14.57
LCS 580-269508/2-A		1347371	9.33	576095	12.27	613319	14.57
LCSD 580-269508/3-A		1340049	9.34	548795	12.27	578632	14.57
320-36960-21	BNA-IDW-5-01	1335049	9.33	569584	12.28	590149	14.57
CCVC 580-269828/13		1344119	9.33	583403	12.27	575753	14.57

FB = Fluorobenzene (IS)
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA-IDW-W-01 | Lab Sample ID: 320-36960-26

Matrix: Water (TCLP) | Lab File ID: R7879.D

Analysis Method: 8260B | Date Collected: 03/09/2018 15:20

Sample wt/vol: 2(mL) | Date Analyzed: 03/27/2018 13:56

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 (60.25) ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 409141 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
71-43-2	Benzene	0.0040	U	0.010	0.0040	0.0016
78-93-3	2-Butanone (MEK)	0.040	U	0.10	0.040	0.018
56-23-5	Carbon tetrachloride	0.0040	U	0.010	0.0040	0.0019
108-90-7	Chlorobenzene	0.0040	U	0.010	0.0040	0.0017
67-66-3	Chloroform	0.0024	J	0.010	0.0040	0.0016
107-06-2	1,2-Dichloroethane	0.0040	U	0.010	0.0040	0.0013
75-35-4	1,1-Dichloroethene	0.0080	U	0.010	0.0080	0.0023
127-18-4	Tetrachloroethene	0.0040	U	0.010	0.0040	0.0020
79-01-6	Trichloroethene	0.0040	U	0.010	0.0040	0.0016
75-01-4	Vinyl chloride	0.0020	U	0.010	0.0020	0.0010

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	100		78-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	88		64-129
460-00-4	4-Bromofluorobenzene (Surr)	97		78-121
1868-53-7	Dibromofluoromethane (Surr)	97		79-119

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7879.D
Lims ID: 320-36960-A-26-A
Client ID: BNA-IDW-W-01
Sample Type: Client
Inject. Date: 27-Mar-2018 13:56:30 ALS Bottle#: 30 Worklist Smp#: 26
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: 320-36960-A-26-A 2ml
Operator ID: wickhamt Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 28-Mar-2018 06:24:52 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK031

First Level Reviewer: wickhamt Date: 27-Mar-2018 14:25:08

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	142315	250.0	
* 1 Fluorobenzene	96	7.154	7.154	0.000	99	1794456	12.5	
* 149 1,4-Dioxane-d8	96		8.013				ND	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	88	389248	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	527069	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.609	-0.007	93	412346	10.9	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.896	-0.008	0	352590	9.93	
$ 7 Toluene-d8 (Surr)	98	8.378	8.386	-0.008	93	2087709	11.2	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	86	643144	11.0	
27 Vinyl chloride	62		3.965				ND	
43 1,1-Dichloroethene	96		4.986				ND	
61 2-Butanone (MEK)	43		6.222				ND	
68 Chloroform	83	6.480	6.480	0.000	93	17250	0.2388	
74 Carbon tetrachloride	117		6.845				ND	
76 1,2-Dichloroethane	62		6.953				ND	
77 Benzene	78		6.982				ND	
79 Trichloroethene	95		7.447				ND	
97 Tetrachloroethene	164		8.865				ND	
102 Chlorobenzene	112		9.474				ND	

Reagents:

MV-568718-D_00014	Amount Added: 1.00	Units: uL	Run Reagent
MV-ARCH SS A_00091	Amount Added: 0.90	Units: uL	Run Reagent

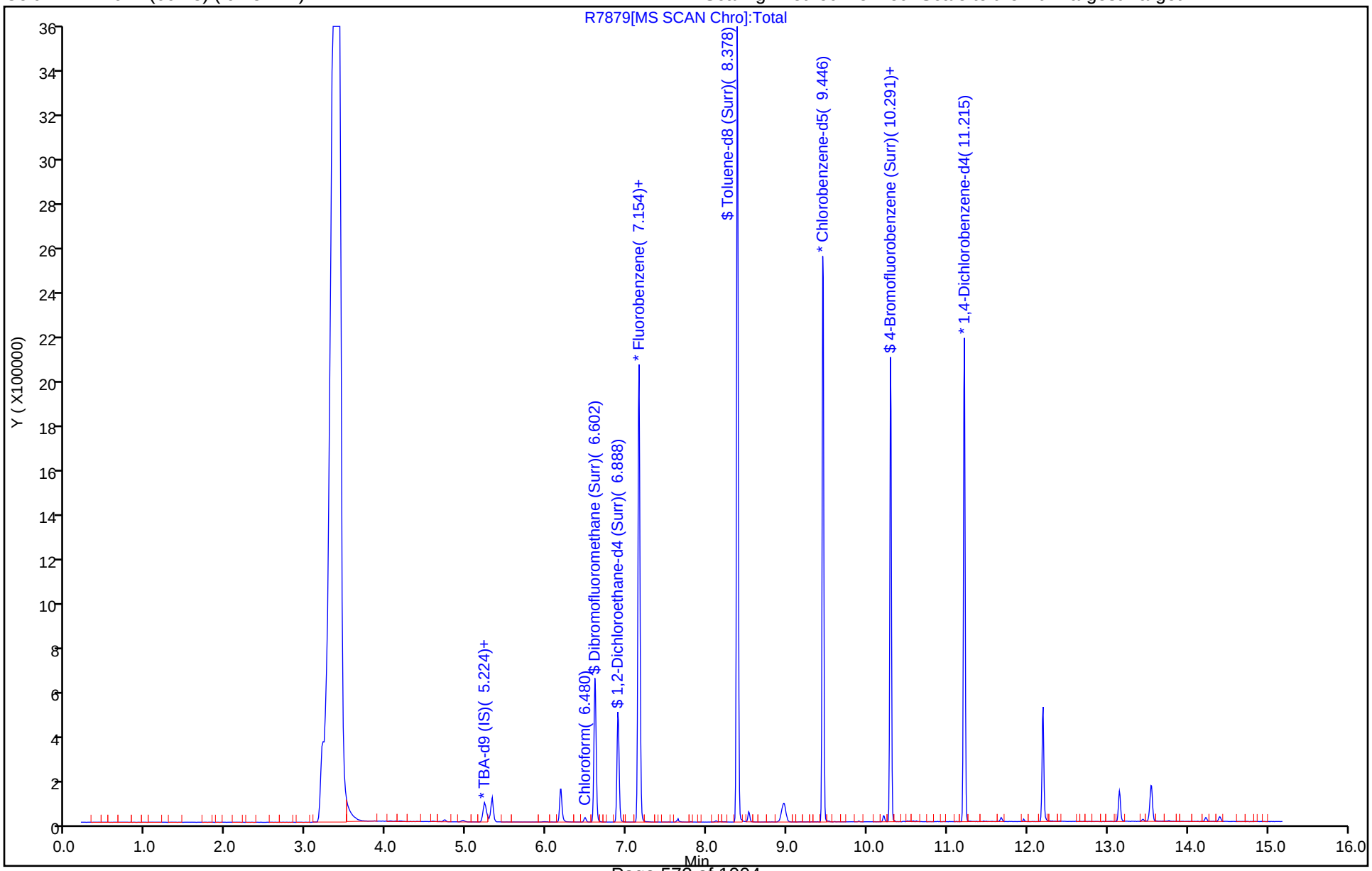
Report Date: 28-Mar-2018 06:25:51 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7879.D

Injection Date:	27-Mar-2018 13:56:30	Instrument ID:	VMS_R1	Operator ID:	wickhamt
Lims ID:	320-36960-A-26-A	Lab Sample ID:	280-36960-26	Worklist Smp#:	26
Client ID:	BNA-IDW-W-01				
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	30
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7879.D
Lims ID: 320-36960-A-26-A
Client ID: BNA-IDW-W-01
Sample Type: Client
Inject. Date: 27-Mar-2018 13:56:30 ALS Bottle#: 30 Worklist Smp#: 26
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: 320-36960-A-26-A 2ml
Operator ID: wickhamt Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 28-Mar-2018 06:24:52 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK031

First Level Reviewer: wickhamt Date: 27-Mar-2018 14:25:08

Compound	Amount Added	Amount Recovered	% Rec.
$ 5 Dibromofluoromethane (Surr)	11.3	10.9	96.65
$ 6 1,2-Dichloroethane-d4 (Surr)	11.3	9.93	88.29
$ 7 Toluene-d8 (Surr)	11.3	11.2	99.55
$ 8 4-Bromofluorobenzene (Surr)	11.3	11.0	97.33

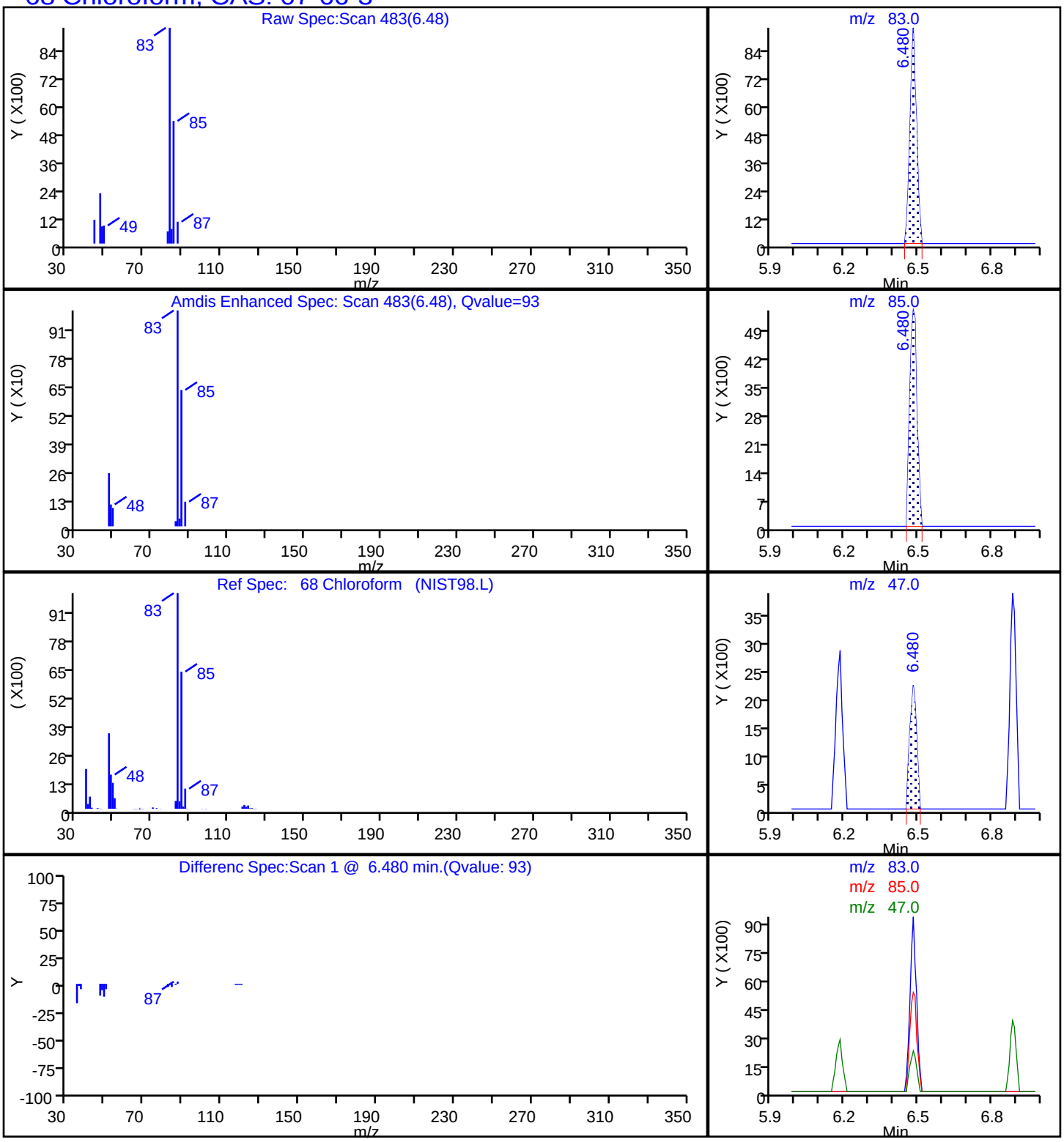
Report Date: 28-Mar-2018 06:25:51 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7879.D

Injection Date:	27-Mar-2018 13:56:30	Instrument ID:	VMS_R1
Lims ID:	320-36960-A-26-A	Lab Sample ID:	280-36960-26
Client ID:	BNA-IDW-W-01		
Operator ID:	wickhamt	ALS Bottle#:	30 Worklist Smp#: 26
Purge Vol:	20.000 mL	Dil. Factor:	1.0000
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid
Column:	DB-624 (60.25) (0.25 mm)	Detector	MS SCAN

68 Chloroform, CAS: 67-66-3



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA-IDW-5-01 | Lab Sample ID: 320-36960-21

Matrix: Solid (TCLP) | Lab File ID: C241833.D

Analysis Method: 8260B | Date Collected: 03/08/2018 16:55

Sample wt/vol: 5(mL) | Date Analyzed: 03/25/2018 05:14

Soil Aliquot Vol: | Dilution Factor: 100

Soil Extract Vol.: | GC Column: DB-VRX ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269828 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
71-43-2	Benzene	200	U M	300	200	53
78-93-3	2-Butanone (MEK)	1000	U	2000	1000	470
56-23-5	Carbon tetrachloride	100	U	300	100	30
108-90-7	Chlorobenzene	100	U	200	100	44
67-66-3	Chloroform	100	U	500	100	50
107-06-2	1,2-Dichloroethane	200	U M	200	200	53
75-35-4	1,1-Dichloroethene	200	U	400	200	78
127-18-4	Tetrachloroethene	100	U	300	100	41
79-01-6	Trichloroethene	200	U	300	200	85
75-01-4	Vinyl chloride	50	U Q	100	50	22

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	101		80-122
17060-07-0	1,2-Dichloroethane-d4 (Surr)	104		80-126
460-00-4	4-Bromofluorobenzene (Surr)	94		75-125
1868-53-7	Dibromofluoromethane (Surr)	99		77-120

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241833.D
Lims ID: 320-36960-A-21-A
Client ID: BNA-IDW-5-01
Sample Type: Client
Inject. Date: 25-Mar-2018 05:14:30 ALS Bottle#: 33 Worklist Smp#: 9
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Sample Info: 320-36960-a-21-a
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 11:31:24 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:31:24

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
* 16 TBA-d9 (IS)	65	6.408	6.411	-0.003	0	1105697	975.0	
34 2-Butanone (MEK)	72	7.867	7.864	0.003	98	1380	1.34	
$ 43 Dibromofluoromethane (Surr	113	8.293	8.296	-0.003	94	343647	48.3	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.682	8.680	0.002	0	441899	50.8	
46 1,2-Dichloroethane	62	8.743	8.743	-0.003	32	1638	0.1444	Ma
* 54 Fluorobenzene (IS)	96	9.333	9.336	-0.003	97	1335049	48.8	
$ 73 Toluene-d8 (Surr)	98	10.914	10.918	-0.004	94	1266410	49.1	
* 85 Chlorobenzene-d5	82	12.276	12.274	0.002	88	569584	48.8	
$ 97 4-Bromofluorobenzene (Surr	95	13.401	13.405	-0.004	90	507938	46.0	
* 109 1,4-Dichlorobenzene-d4	152	14.569	14.566	0.003	96	590149	48.8	

QC Flag Legend

Review Flags
M - Manually Integrated
a - User Assigned ID

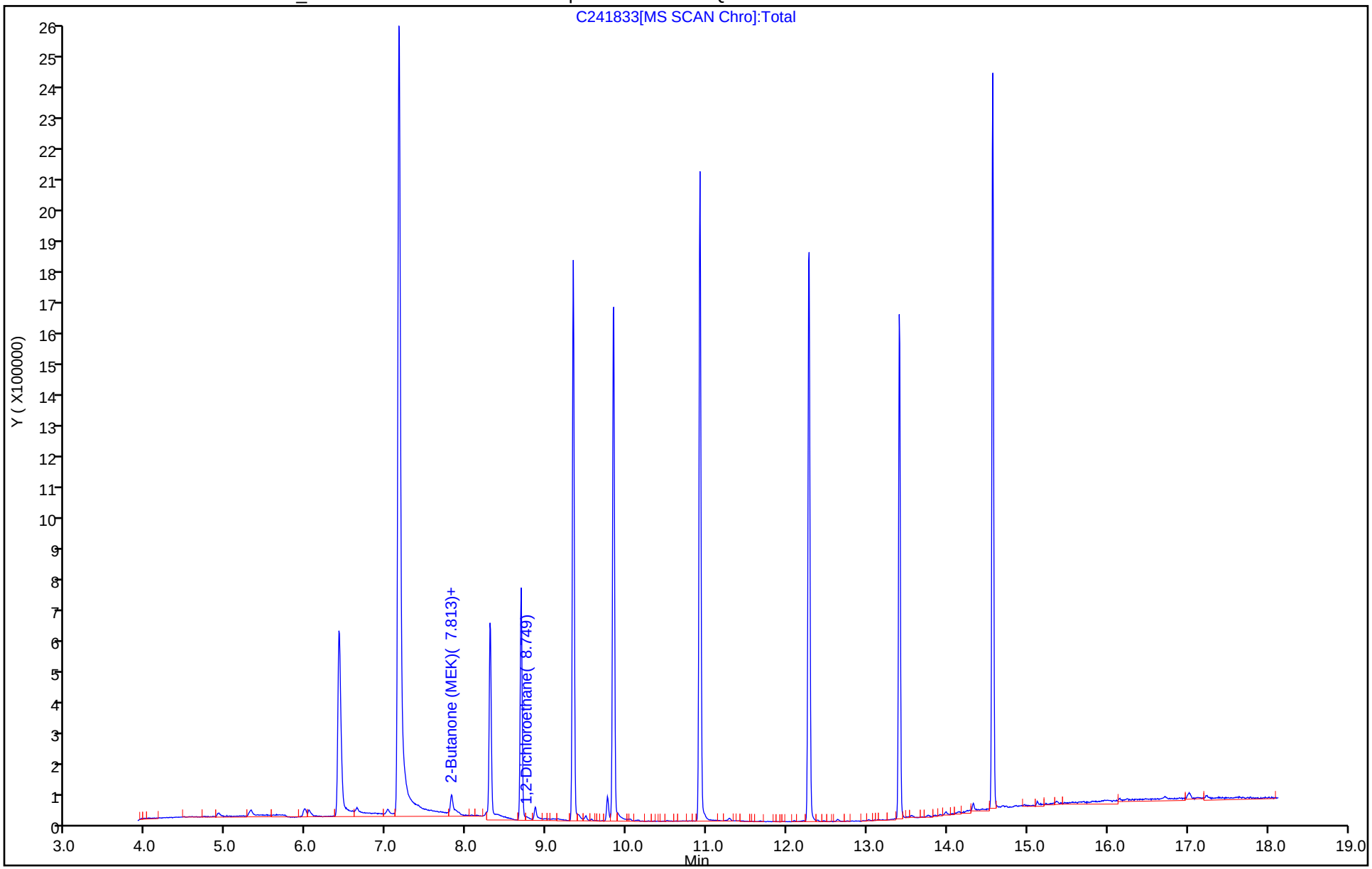
Reagents:

SURR/IS/TFT_00100 Amount Added: 1.00 Units: uL Run Reagent

Report Date: 26-Mar-2018 11:31:24 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File:	\\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241833.D				
Injection Date:	25-Mar-2018 05:14:30	Instrument ID:	SEA102	Operator ID:	JSM
Lims ID:	320-36960-A-21-A	Lab Sample ID:	580-36960-21	Worklist Smp#:	9
Client ID:	BNA-IDW-5-01				
Purge Vol:	5.000 mL	Dil. Factor:	100.0000	ALS Bottle#:	33
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



TestAmerica Seattle
Recovery Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241833.D
Lims ID: 320-36960-A-21-A
Client ID: BNA-IDW-5-01
Sample Type: Client
Inject. Date: 25-Mar-2018 05:14:30 ALS Bottle#: 33 Worklist Smp#: 9
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Sample Info: 320-36960-a-21-a
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 11:31:24 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:31:24

Compound	Amount Added	Amount Recovered	% Rec.
$ 43 Dibromofluoromethane (Surr)	48.8	48.3	99.10
$ 45 1,2-Dichloroethane-d4 (Surr)	48.8	50.8	104.16
$ 64 Trifluorotoluene (Surr)	0.0	0	0.00
$ 73 Toluene-d8 (Surr)	48.8	49.1	100.67
$ 97 4-Bromofluorobenzene (Surr)	48.8	46.0	94.31
$ 125 BFB	0.0	0	0.00

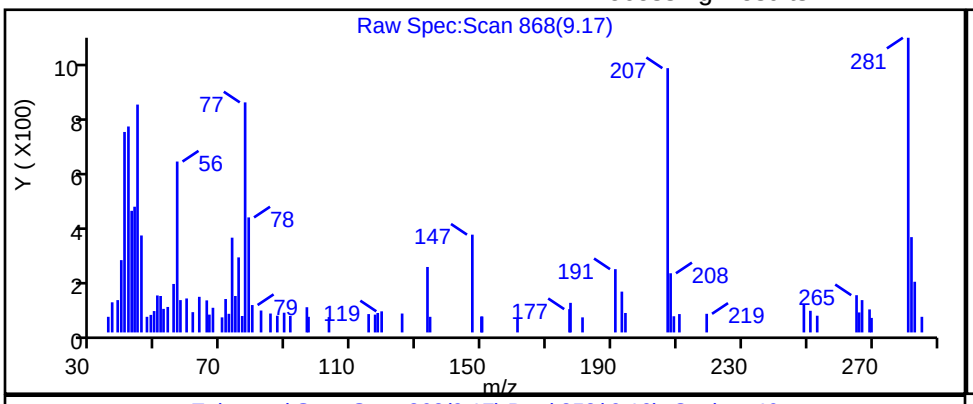
User Disabled Compound Report

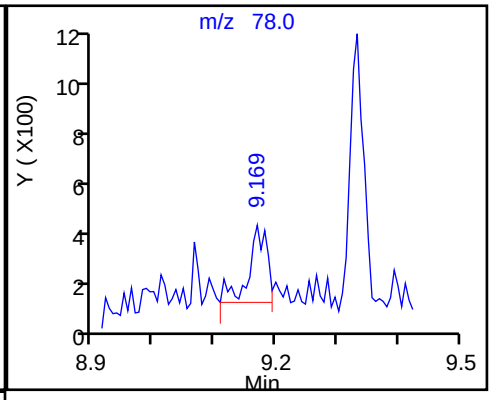
TestAmerica Seattle

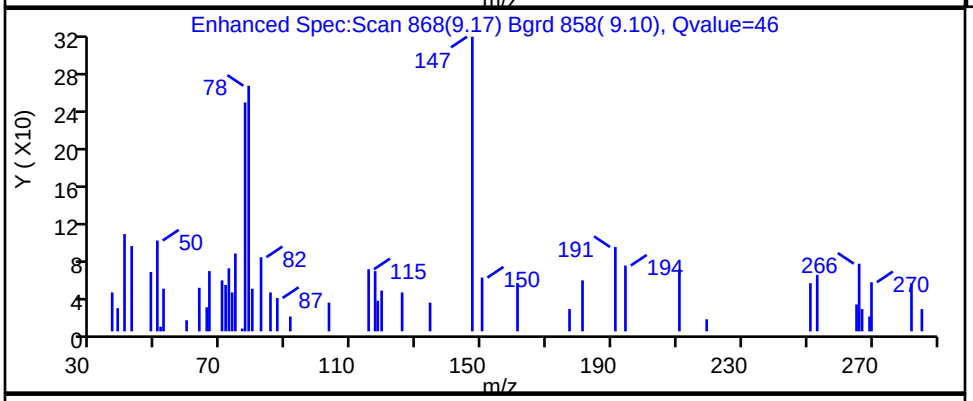
Data File:	\\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241833.D				
Injection Date:	25-Mar-2018 05:14:30	Instrument ID:	SEA102		
Lims ID:	320-36960-A-21-A	Lab Sample ID:	580-36960-21		
Client ID:	BNA-IDW-5-01				
Operator ID:	JSM	ALS Bottle#:	33	Worklist Smp#:	9
Purge Vol:	5.000 mL	Dil. Factor:	100.0000		
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		
Column:		Detector	MS SCAN		

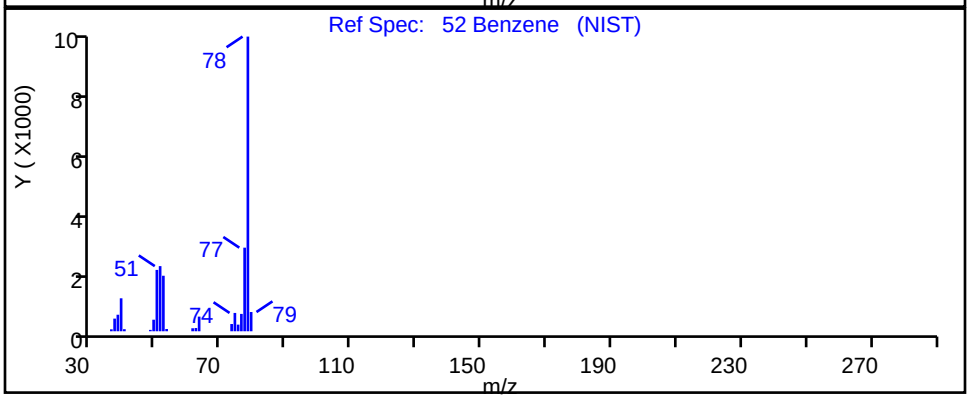
52 Benzene, CAS: 71-43-2

Processing Results









RT	Mass	Response	Amount
9.17	78.00	649	0.021351

Reviewer: pimtongp, 26-Mar-2018 11:31:24

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

TestAmerica Seattle

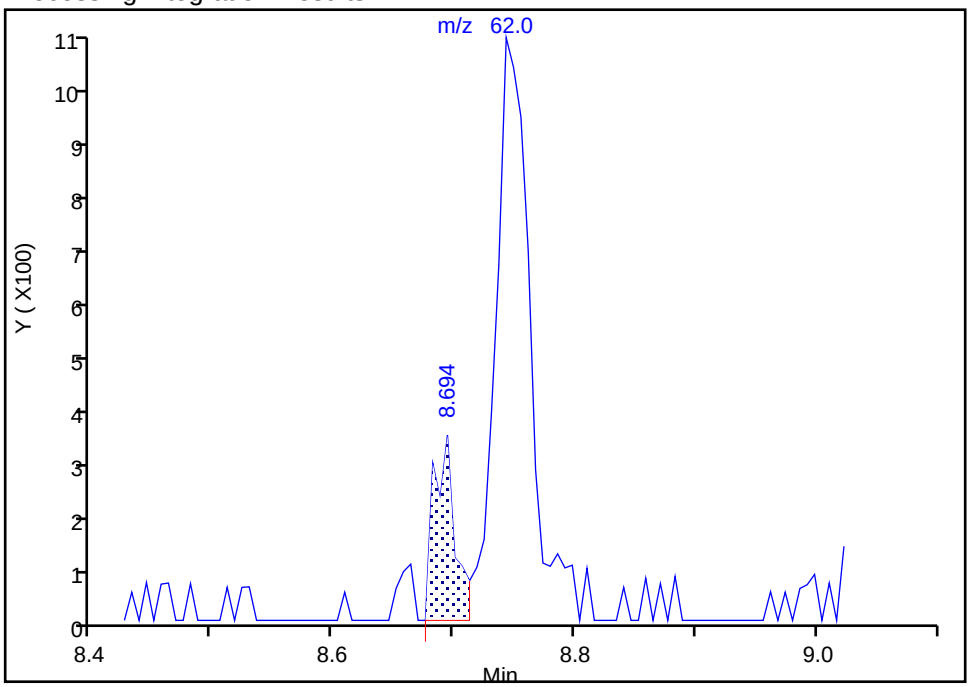
Data File:	\\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241833.D				
Injection Date:	25-Mar-2018 05:14:30	Instrument ID:	SEA102		
Lims ID:	320-36960-A-21-A	Lab Sample ID:	580-36960-21		
Client ID:	BNA-IDW-5-01				
Operator ID:	JSM	ALS Bottle#:	33	Worklist Smp#:	9
Purge Vol:	5.000 mL	Dil. Factor:	100.0000		
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		
Column:		Detector	MS SCAN		

46 1,2-Dichloroethane, CAS: 107-06-2

Signal: 1

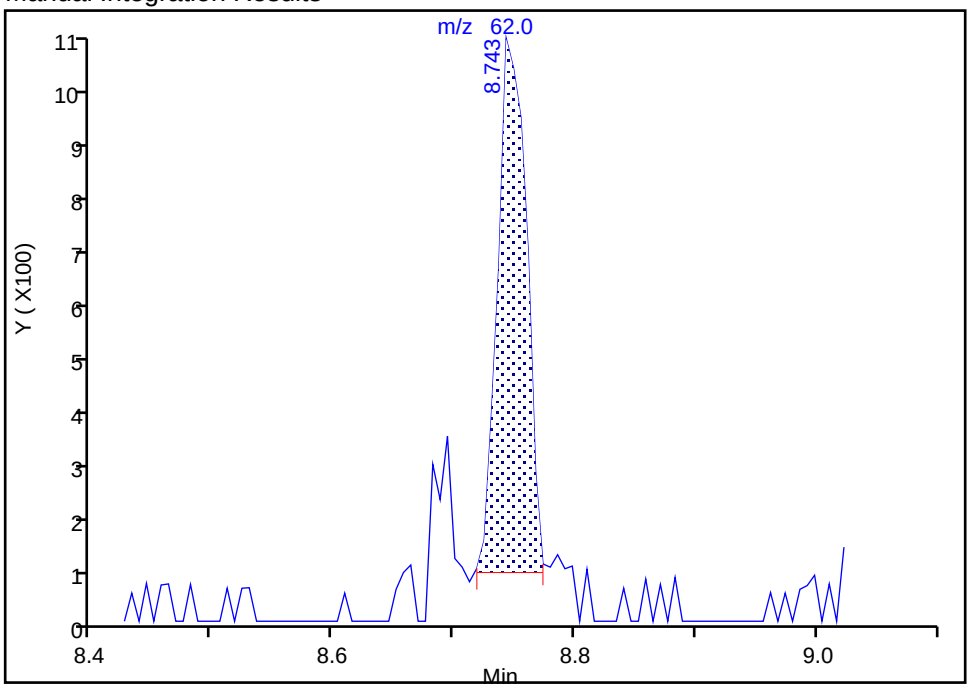
Processing Integration Results

RT: 8.69
Area: 418
Amount: 0.036845
Amount Units: ug/L



Manual Integration Results

RT: 8.74
Area: 1638
Amount: 0.144384
Amount Units: ug/L



Reviewer: pimtongp, 26-Mar-2018 11:30:48

Audit Action: Manually Integrated Audit Reason: Baseline

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 406767

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/05/2018 07:47 Calibration End Date: 03/05/2018 09:22 Calibration ID: 31802

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 280-406767/10	R6830.D
Level 2	STD 280-406767/11	R6831.D
Level 3	STD 280-406767/12	R6832.D
Level 4	ICIS 280-406767/13	R6833.D
Level 5	STD 280-406767/14	R6834.D
Level 6	STD 280-406767/15	R6835.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 3	LVL 4	LVL 5		B	M1	M2								
Ethanol	+++++ 0.1748	0.1488	0.1843	0.1861	0.1436	Ave		0.1675				11.9		15.0			
Isopropyl alcohol	1.8703 1.3615	1.4383	1.4449	1.3272	1.3142	Ave		1.4594				14.3		15.0			
Acetonitrile	0.0099 0.0097	0.0093	0.0104	0.0099	0.0095	Ave		0.0098				3.7		15.0			
Isopropyl ether	0.1904 0.2182	0.1856	0.2138	0.2171	0.2129	Ave		0.2063				7.0		15.0			
2-Chloro-1,3-butadiene	0.5666 0.5893	0.5564	0.6439	0.6441	0.6092	Ave		0.6016				6.3		15.0			
Tert-butyl ethyl ether	0.5050 0.5941	0.5019	0.5745	0.5815	0.5751	Ave		0.5554				7.4		15.0			
Ethyl acetate	0.0782 0.0786	0.0730	0.0778	0.0783	0.0761	Ave		0.0770				2.8		15.0			
Propionitrile	0.0103 0.0111	0.0104	0.0114	0.0113	0.0108	Ave		0.0109				4.2		15.0			
Methacrylonitrile	0.0543 0.0532	0.0536	0.0609	0.0595	0.0541	Ave		0.0559				6.0		15.0			
Tert-amyl methyl ether	0.3457 0.4327	0.3393	0.3999	0.4050	0.4134	Ave		0.3893				9.8		15.0			
n-Butanol	1.1517 0.6341	0.8076	0.6402	0.5737	0.5673	Lin2	14.417	0.5513							0.9910		0.9900
Methyl methacrylate	0.0201 0.0297	0.0209	0.0251	0.0263	0.0278	Lin2	-0.018	0.0278							0.9950		0.9900
2-Nitropropane	0.0095 0.0179	0.0095	0.0117	0.0132	0.0153	Lin1	-0.027	0.0170							0.9900		0.9900
cis-1,4-Dichloro-2-butene	0.1007 0.1495	0.1006	0.1257	0.1304	0.1372	Lin2	-0.091	0.1380							0.9930		0.9900
1,2,3-Trimethylbenzene	4.3348 4.1844	4.1786	4.6480	4.5332	4.4267	Ave		4.3843				4.3		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 406767

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/05/2018 07:47 Calibration End Date: 03/05/2018 09:22 Calibration ID: 31802

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 3	LVL 4	LVL 5		B	M1	M2								
Dibromofluoromethane (Surr)	+++++ 0.2554	0.2275	0.2649	0.2586	0.2498	Ave		0.2512				5.7		15.0			
1,2-Dichloroethane-d4 (Surr)	+++++ 0.2169	0.2119	0.2392	0.2287	0.2152	Ave		0.2224				5.1		15.0			
Toluene-d8 (Surr)	+++++ 5.6117	5.7041	6.5242	6.1959	5.8323	Ave		5.9737				6.4		15.0			
4-Bromofluorobenzene (Surr)	+++++ 1.3802	1.5645	1.5994	1.4885	1.4189	Ave		1.4903				6.2		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 406767

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/05/2018 07:47 Calibration End Date: 03/05/2018 09:22 Calibration ID: 31802

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 280-406767/10	R6830.D
Level 2	STD 280-406767/11	R6831.D
Level 3	STD 280-406767/12	R6832.D
Level 4	ICIS 280-406767/13	R6833.D
Level 5	STD 280-406767/14	R6834.D
Level 6	STD 280-406767/15	R6835.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Ethanol	TBAd9	Ave	+++++ 275960	7348	23867	46418	111169	+++++ 3600	120	300	600	1800
Isopropyl alcohol	TBAd9	Ave	7633 358150	11836	31189	55178	169528	10.0 600	20.0	50.0	100	300
Acetonitrile	FB	Ave	12419 705378	23460	65380	119520	349152	10.0 600	20.0	50.0	100	300
Isopropyl ether	FB	Ave	23985 1594086	46635	135006	262563	783677	1.00 60.0	2.00	5.00	10.0	30.0
2-Chloro-1,3-butadiene	FB	Ave	71363 4306180	139773	406577	778961	2242382	1.00 60.0	2.00	5.00	10.0	30.0
Tert-butyl ethyl ether	FB	Ave	63598 4341128	126092	362754	703228	2116983	1.00 60.0	2.00	5.00	10.0	30.0
Ethyl acetate	FB	Ave	19704 1148722	36654	98259	189334	560360	2.00 120	4.00	10.0	20.0	60.0
Propionitrile	FB	Ave	13021 813926	26169	72105	136490	398166	10.0 600	20.0	50.0	100	300
Methacrylonitrile	FB	Ave	68396 3889656	134528	384453	719066	1991829	10.0 600	20.0	50.0	100	300
Tert-amyl methyl ether	FB	Ave	43541 3161757	85243	252510	489711	1521742	1.00 60.0	2.00	5.00	10.0	30.0
n-Butanol	TBAd9	Lin2	11750 416986	16614	34545	59630	182944	25.0 1500	50.0	125	250	750
Methyl methacrylate	FB	Lin2	5066 434085	10520	31725	63626	204761	2.00 120	4.00	10.0	20.0	60.0
2-Nitropropane	FB	Lin1	2390 261533	4791	14790	31993	112839	2.00 120	4.00	10.0	20.0	60.0
cis-1,4-Dichloro-2-butene	DCBd4	Lin2	6860 609221	14011	44217	88591	286831	2.00 120	4.00	10.0	20.0	60.0
1,2,3-Trimethylbenzene	DCBd4	Ave	147694 8527115	290955	817726	1540379	4626952	1.00 60.0	2.00	5.00	10.0	30.0
Dibromofluoromethane (Surr)	FB	Ave	+++++ 1866280	57141	167269	312703	919518	+++++ 60.0	2.00	5.00	10.0	30.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 406767

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/05/2018 07:47 Calibration End Date: 03/05/2018 09:22 Calibration ID: 31802

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,2-Dichloroethane-d4 (Surr)	FB	Ave	+++++ 1584968	53229	151044	276572	791977	+++++ 60.0	2.00	5.00	10.0	30.0
Toluene-d8 (Surr)	CBNZ d5	Ave	+++++ 8550145	300326	859320	1571450	4538742	+++++ 60.0	2.00	5.00	10.0	30.0
4-Bromofluorobenzene (Surr)	DCBd 4	Ave	+++++ 2812577	108937	281380	505789	1483075	+++++ 60.0	2.00	5.00	10.0	30.0

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD
Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6830.D
Lims ID: STD
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 05-Mar-2018 07:47:30 ALS Bottle#: 13 Worklist Smp#: 10
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD
Operator ID: DOBRANSKYM Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub110

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 05-Mar-2018 12:48:32 Calib Date: 05-Mar-2018 09:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK015

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	102027	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	98	1574359	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.446	0.007	88	321996	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	425896	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	37506	1.00	1.19	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	34673	1.00	1.24	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	94	197305	1.00	1.28	
$ 8 4-Bromofluorobenzene (Surr	95	10.298	10.291	0.007	84	76553	1.00	1.51	
28 Ethylene oxide	43	4.216	4.216	0.000	100	42721	100.0	105.0	
33 Ethanol	45		4.594				ND	ND	
38 Propene oxide	58	4.818	4.818	0.000	97	265778	100.0	106.9	
42 Isopropyl alcohol	45	4.972	4.972	0.000	93	7633	10.0	12.8	
46 Acetonitrile	41	5.168	5.168	0.000	93	12419	10.0	10.1	
56 Isopropyl ether	87	5.825	5.825	0.000	94	23985	1.00	0.9229	
58 2-Chloro-1,3-butadiene	53	5.923	5.923	0.000	92	71363	1.00	0.9418	
59 Tert-butyl ethyl ether	59	6.100	6.100	0.000	96	63598	1.00	0.9092	
60 Ethyl acetate	43	6.222	6.222	0.000	95	19704	2.00	2.03	
65 Propionitrile	54	6.272	6.265	0.007	96	13021	10.0	9.48	
66 Methacrylonitrile	41	6.401	6.394	0.007	92	68396	10.0	9.71	
75 Tert-amyl methyl ether	73	6.982	6.981	0.001	93	43541	1.00	0.8879	
78 n-Butanol	56	7.153	7.182	-0.029	75	11750	25.0	26.1	
81 Methyl methacrylate	100	7.583	7.583	0.000	91	5066	2.00	2.10	
88 2-Nitropropane	41	7.934	7.941	-0.007	96	2390	2.00	2.69	
99 Tetrahydrothiophene	60	9.059	9.059	0.000	91	4243	2.00	2.52	
110 cis-1,4-Dichloro-2-butene	53	10.169	10.169	0.000	0	6860	2.00	2.12	
125 1,2,3-Trimethylbenzene	105	11.244	11.243	0.001	97	147694	1.00	0.9887	
16 1,3,5-Trichlorobenzene	180	12.476	12.476	0.000	96	56463	1.00	0.9865	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Reagents:

MV-ARCH SS A_00091	Amount Added:	0.08	Units: uL
MV-568718-D_00008	Amount Added:	1.00	Units: uL
MV-Supp A_00029	Amount Added:	0.50	Units: uL

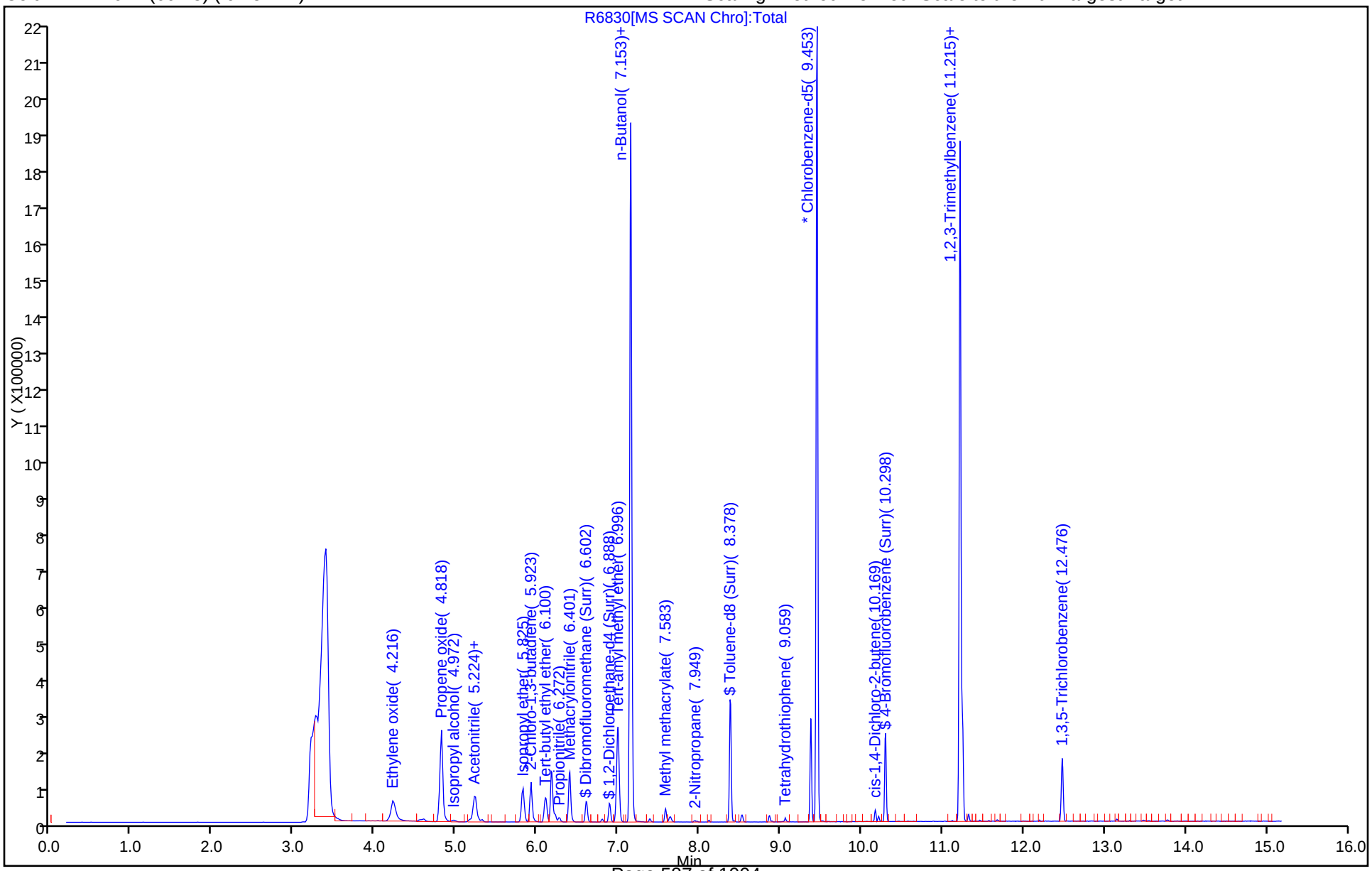
Report Date: 05-Mar-2018 12:48:33 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6830.D

Injection Date:	05-Mar-2018 07:47:30	Instrument ID:	VMS_R1	Operator ID:	DOBRANSKYM
Lims ID:	STD			Worklist Smp#:	10
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	13
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6831.D
Lims ID: STD
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 05-Mar-2018 08:06:30 ALS Bottle#: 14 Worklist Smp#: 11
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD
Operator ID: DOBRANSKYM Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub110

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 05-Mar-2018 12:48:39 Calib Date: 05-Mar-2018 09:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK015

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	102862	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	98	1570057	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.446	0.000	88	329066	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	435181	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	57141	2.00	1.81	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	53229	2.00	1.91	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	93	300326	2.00	1.91	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	84	108937	2.00	2.10	
28 Ethylene oxide	43	4.216	4.216	0.000	100	81613	200.0	201.2	
33 Ethanol	45	4.594	4.594	0.000	57	7348	120.0	106.6	M
38 Propene oxide	58	4.818	4.818	0.000	97	506961	200.0	204.5	
42 Isopropyl alcohol	45	4.972	4.972	0.000	95	11836	20.0	19.7	
46 Acetonitrile	41	5.168	5.168	0.000	99	23460	20.0	19.1	
56 Isopropyl ether	87	5.825	5.825	0.000	93	46635	2.00	1.80	
58 2-Chloro-1,3-butadiene	53	5.923	5.923	0.000	92	139773	2.00	1.85	
59 Tert-butyl ethyl ether	59	6.100	6.100	0.000	97	126092	2.00	1.81	
60 Ethyl acetate	43	6.222	6.222	0.000	98	36654	4.00	3.79	
65 Propionitrile	54	6.272	6.265	0.007	97	26169	20.0	19.1	
66 Methacrylonitrile	41	6.394	6.394	0.000	92	134528	20.0	19.2	
75 Tert-amyl methyl ether	73	6.981	6.981	0.000	94	85243	2.00	1.74	
78 n-Butanol	56	7.153	7.182	-0.029	87	16614	50.0	47.1	M
81 Methyl methacrylate	100	7.583	7.583	0.000	93	10520	4.00	3.66	
88 2-Nitropropane	41	7.941	7.941	0.000	90	4791	4.00	3.82	
99 Tetrahydrothiophene	60	9.059	9.059	0.000	92	8540	4.00	3.73	
110 cis-1,4-Dichloro-2-butene	53	10.169	10.169	0.000	0	14011	4.00	3.57	
125 1,2,3-Trimethylbenzene	105	11.243	11.243	0.000	98	290955	2.00	1.91	
16 1,3,5-Trichlorobenzene	180	12.475	12.476	-0.001	96	112049	2.00	1.92	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

MV-ARCH SS A_00091	Amount Added:	0.16	Units: uL
MV-568718-D_00008	Amount Added:	1.00	Units: uL
MV-Supp A_00029	Amount Added:	1.00	Units: uL

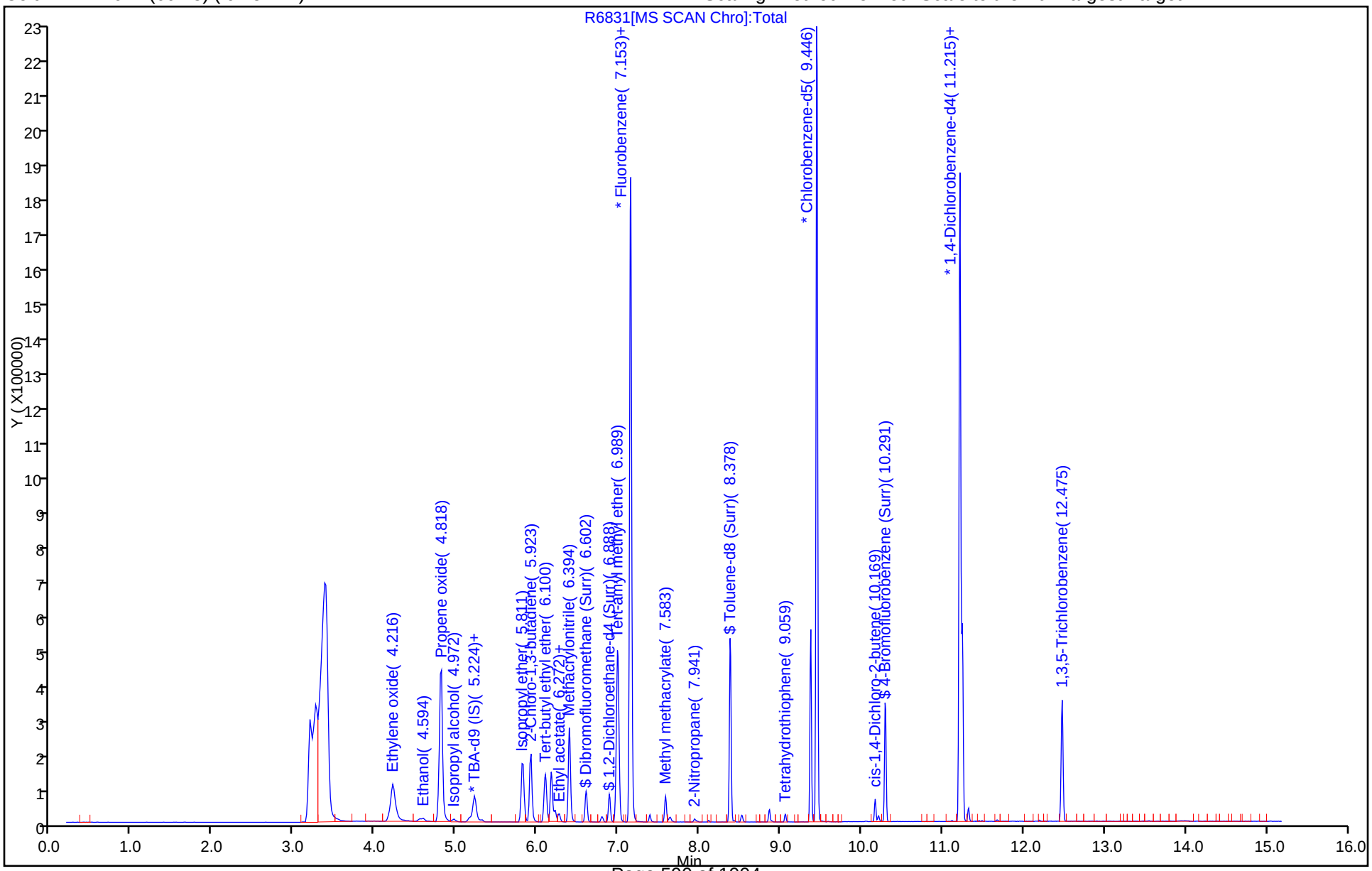
Report Date: 05-Mar-2018 12:48:40 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6831.D

Injection Date:	05-Mar-2018 08:06:30	Instrument ID:	VMS_R1	Operator ID:	DOBRANSKYM
Lims ID:	STD			Worklist Smp#:	11
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	14
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Denver

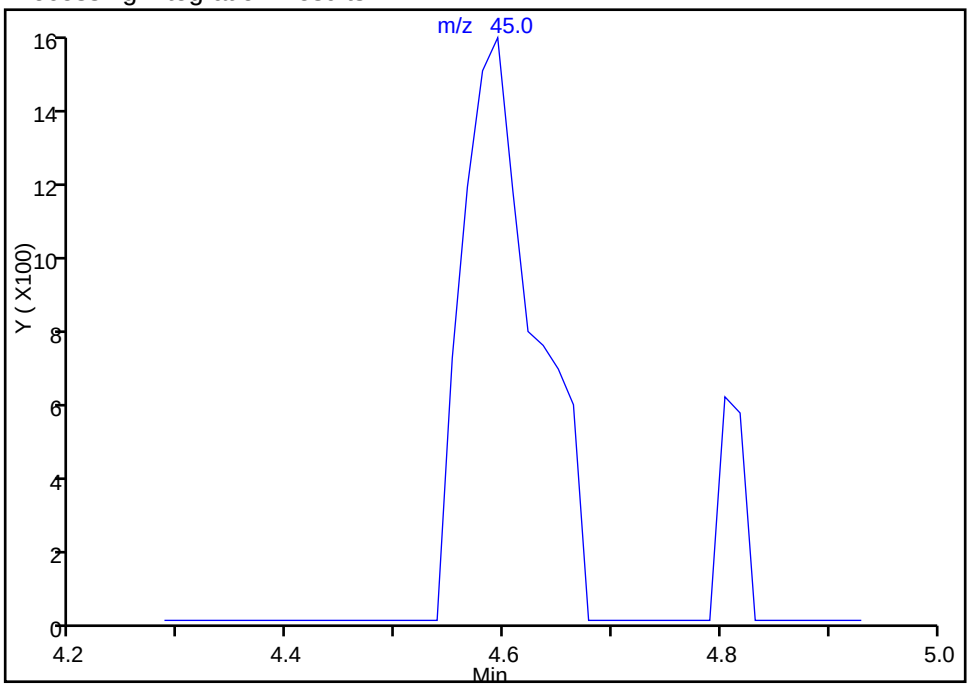
Data File:	\\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6831.D				
Injection Date:	05-Mar-2018 08:06:30	Instrument ID:	VMS_R1		
Lims ID:	STD				
Client ID:					
Operator ID:	DOBRANSKYM	ALS Bottle#:	14	Worklist Smp#:	11
Purge Vol:	20.000 mL	Dil. Factor:	1.0000		
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		
Column:	DB-624 (60.25) (0.25 mm)	Detector	MS SCAN		

33 Ethanol, CAS: 64-17-5

Signal: 1

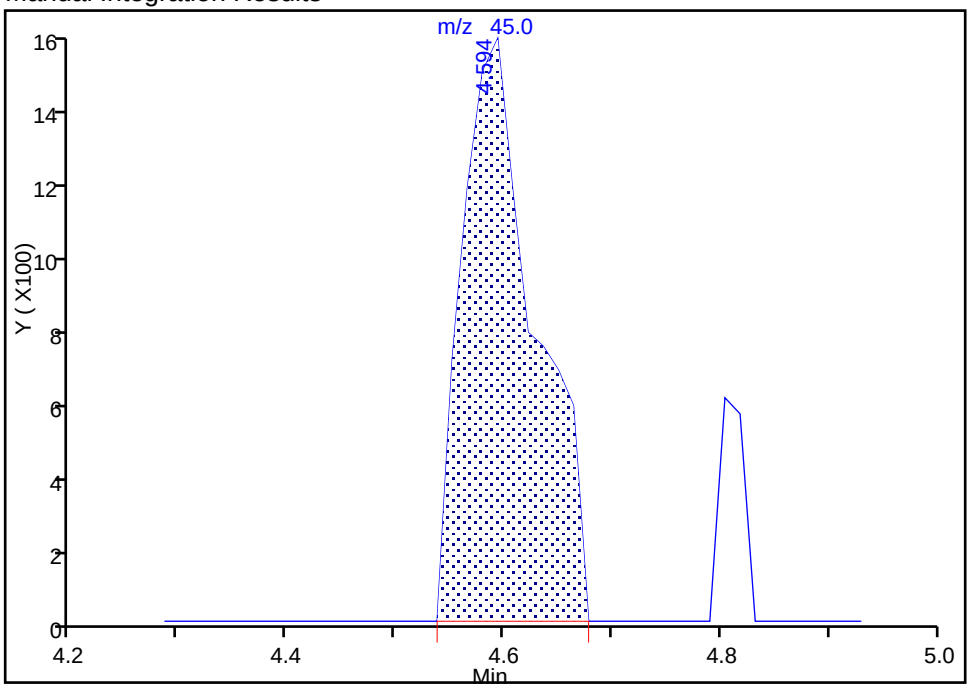
Not Detected
Expected RT: 4.59

Processing Integration Results



Manual Integration Results

RT: 4.59
Area: 7348
Amount: 106.6000
Amount Units: ug/l



Reviewer: dobranskym, 05-Mar-2018 09:36:08
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Denver

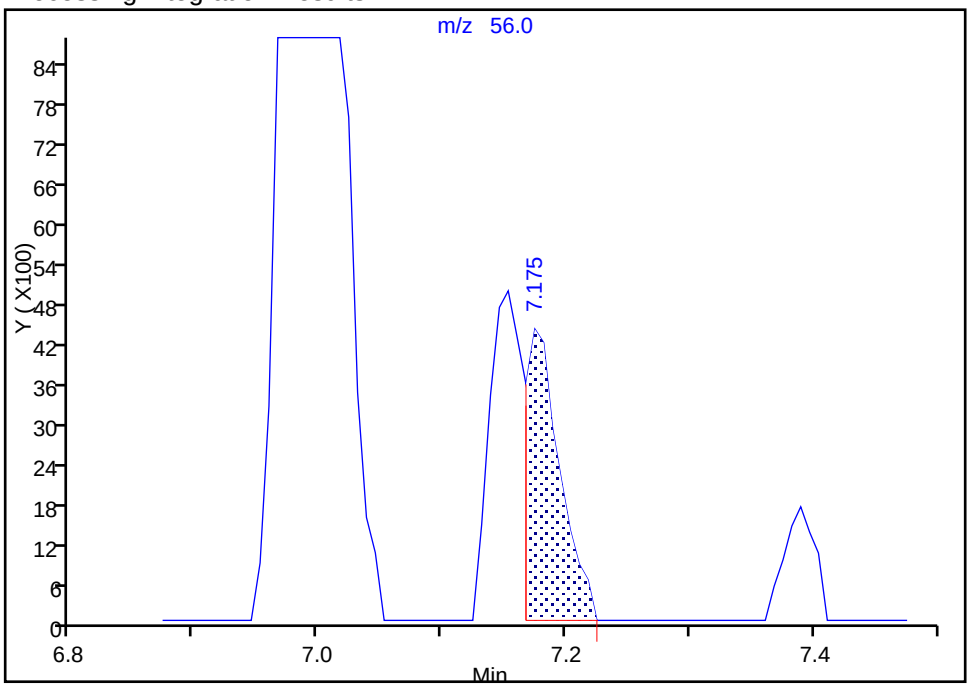
Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6831.D
Injection Date: 05-Mar-2018 08:06:30 Instrument ID: VMS_R1
Lims ID: STD
Client ID:
Operator ID: DOBRANSKYM ALS Bottle#: 14 Worklist Smp#: 11
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Method: AQ_VMSR1_8260 Limit Group: MSV - 8260B Water and Solid
Column: DB-624 (60.25) (0.25 mm) Detector MS SCAN

78 n-Butanol, CAS: 71-36-3

Signal: 1

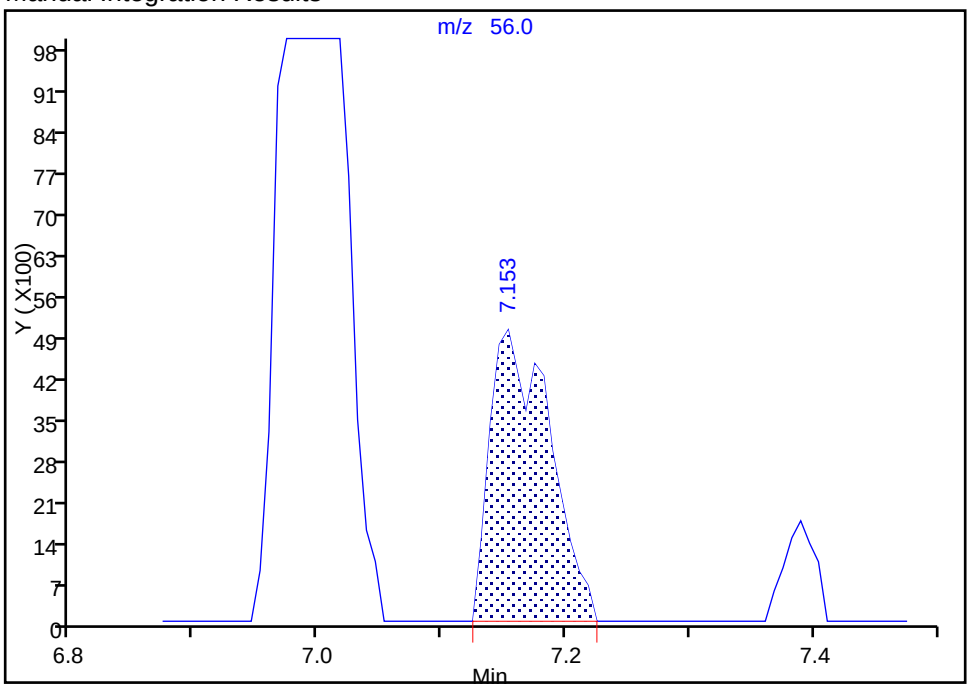
Processing Integration Results

RT: 7.17
Area: 8557
Amount: 44.090789
Amount Units: ug/l



Manual Integration Results

RT: 7.15
Area: 16614
Amount: 47.095973
Amount Units: ug/l



Reviewer: dobranskym, 05-Mar-2018 12:47:04
Audit Action: Manually Integrated Audit Reason: Split Peak

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6832.D
Lims ID: STD
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 05-Mar-2018 08:25:30 ALS Bottle#: 15 Worklist Smp#: 12
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD
Operator ID: DOBRANSKYM Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub110

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 05-Mar-2018 12:48:46 Calib Date: 05-Mar-2018 09:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK015

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	107927	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	98	1578524	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.446	0.000	89	329282	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	439826	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	167269	5.00	5.27	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	151044	5.00	5.38	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	94	859320	5.00	5.46	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	84	281380	5.00	5.37	
28 Ethylene oxide	43	4.216	4.216	0.000	100	219099	500.0	537.3	
33 Ethanol	45	4.594	4.594	0.000	74	23867	300.0	330.0	
38 Propene oxide	58	4.818	4.818	0.000	97	1373256	500.0	551.0	
42 Isopropyl alcohol	45	4.972	4.972	0.000	97	31189	50.0	49.5	
46 Acetonitrile	41	5.168	5.168	0.000	98	65380	50.0	53.0	
56 Isopropyl ether	87	5.826	5.825	0.001	94	135006	5.00	5.18	
58 2-Chloro-1,3-butadiene	53	5.923	5.923	0.000	92	406577	5.00	5.35	
59 Tert-butyl ethyl ether	59	6.101	6.100	0.001	97	362754	5.00	5.17	
60 Ethyl acetate	43	6.222	6.222	0.000	98	98259	10.0	10.1	
65 Propionitrile	54	6.272	6.265	0.007	98	72105	50.0	52.4	
66 Methacrylonitrile	41	6.394	6.394	0.000	92	384453	50.0	54.4	
75 Tert-amyl methyl ether	73	6.982	6.981	0.001	91	252510	5.00	5.14	
78 n-Butanol	56	7.182	7.182	0.000	91	34545	125.0	119.0	
81 Methyl methacrylate	100	7.583	7.583	0.000	93	31725	10.0	9.69	
88 2-Nitropropane	41	7.941	7.941	0.000	92	14790	10.0	8.47	
99 Tetrahydrothiophene	60	9.059	9.059	0.000	93	26546	10.0	8.90	
110 cis-1,4-Dichloro-2-butene	53	10.169	10.169	0.000	0	44217	10.0	9.76	
125 1,2,3-Trimethylbenzene	105	11.244	11.243	0.001	99	817726	5.00	5.30	
16 1,3,5-Trichlorobenzene	180	12.476	12.476	0.000	96	306567	5.00	5.19	

Reagents:

MV-ARCH SS A_00091	Amount Added:	0.40	Units: uL
MV-568718-D_00008	Amount Added:	1.00	Units: uL
MV-Supp A_00029	Amount Added:	2.50	Units: uL

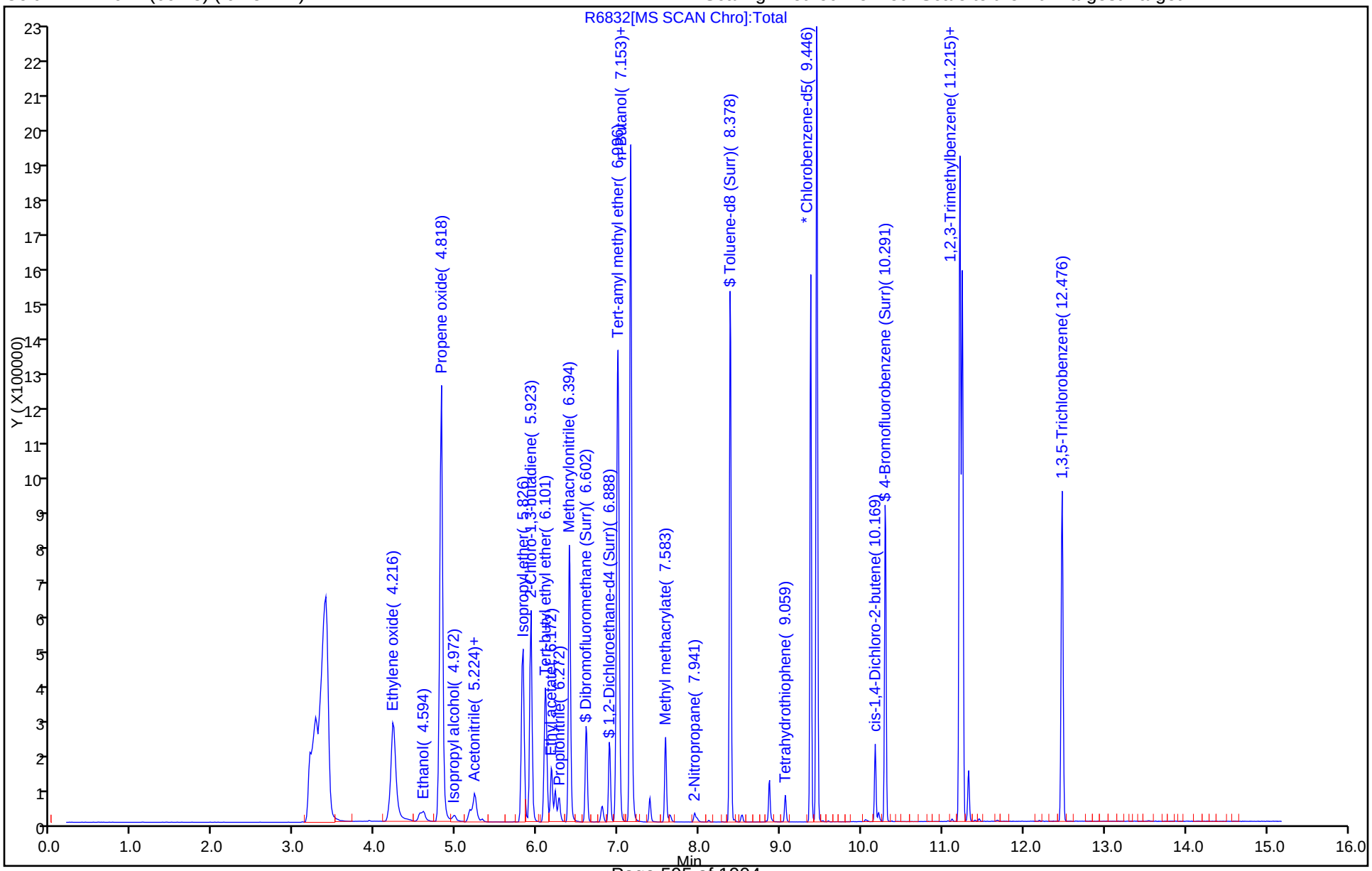
Report Date: 05-Mar-2018 12:48:47 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6832.D

Injection Date:	05-Mar-2018 08:25:30	Instrument ID:	VMS_R1	Operator ID:	DOBRANSKYM
Lims ID:	STD			Worklist Smp#:	12
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	15
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6833.D
Lims ID: ICIS
Client ID:
Sample Type: ICIS Calib Level: 5
Inject. Date: 05-Mar-2018 08:44:30 ALS Bottle#: 16 Worklist Smp#: 13
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: ICIS
Operator ID: DOBRANSKYM Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub110

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 05-Mar-2018 12:48:53 Calib Date: 05-Mar-2018 09:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK015

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	103940	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	98	1511639	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.446	0.000	88	317032	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	424751	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	312703	10.0	10.3	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	276572	10.0	10.3	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	94	1571450	10.0	10.4	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	85	505789	10.0	9.99	
28 Ethylene oxide	43	4.216	4.216	0.000	100	410925	1000.0	1052.3	
33 Ethanol	45	4.594	4.594	0.000	96	46418	600.0	666.4	
38 Propene oxide	58	4.818	4.818	0.000	97	2524442	1000.0	1057.7	
42 Isopropyl alcohol	45	4.972	4.972	0.000	98	55178	100.0	90.9	
46 Acetonitrile	41	5.168	5.168	0.000	98	119520	100.0	101.2	
56 Isopropyl ether	87	5.825	5.825	0.000	94	262563	10.0	10.5	
58 2-Chloro-1,3-butadiene	53	5.923	5.923	0.000	92	778961	10.0	10.7	
59 Tert-butyl ethyl ether	59	6.100	6.100	0.000	97	703228	10.0	10.5	
60 Ethyl acetate	43	6.222	6.222	0.000	99	189334	20.0	20.3	
65 Propionitrile	54	6.265	6.265	0.000	99	136490	100.0	103.5	
66 Methacrylonitrile	41	6.394	6.394	0.000	92	719066	100.0	106.3	
75 Tert-amyl methyl ether	73	6.981	6.981	0.000	94	489711	10.0	10.4	
78 n-Butanol	56	7.182	7.182	0.000	91	59630	250.0	234.0	
81 Methyl methacrylate	100	7.583	7.583	0.000	92	63626	20.0	19.6	
88 2-Nitropropane	41	7.941	7.941	0.000	99	31993	20.0	17.2	
99 Tetrahydrothiophene	60	9.059	9.059	0.000	93	57198	20.0	18.3	
110 cis-1,4-Dichloro-2-butene	53	10.169	10.169	0.000	0	88591	20.0	19.6	
125 1,2,3-Trimethylbenzene	105	11.243	11.243	0.000	99	1540379	10.0	10.3	
16 1,3,5-Trichlorobenzene	180	12.476	12.476	0.000	96	579884	10.0	10.2	

Reagents:

MV-ARCH SS A_00091	Amount Added:	0.80	Units: uL
MV-568718-D_00008	Amount Added:	1.00	Units: uL
MV-Supp A_00029	Amount Added:	5.00	Units: uL

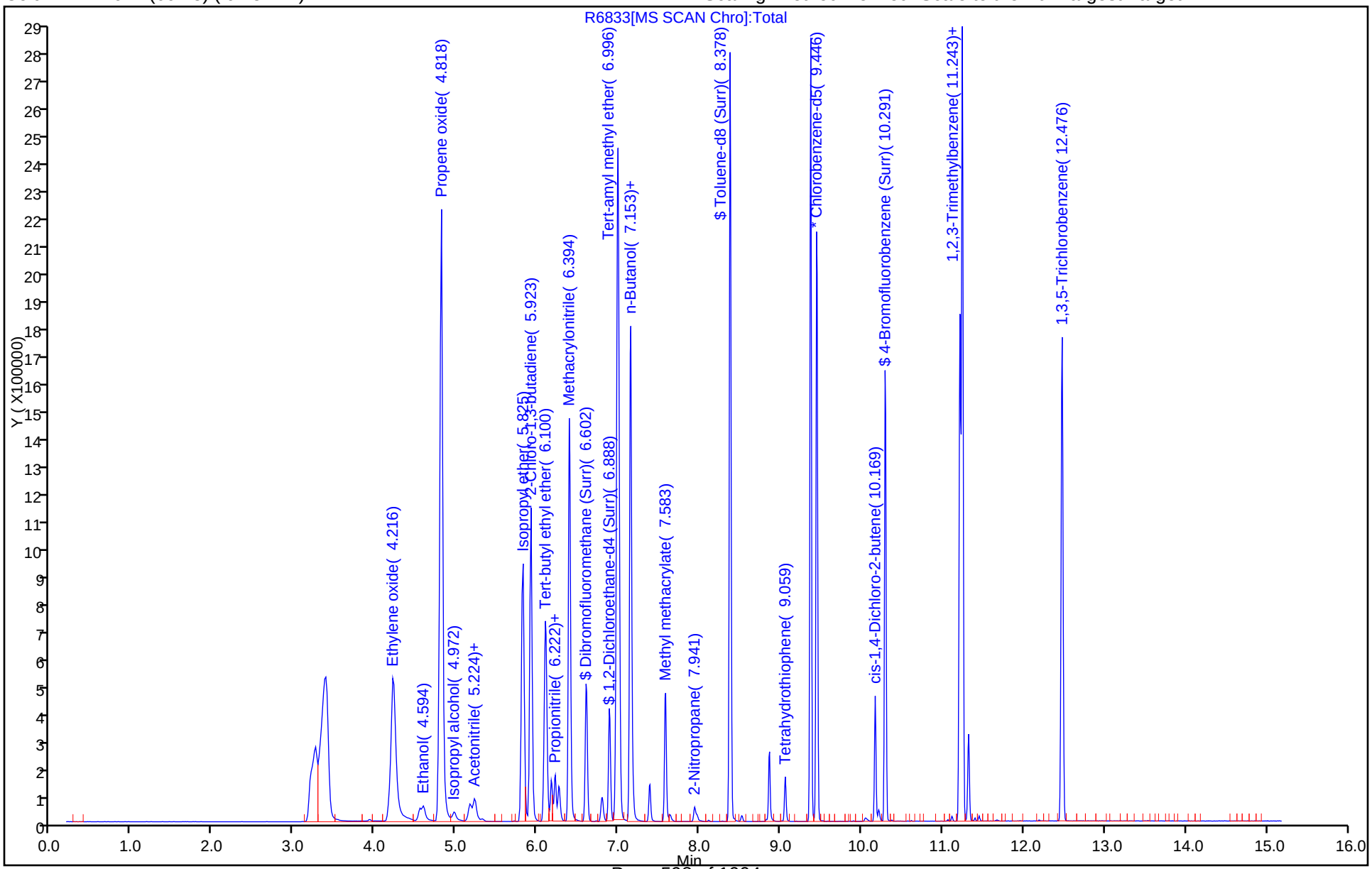
Report Date: 05-Mar-2018 12:48:54 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6833.D

Injection Date:	05-Mar-2018 08:44:30	Instrument ID:	VMS_R1	Operator ID:	DOBRANSKYM
Lims ID:	ICIS			Worklist Smp#:	13
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	16
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6834.D
Lims ID: STD
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 05-Mar-2018 09:03:30 ALS Bottle#: 17 Worklist Smp#: 14
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD
Operator ID: DOBRANSKYM Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub110

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 05-Mar-2018 12:49:01 Calib Date: 05-Mar-2018 09:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK015

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	107498	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	98	1533722	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.446	0.007	88	324252	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	98	435518	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	919518	30.0	29.8	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.896	6.888	0.008	0	791977	30.0	29.0	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	93	4538742	30.0	29.3	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	85	1483075	30.0	28.6	
28 Ethylene oxide	43	4.216	4.216	0.000	100	1104601	3000.0	2787.9	
33 Ethanol	45	4.594	4.594	0.000	98	111169	1800.0	1543.2	
38 Propene oxide	58	4.818	4.818	0.000	96	6687217	3000.0	2761.5	
42 Isopropyl alcohol	45	4.972	4.972	0.000	99	169528	300.0	270.2	
46 Acetonitrile	41	5.168	5.168	0.000	99	349152	300.0	291.5	
56 Isopropyl ether	87	5.825	5.825	0.000	94	783677	30.0	31.0	
58 2-Chloro-1,3-butadiene	53	5.923	5.923	0.000	92	2242382	30.0	30.4	
59 Tert-butyl ethyl ether	59	6.100	6.100	0.000	98	2116983	30.0	31.1	
60 Ethyl acetate	43	6.222	6.222	0.000	99	560360	60.0	59.3	
65 Propionitrile	54	6.272	6.265	0.007	99	398166	300.0	297.6	
66 Methacrylonitrile	41	6.394	6.394	0.000	92	1991829	300.0	290.3	
75 Tert-amyl methyl ether	73	6.981	6.981	0.000	97	1521742	30.0	31.9	
78 n-Butanol	56	7.182	7.182	0.000	91	182944	750.0	745.6	
81 Methyl methacrylate	100	7.583	7.583	0.000	92	204761	60.0	60.7	
88 2-Nitropropane	41	7.941	7.941	0.000	98	112839	60.0	55.8	
99 Tetrahydrothiophene	60	9.059	9.059	0.000	93	192118	60.0	57.3	
110 cis-1,4-Dichloro-2-butene	53	10.169	10.169	0.000	0	286831	60.0	60.3	
125 1,2,3-Trimethylbenzene	105	11.243	11.243	0.000	99	4626952	30.0	30.3	
16 1,3,5-Trichlorobenzene	180	12.476	12.476	0.000	97	1801793	30.0	30.8	

Reagents:

MV-ARCH SS A_00091	Amount Added:	2.40	Units: uL
MV-568718-D_00008	Amount Added:	1.00	Units: uL
MV-Supp A_00029	Amount Added:	15.00	Units: uL

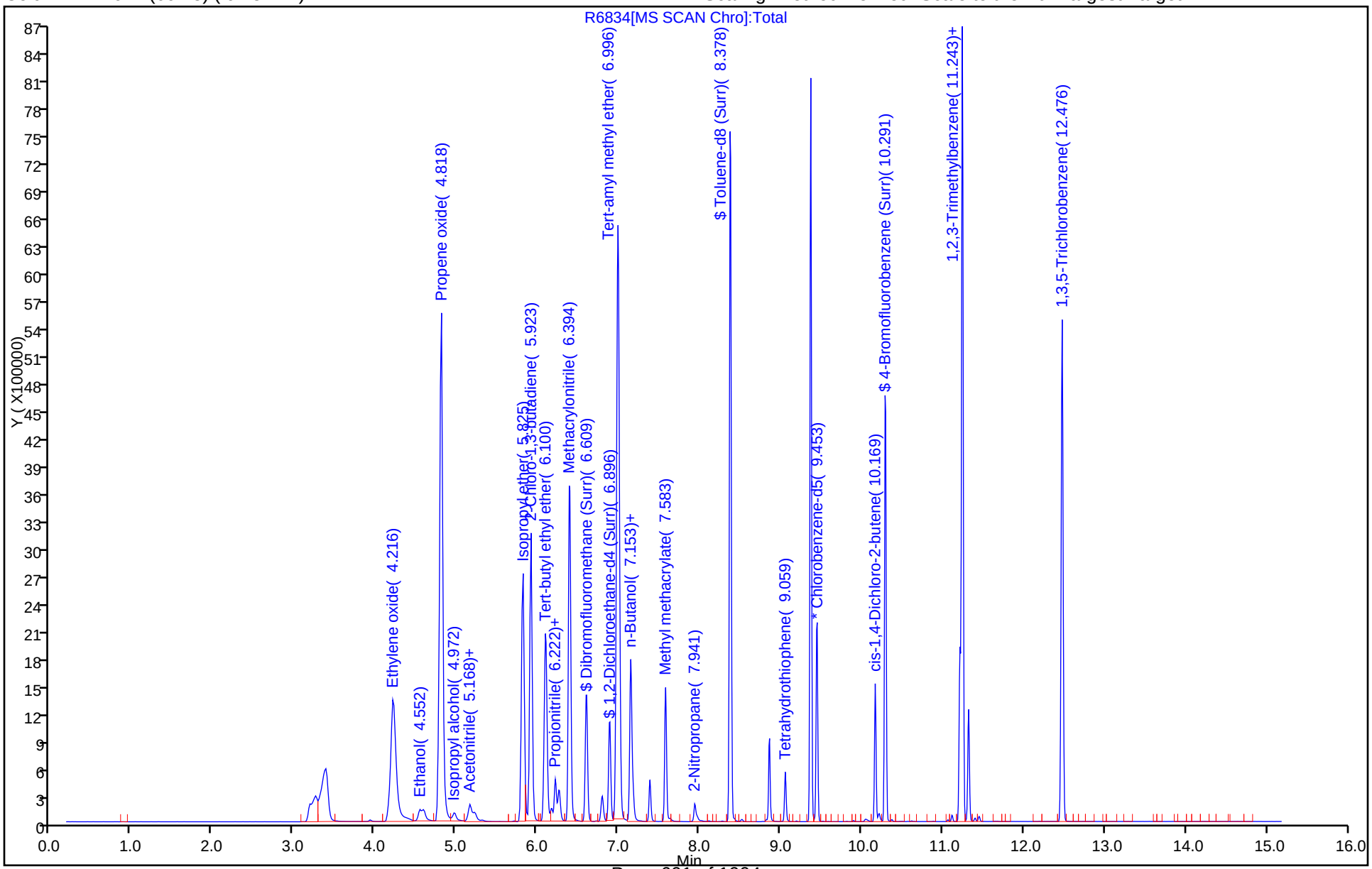
Report Date: 05-Mar-2018 12:49:02 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6834.D

Injection Date:	05-Mar-2018 09:03:30	Instrument ID:	VMS_R1	Operator ID:	DOBRANSKYM
Lims ID:	STD			Worklist Smp#:	14
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D
Lims ID: STD
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 05-Mar-2018 09:22:30 ALS Bottle#: 18 Worklist Smp#: 15
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD
Operator ID: DOBRANSKYM Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub110

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 05-Mar-2018 12:49:07 Calib Date: 05-Mar-2018 09:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK015

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	109607	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	98	1522267	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.446	0.000	88	317421	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	424545	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	1866280	60.0	61.0	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	1584968	60.0	58.5	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	93	8550145	60.0	56.4	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	86	2812577	60.0	55.6	
28 Ethylene oxide	43	4.216	4.216	0.000	100	2093872	6000.0	5324.4	
33 Ethanol	45	4.594	4.594	0.000	56	275960	3600.0	3757.1	
38 Propene oxide	58	4.818	4.818	0.000	96	11940426	6000.0	4968.0	
42 Isopropyl alcohol	45	4.972	4.972	0.000	99	358150	600.0	559.7	
46 Acetonitrile	41	5.168	5.168	0.000	99	705378	600.0	593.3	
56 Isopropyl ether	87	5.826	5.825	0.001	94	1594086	60.0	63.4	
58 2-Chloro-1,3-butadiene	53	5.923	5.923	0.000	91	4306180	60.0	58.8	
59 Tert-butyl ethyl ether	59	6.101	6.100	0.000	98	4341128	60.0	64.2	
60 Ethyl acetate	43	6.215	6.222	-0.007	99	1148722	120.0	122.5	
65 Propionitrile	54	6.265	6.265	0.000	99	813926	600.0	613.0	
66 Methacrylonitrile	41	6.394	6.394	0.000	91	3889656	600.0	571.1	
75 Tert-amyl methyl ether	73	6.982	6.981	0.001	97	3161757	60.0	66.7	
78 n-Butanol	56	7.175	7.182	-0.007	88	416986	1500.0	1699.2	
81 Methyl methacrylate	100	7.576	7.583	-0.007	92	434085	120.0	129.0	
88 2-Nitropropane	41	7.941	7.941	0.000	98	261533	120.0	128.1	
99 Tetrahydrothiophene	60	9.059	9.059	0.000	93	416275	120.0	125.2	
110 cis-1,4-Dichloro-2-butene	53	10.169	10.169	0.000	0	609221	120.0	130.6	
125 1,2,3-Trimethylbenzene	105	11.244	11.243	0.001	99	8527115	60.0	57.3	
16 1,3,5-Trichlorobenzene	180	12.476	12.476	0.000	97	3341422	60.0	58.6	

Reagents:

MV-ARCH SS A_00091	Amount Added:	4.80	Units: uL
MV-568718-D_00008	Amount Added:	1.00	Units: uL
MV-Supp A_00029	Amount Added:	30.00	Units: uL

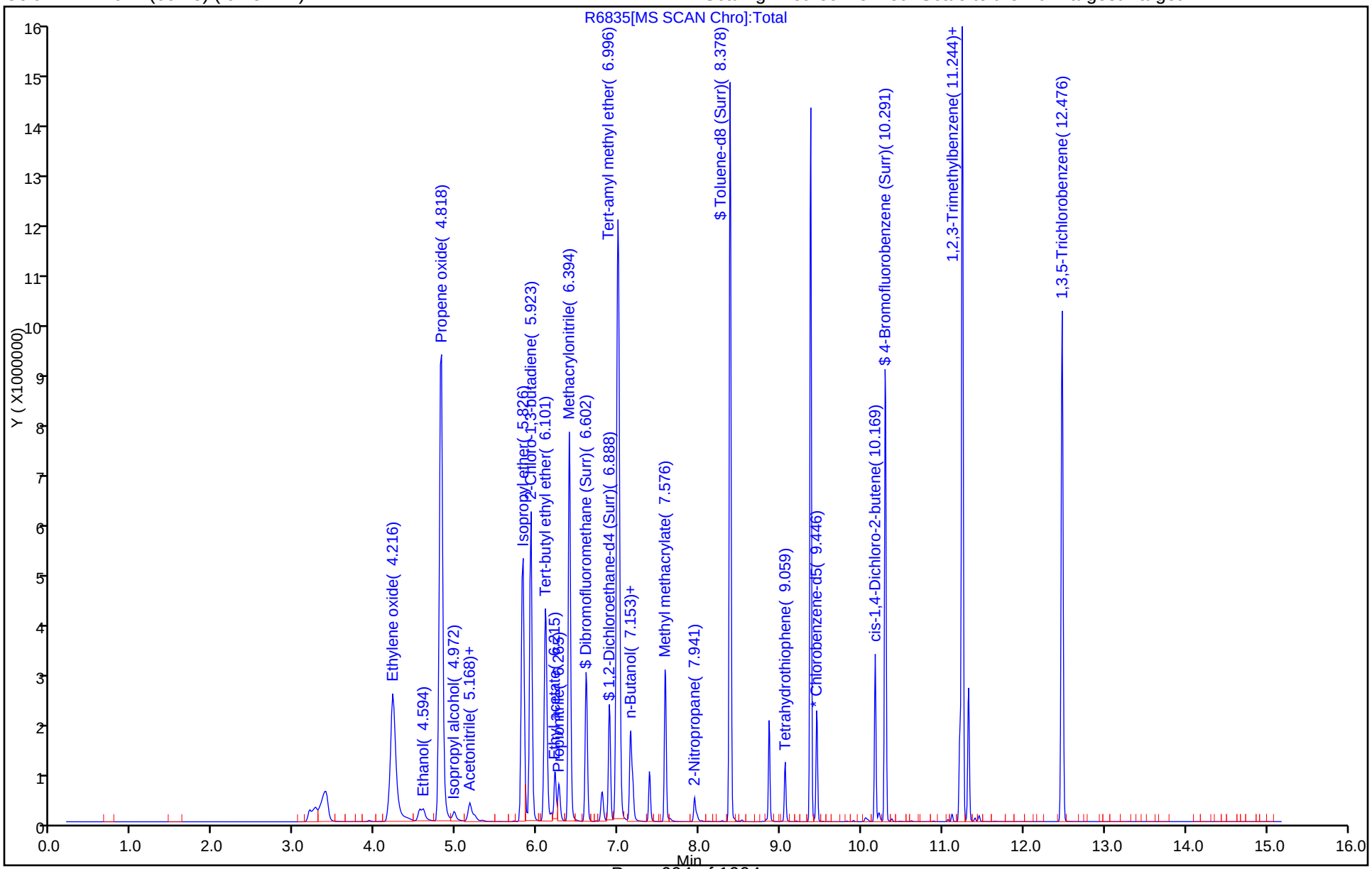
Report Date: 05-Mar-2018 12:49:08 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Injection Date:	05-Mar-2018 09:22:30	Instrument ID:	VMS_R1	Operator ID:	DOBRANSKYM
Lims ID:	STD			Worklist Smp#:	15
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	18
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD003 280-407291/11	R7052.D
Level 2	STD01 280-407291/12	R7053.D
Level 3	STD02 280-407291/13	R7054.D
Level 4	STD05 280-407291/14	R7055.D
Level 5	ICIS 280-407291/15	R7056.D
Level 6	STD30 280-407291/16	R7057.D
Level 7	STD60 280-407291/17	R7058.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 4	LVL 5		B	M1	M2								
Dichlorodifluoromethane	0.2892 0.4201	0.3282 0.3969	0.3367	0.3385	0.4156	Lin2	-0.033	0.3849							0.9920		0.9900
Chloromethane	0.2701 0.3030	0.2902 0.2896	0.2822	0.2796	0.2995	Ave		0.2877			0.1000	4.0		15.0			
Vinyl chloride	0.2981 0.3346	0.3113 0.3153	0.3160	0.3090	0.3422	Ave		0.3181				4.8		30.0			
Bromomethane	0.2185 0.2381	0.2255 0.2169	0.2251	0.2261	0.2398	Ave		0.2271				3.9		15.0			
Chloroethane	0.2521 0.1928	0.2146 0.1735	0.1978	0.1879	0.1981	Ave		0.2024				12.4		15.0			
Dichlorofluoromethane	0.4956 0.5023	0.4845 0.4726	0.4889	0.4867	0.5112	Ave		0.4917				2.6		15.0			
Trichlorofluoromethane	0.4713 0.4886	0.4602 0.4562	0.4751	0.4735	0.4923	Ave		0.4739				2.8		15.0			
Ethyl ether	0.1448 0.1511	0.1393 +++++	0.1383	0.1419	0.1544	Ave		0.1450				4.5		15.0			
Acrolein	0.0128 0.0159	0.0147 0.0154	0.0147	0.0150	0.0158	Ave		0.0149				7.0		15.0			
Acetone	0.0495 0.0241	0.0313 0.0227	0.0269	0.0255	0.0248	Lin2	0.0312	0.0235							0.9990		0.9900
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2291 0.2558	0.2335 0.2498	0.2361	0.2350	0.2536	Ave		0.2418				4.5		15.0			
1,1-Dichloroethene	0.3019 0.3197	0.2890 0.3097	0.2994	0.2953	0.3176	Ave		0.3047				3.8		30.0			
Iodomethane	0.4128 0.4481	0.4012 0.4435	0.4104	0.4214	0.4449	Ave		0.4260				4.5		15.0			
Methyl acetate	0.0646 0.0625	0.0680 0.0604	0.0636	0.0644	0.0649	Ave		0.0641				3.7		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

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 4	LVL 5		B	M1	M2								
3-Chloro-1-propene	0.5029 0.5617	0.5136 0.5232	0.5502	0.5545	0.5876	Ave		0.5419				5.5		15.0			
Carbon disulfide	1.4046 1.3328	1.3148 1.2708	1.3083	1.2873	1.3685	Ave		1.3267				3.5		15.0			
t-Butyl alcohol	0.0052 0.0078	0.0066 0.0078	0.0066	0.0070	0.0075	Ave		0.0069				13.1		15.0			
Methylene Chloride	0.4788 0.2686	0.3302 0.2618	0.2901	0.2765	0.2765	Lin2	0.0643	0.2642							1.0000		0.9900
Acrylonitrile	0.0282 0.0334	0.0308 0.0325	0.0314	0.0329	0.0334	Ave		0.0318				5.9		15.0			
Methyl tert-butyl ether	0.3667 0.4413	0.3917 0.4349	0.3990	0.4164	0.4346	Ave		0.4121				6.7		15.0			
trans-1,2-Dichloroethene	0.3263 0.3362	0.3102 0.3293	0.3215	0.3260	0.3426	Ave		0.3275				3.2		15.0			
Hexane	2.6698 2.8025	2.7076 2.6624	2.8407	2.7734	2.9105	Lin2	-0.038	2.7952							0.9990		0.9900
Vinyl acetate	0.2027 0.2456	0.2227 0.2342	0.2250	0.2339	0.2596	Lin2	-0.025	0.2412							0.9980		0.9900
1,1-Dichloroethane	0.5678 0.5923	0.5819 0.5700	0.5851	0.5927	0.6130	Ave		0.5861			0.1000	2.6		15.0			
2-Butanone (MEK)	+++++ 0.0388	0.0410 0.0392	0.0365	0.0370	0.0395	Ave		0.0387				4.3		15.0			
sec-Butyl Alcohol	0.9971 1.2952	1.0561 1.2286	1.0775	1.1495	1.2781	Ave		1.1546				10.1		15.0			
cis-1,2-Dichloroethene	0.3193 0.3334	0.3172 0.3306	0.3149	0.3232	0.3381	Ave		0.3252				2.7		15.0			
2,2-Dichloropropane	0.3530 0.4536	0.3516 0.4448	0.3702	0.3957	0.4366	Lin2	-0.026	0.4197							0.9930		0.9900
Bromochloromethane	0.0867 0.1012	0.0902 0.1012	0.0923	0.0951	0.1010	Ave		0.0954				6.2		15.0			
Chloroform	0.4850 0.5145	0.4915 0.5014	0.4978	0.5068	0.5250	Ave		0.5031				2.7		30.0			
Tetrahydrofuran	+++++ 0.0254	0.0240 0.0252	0.0232	0.0243	0.0250	Ave		0.0245				3.5		15.0			
Isobutyl alcohol	0.3451 0.5420	0.5056 0.4901	0.5011	0.5202	0.5412	Lin2	-1.342	0.5319							0.9980		0.9900
1,1,1-Trichloroethane	0.4373 0.5098	0.4337 0.4938	0.4682	0.4755	0.5091	Ave		0.4754				6.6		15.0			
Cyclohexane	0.6441 0.6957	0.6277 0.6452	0.6767	0.6659	0.7110	Ave		0.6666				4.5		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

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 4	LVL 5		B	M1	M2								
1,1-Dichloropropene	0.4789 0.5005	0.4725 0.4781	0.4898	0.4873	0.5148	Ave		0.4888				3.0		15.0			
Carbon tetrachloride	0.3512 0.4406	0.3530 0.4270	0.3891	0.3985	0.4340	Ave		0.3991				9.3		15.0			
1,2-Dichloroethane	0.2767 0.2580	0.2652 0.2481	0.2571	0.2600	0.2670	Ave		0.2617				3.5		15.0			
Benzene	1.3193 1.3329	1.3248 1.2964	1.3305	1.3342	1.3804	Ave		1.3312				1.9		15.0			
Trichloroethene	0.3412 0.3442	0.3217 0.3421	0.3284	0.3322	0.3459	Ave		0.3365				2.7		15.0			
2-Pentanone	0.1079 0.1293	0.1129 0.1255	0.1184	0.1280	0.1168	Ave		0.1198				6.7		15.0			
1,2-Dichloropropane	0.2872 0.2991	0.2953 0.2887	0.2891	0.2931	0.3075	Ave		0.2943				2.4		30.0			
Methylcyclohexane	0.5288 0.5739	0.5222 0.5305	0.5556	0.5506	0.5816	Ave		0.5490				4.2		15.0			
1,4-Dioxane	+++++ 0.0010	+++++ 0.0010	0.0007	0.0008	0.0009	Lin2	-0.012	0.0010							0.9910		0.9900
Dibromomethane	0.0731 0.0967	0.0901 0.0961	0.0911	0.0933	0.0984	Ave		0.0912				9.4		15.0			
Bromodichloromethane	0.2361 0.3134	0.2592 0.3133	0.2697	0.2863	0.3095	Lin2	-0.022	0.3001							0.9970		0.9900
2-Chloroethyl vinyl ether	+++++ 0.0833	0.0562 0.0838	0.0614	0.0667	0.0752	Lin2	-0.027	0.0794							0.9940		0.9900
cis-1,3-Dichloropropene	1.2474 1.8324	1.3691 1.8408	1.4749	1.6712	1.8010	Lin2	-0.169	1.7305							0.9930		0.9900
4-Methyl-2-pentanone (MIBK)	0.0681 0.0957	0.0750 0.0915	0.0807	0.0893	0.0934	Lin2	-0.030	0.0905							0.9960		0.9900
Toluene	1.4919 1.4258	1.4304 1.3626	1.4395	1.4273	1.4794	Ave		1.4367				2.9		30.0			
Ethyl methacrylate	0.5200 0.8146	0.5971 0.8145	0.6430	0.7276	0.7791	Lin2	-0.083	0.7607							0.9930		0.9900
trans-1,3-Dichloropropene	0.1846 0.2929	0.2018 0.2885	0.2226	0.2521	0.2831	Lin1	-0.057	0.2890							0.9990		0.9900
1,1,2-Trichloroethane	0.1275 0.1431	0.1343 0.1406	0.1354	0.1368	0.1415	Ave		0.1370				3.9		15.0			
2-Hexanone	0.2128 0.2987	0.2229 0.2844	0.2493	0.2812	0.2890	Lin2	-0.095	0.2803							0.9940		0.9900
1,3-Dichloropropane	1.2168 1.2863	1.2506 1.2471	1.2673	1.2964	1.3201	Ave		1.2692				2.7		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

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 4	LVL 5		B	M1	M2								
Tetrachloroethene	1.2187 1.2792	1.2189 1.2694	1.2336	1.2319	1.2888	Ave		1.2486				2.4		15.0			
Dibromochloromethane	0.5169 0.7956	0.5919 0.8067	0.6200	0.7020	0.7603	Lin2	-0.078	0.7425							0.9920		0.9900
1,2-Dibromoethane (EDB)	0.4979 0.5927	0.5175 0.5899	0.5455	0.5638	0.5869	Ave		0.5563				6.8		15.0			
1-Chlorohexane	2.1787 2.5016	2.1997 2.4221	2.4087	2.4029	2.5468	Ave		2.3801				5.9		15.0			
Chlorobenzene	3.9558 3.9184	3.9541 3.8331	3.9338	3.9179	4.0152	Ave		3.9326			0.3000	1.4		15.0			
1,1,1,2-Tetrachloroethane	0.8931 1.1690	1.0077 1.1543	1.0141	1.0763	1.1414	Ave		1.0651				9.4		15.0			
Ethylbenzene	2.3969 2.5363	2.4041 2.4341	2.4235	2.4633	2.5577	Ave		2.4594				2.6		30.0			
m-Xylene & p-Xylene	2.8377 3.0611	2.8997 2.9778	2.9570	3.0069	3.1123	Ave		2.9789				3.1		15.0			
o-Xylene	2.5119 2.7864	2.6443 2.6104	2.7262	2.7697	2.8559	Ave		2.7007				4.4		15.0			
Styrene	3.2544 4.2857	3.5653 4.0343	3.7364	4.0713	4.3082	Lin2	-0.285	4.1048							0.9970		0.9900
Bromoform	+++++ 0.3558	0.2155 0.3670	0.2423	0.2749	0.3079	Lin2	-0.141	0.3375			0.1000				0.9900		0.9900
Isopropylbenzene	5.1879 5.3477	5.1952 5.0539	5.4415	5.4150	5.6346	Ave		5.3251				3.7		15.0			
Cyclohexanone	0.0088 0.0154	0.0111 0.0152	0.0119	0.0126	0.0138	Lin2	-0.068	0.0140							0.9920		0.9900
1,1,2,2-Tetrachloroethane	0.4494 0.4490	0.4422 0.4431	0.4381	0.4541	0.4643	Ave		0.4486			0.3000	1.9		15.0			
trans-1,4-Dichloro-2-butene	+++++ 0.1147	0.0827 0.1129	0.0956	0.0988	0.1078	Ave		0.1021				11.9		15.0			
1,2,3-Trichloropropane	+++++ 0.1240	0.1156 0.1200	0.1143	0.1209	0.1237	Ave		0.1198				3.4		15.0			
Bromobenzene	0.8589 0.9360	0.8819 0.9370	0.8859	0.9134	0.9407	Ave		0.9077				3.6		15.0			
N-Propylbenzene	1.4516 1.5224	1.4101 1.4977	1.4705	1.4926	1.5556	Ave		1.4858				3.2		15.0			
1,3,5-Trimethylbenzene	4.0664 4.3872	4.1854 4.1329	4.3382	4.4213	4.5696	Ave		4.3001				4.2		15.0			
2-Chlorotoluene	1.1392 1.1473	1.1052 1.1007	1.1437	1.1467	1.1873	Ave		1.1386				2.6		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

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 4	LVL 5		B	M1	M2								
4-Chlorotoluene	1.1133 1.1540	1.1050 1.1503	1.1375	1.1442	1.1887	Ave		1.1419				2.4		15.0			
tert-Butylbenzene	4.0959 4.4186	4.2752 4.3042	4.3997	4.4376	4.6035	Ave		4.3621				3.6		15.0			
1,2,4-Trimethylbenzene	3.9257 4.3566	4.2293 4.2361	4.3272	4.3787	4.4912	Ave		4.2778				4.2		15.0			
sec-Butylbenzene	1.1430 1.2293	1.1135 1.2108	1.1942	1.1950	1.2432	Ave		1.1898				3.9		15.0			
4-Isopropyltoluene	4.5528 5.0343	4.7379 4.8134	5.0405	5.0314	5.1939	Ave		4.9149				4.5		15.0			
1,3-Dichlorobenzene	2.0084 2.0059	2.0064 2.0245	2.0308	2.0214	2.0651	Ave		2.0232				1.0		15.0			
1,4-Dichlorobenzene	1.9493 1.9396	1.9718 1.9372	1.9444	1.9490	1.9811	Ave		1.9532				0.9		15.0			
n-Butylbenzene	4.5989 4.9171	4.7374 4.6665	4.9676	5.0047	5.1793	Ave		4.8673				4.3		15.0			
1,2-Dichlorobenzene	1.5543 1.5924	1.5591 1.6056	1.5735	1.5980	1.6352	Ave		1.5883				1.8		15.0			
1,2-Dibromo-3-Chloropropane	+++++ 0.0615	0.0290 0.0639	0.0384	0.0501	0.0531	Lin2	-0.034	0.0597							0.9940		0.9900
1,2,4-Trichlorobenzene	1.0341 1.1237	1.0223 1.1526	1.0461	1.0896	1.1277	Ave		1.0852				4.8		15.0			
Hexachlorobutadiene	0.8079 0.8553	0.8109 0.8759	0.8133	0.8208	0.8602	Ave		0.8349				3.4		15.0			
Naphthalene	+++++ 1.4890	1.1312 1.5111	1.2010	1.3542	1.4491	Ave		1.3559				11.7		15.0			
1,2,3-Trichlorobenzene	0.7506 0.8404	0.7789 0.8601	0.7994	0.8271	0.8515	Ave		0.8154				5.0		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD003 280-407291/11	R7052.D
Level 2	STD01 280-407291/12	R7053.D
Level 3	STD02 280-407291/13	R7054.D
Level 4	STD05 280-407291/14	R7055.D
Level 5	ICIS 280-407291/15	R7056.D
Level 6	STD30 280-407291/16	R7057.D
Level 7	STD60 280-407291/17	R7058.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Dichlorodifluoromethane	FB	Lin2	10112 1524345	37907 3071855	76891	194250	489220	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Chloromethane	FB	Ave	9445 1099222	33511 2241673	64446	160473	352479	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Vinyl chloride	FB	Ave	10424 1214043	35950 2440703	72156	177322	402815	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Bromomethane	FB	Ave	7639 864003	26038 1678958	51397	129731	282248	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Chloroethane	FB	Ave	8817 699569	24790 1343182	45171	107816	233127	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Dichlorofluoromethane	FB	Ave	17329 1822487	55958 3657988	111653	279336	601720	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Trichlorofluoromethane	FB	Ave	16479 1772885	53144 3531006	108486	271767	579481	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Ethyl ether	FB	Ave	5063 548079	16086 +++++	31588	81449	181688	0.300 30.0	1.00 +++++	2.00	5.00	10.0
Acrolein	FB	Ave	4489 578073	17013 1192724	33511	86278	185996	3.00 300	10.00 600	20.0	50.0	100.0
Acetone	FB	Lin2	6928 349195	14451 704168	24557	58642	116800	1.20 120	4.00 240	8.00	20.0	40.0
1,1,2-Trichloro-1,2,2-trifluoroethane	FB	Ave	8012 928005	26971 1933714	53913	134861	298457	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,1-Dichloroethene	FB	Ave	10556 1159872	33379 2397453	68376	169497	373809	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Iodomethane	FB	Ave	14435 1625729	46335 3432643	93725	241861	523661	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Methyl acetate	FB	Ave	11303 1134092	39273 2336674	72651	184677	381694	1.50 150	5.00 300	10.0	25.0	50.0
3-Chloro-1-propene	FB	Ave	17585 2037889	59315 4049537	125635	318220	691678	0.300 30.0	1.00 60.0	2.00	5.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Carbon disulfide	FB	Ave	49116 4835580	151847 9836483	298745	738771	1610803	0.300 30.0	1.00 60.0	2.00	5.00	10.0
t-Butyl alcohol	FB	Ave	1833 281729	7626 605696	14968	40444	88859	3.00 300	10.0 600	20.0	50.0	100
Methylene Chloride	FB	Lin2	16743 974496	38134 2026463	66248	158678	325408	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Acrylonitrile	FB	Ave	9861 1212252	35616 2514598	71766	188669	393644	3.00 300	10.0 600	20.0	50.0	100
Methyl tert-butyl ether	FB	Ave	12824 1601072	45239 3366216	91102	238968	511562	0.300 30.0	1.00 60.0	2.00	5.00	10.0
trans-1,2-Dichloroethene	FB	Ave	11411 1219884	35825 2549077	73413	187072	403300	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Hexane	CBNZ d5	Lin2	19793 2214412	65625 4473506	136995	338920	743543	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Vinyl acetate	FB	Lin2	14177 1782343	51445 3625730	102770	268473	611047	0.600 60.0	2.00 120	4.00	10.0	20.0
1,1-Dichloroethane	FB	Ave	19855 2148910	67209 4412148	133614	340136	721524	0.300 30.0	1.00 60.0	2.00	5.00	10.0
2-Butanone (MEK)	FB	Ave	+++++ 563338	18922 1212766	33371	84974	186189	+++++ 120	4.00 240	8.00	20.0	40.0
sec-Butyl Alcohol	TBAd 9	Ave	4886 708461	16995 1510327	35837	98743	222223	9.00 900	30.0 1800	60.0	150	300
cis-1,2-Dichloroethene	FB	Ave	11164 1209785	36632 2559165	71899	185493	397957	0.300 30.0	1.00 60.0	2.00	5.00	10.0
2,2-Dichloropropane	FB	Lin2	12342 1645692	40606 3442672	84529	227067	513941	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Bromochloromethane	FB	Ave	3032 367301	10421 783569	21084	54552	118862	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Chloroform	FB	Ave	16958 1866844	56766 3880927	113679	290836	617976	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Tetrahydrofuran	FB	Ave	+++++ 184439	5543 390600	10590	27841	58948	+++++ 60.0	2.00 120	4.00	10.0	20.0
Isobutyl alcohol	TBAd 9	Lin2	1409 247046	6781 502120	13888	37237	78408	7.50 750	25.0 1500	50.0	125	250
1,1,1-Trichloroethane	FB	Ave	15293 1849691	50092 3822120	106908	272916	599191	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Cyclohexane	FB	Ave	22524 2524292	72497 4994108	154519	382180	836863	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,1-Dichloropropene	FB	Ave	16745 1815809	54571 3700705	111836	279684	605984	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Carbon tetrachloride	FB	Ave	12279 1598521	40773 3305281	88847	228726	510789	0.300 30.0	1.00 60.0	2.00	5.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
1,2-Dichloroethane	FB	Ave	9677 936043	30631 1920230	58706	149208	314222	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Benzene	FB	Ave	46134 4836001	153008 10034765	303818	765679	1624774	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Trichloroethene	FB	Ave	11932 1248958	37150 2648012	74990	190640	407171	0.300 30.0	1.00 60.0	2.00	5.00	10.0
2-Pentanone	FB	Ave	15094 1875886	52165 3884206	108160	293742	549831	1.20 120	4.00 240	8.00	20.0	40.0
1,2-Dichloropropane	FB	Ave	10044 1085055	34108 2234834	66013	168228	361933	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Methylcyclohexane	FB	Ave	18490 2082251	60307 4106102	126875	315987	684563	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,4-Dioxane	FB	Lin2	+++++ 73446	+++++ 158832	3339	8807	20020	+++++ 600	+++++ 1200	40.0	100	200
Dibromomethane	FB	Ave	2557 350696	10404 743756	20792	53518	115856	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Bromodichloromethane	FB	Lin2	8257 1137146	29931 2424712	61595	164301	364357	0.300 30.0	1.00 60.0	2.00	5.00	10.0
2-Chloroethyl vinyl ether	FB	Lin2	+++++ 302124	6486 648436	14027	38286	88551	+++++ 30.0	1.00 60.0	2.00	5.00	10.0
cis-1,3-Dichloropropene	CBNZ d5	Lin2	9248 1447880	33184 3093022	71129	204223	460101	0.300 30.0	1.00 60.0	2.00	5.00	10.0
4-Methyl-2-pentanone (MIBK)	FB	Lin2	9527 1389520	34660 2832822	73711	204909	439761	1.20 120	4.00 240	8.00	20.0	40.0
Toluene	FB	Ave	52170 5173013	165194 10547255	328718	819102	1741404	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Ethyl methacrylate	CBNZ d5	Lin2	3855 643677	14473 1368481	31009	88920	199023	0.300 30.0	1.00 60.0	2.00	5.00	10.0
trans-1,3-Dichloropropene	FB	Lin1	6456 1062795	23309 2233451	50834	144698	333255	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,1,2-Trichloroethane	FB	Ave	4460 519081	15516 1088152	30923	78529	166542	0.300 30.0	1.00 60.0	2.00	5.00	10.0
2-Hexanone	CBNZ d5	Lin2	6310 943980	21606 1911731	48099	137437	295312	1.20 120	4.00 240	8.00	20.0	40.0
1,3-Dichloropropane	CBNZ d5	Ave	9021 1016399	30312 2095454	61116	158426	337246	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Tetrachloroethene	CBNZ d5	Ave	9035 1010743	29542 2132908	59488	150548	329244	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Dibromochloromethane	CBNZ d5	Lin2	3832 628683	14345 1355421	29898	85781	194233	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,2-Dibromoethane (EDB)	CBNZ d5	Ave	3691 468358	12544 991175	26308	68903	149941	0.300 30.0	1.00 60.0	2.00	5.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
1-Chlorohexane	CBNZ d5	Ave	16152 1976647	53316 4069634	116158	293643	650628	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Chlorobenzene	CBNZ d5	Ave	29327 3096216	95837 6440496	189706	478781	1025761	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,1,1,2-Tetrachloroethane	CBNZ d5	Ave	6621 923735	24424 1939562	48903	131522	291600	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Ethylbenzene	CBNZ d5	Ave	17770 2004115	58269 4089822	116873	301025	653395	0.300 30.0	1.00 60.0	2.00	5.00	10.0
m-Xylene & p-Xylene	CBNZ d5	Ave	21038 2418777	70281 5003358	142600	367452	795080	0.300 30.0	1.00 60.0	2.00	5.00	10.0
o-Xylene	CBNZ d5	Ave	18622 2201717	64091 4386133	131472	338462	729576	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Styrene	CBNZ d5	Lin2	24127 3386423	86413 6778615	180187	497525	1100593	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Bromoform	CBNZ d5	Lin2	+++++ 281168	5224 616623	11684	33597	78646	+++++ 30.0	1.00 60.0	2.00	5.00	10.0
Isopropylbenzene	DCBd 4	Ave	52955 6266010	178387 12401600	373871	955486	2080782	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Cyclohexanone	CBNZ d5	Lin2	2617 485261	10785 1023654	23011	61386	141114	12.0 1200	40.0 2400	80.0	200	400
1,1,2,2-Tetrachloroethane	DCBd 4	Ave	4587 526089	15185 1087312	30102	80121	171445	0.300 30.0	1.00 60.0	2.00	5.00	10.0
trans-1,4-Dichloro-2-butene	DCBd 4	Ave	+++++ 134422	2838 277051	6566	17436	39824	+++++ 30.0	1.00 60.0	2.00	5.00	10.0
1,2,3-Trichloropropane	DCBd 4	Ave	+++++ 145335	3970 294570	7855	21337	45672	+++++ 30.0	1.00 60.0	2.00	5.00	10.0
Bromobenzene	DCBd 4	Ave	8767 1096731	30281 2299285	60871	161180	347372	0.300 30.0	1.00 60.0	2.00	5.00	10.0
N-Propylbenzene	DCBd 4	Ave	14817 1783839	48419 3675265	101032	263366	574445	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,3,5-Trimethylbenzene	DCBd 4	Ave	41507 5140553	143714 10141640	298066	780156	1687476	0.300 30.0	1.00 60.0	2.00	5.00	10.0
2-Chlorotoluene	DCBd 4	Ave	11628 1344303	37948 2701049	78580	202336	438455	0.300 30.0	1.00 60.0	2.00	5.00	10.0
4-Chlorotoluene	DCBd 4	Ave	11364 1352114	37943 2822630	78154	201891	438987	0.300 30.0	1.00 60.0	2.00	5.00	10.0
tert-Butylbenzene	DCBd 4	Ave	41808 5177405	146796 10561973	302294	783027	1699988	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,2,4-Trimethylbenzene	DCBd 4	Ave	40071 5104757	145220 10394778	297313	772624	1658541	0.300 30.0	1.00 60.0	2.00	5.00	10.0
sec-Butylbenzene	DCBd 4	Ave	11667 1440406	38233 2971112	82051	210856	459082	0.300 30.0	1.00 60.0	2.00	5.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 407291

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2018 19:13 Calibration End Date: 03/08/2018 21:08 Calibration ID: 31836

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
4-Isopropyltoluene	DCBd 4	Ave	46472 5898768	162683 11811521	346317	887807	1918015	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,3-Dichlorobenzene	DCBd 4	Ave	20501 2350329	68893 4967931	139528	356673	762628	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,4-Dichlorobenzene	DCBd 4	Ave	19897 2272638	67706 4753686	133595	343904	731584	0.300 30.0	1.00 60.0	2.00	5.00	10.0
n-Butylbenzene	DCBd 4	Ave	46943 5761491	162667 11450883	341308	883090	1912636	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,2-Dichlorobenzene	DCBd 4	Ave	15865 1865842	53534 3939836	108111	281967	603839	0.300 30.0	1.00 60.0	2.00	5.00	10.0
1,2-Dibromo-3-Chloropropane	DCBd 4	Lin2	+++++ 72008	995 156747	2640	8833	19595	+++++ 30.0	1.00 60.0	2.00	5.00	10.0
1,2,4-Trichlorobenzene	DCBd 4	Ave	10555 1316631	35103 2828450	71878	192258	416440	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Hexachlorobutadiene	DCBd 4	Ave	8247 1002193	27842 2149255	55878	144833	317652	0.300 30.0	1.00 60.0	2.00	5.00	10.0
Naphthalene	DCBd 4	Ave	+++++ 1744645	38843 3708096	82518	238949	535141	+++++ 30.0	1.00 60.0	2.00	5.00	10.0
1,2,3-Trichlorobenzene	DCBd 4	Ave	7662 984667	26745 2110570	54924	145941	314458	0.300 30.0	1.00 60.0	2.00	5.00	10.0

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD
Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7052.D
Lims ID: std003
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 08-Mar-2018 19:13:30 ALS Bottle#: 11 Worklist Smp#: 11
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD03
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub62

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 08-Mar-2018 22:12:00 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: linesj Date: 08-Mar-2018 20:22:35

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	136114	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	98	1456986	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.453	-0.007	88	308901	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	425308	12.5	12.5	
23 Dichlorodifluoromethane	85	3.601	3.601	0.000	95	10112	0.3000	0.3101	
26 Chloromethane	50	3.839	3.839	0.000	95	9445	0.3000	0.2816	
27 Vinyl chloride	62	3.965	3.965	0.000	87	10424	0.3000	0.2812	
29 Bromomethane	94	4.300	4.300	0.000	77	7639	0.3000	0.2886	
30 Chloroethane	64	4.342	4.342	0.000	94	8817	0.3000	0.3737	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	94	17329	0.3000	0.3024	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	94	16479	0.3000	0.2983	
35 Ethyl ether	59	4.734	4.734	0.000	91	5063	0.3000	0.2997	
39 Acrolein	56	4.860	4.860	0.000	97	4489	3.00	2.58	
41 Acetone	43	4.958	4.958	0.000	97	6928	1.20	1.20	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.972	0.000	91	8012	0.3000	0.2842	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	97	10556	0.3000	0.2973	
44 Iodomethane	142	5.154	5.154	0.000	98	14435	0.3000	0.2907	
45 Methyl acetate	43	5.182	5.182	0.000	95	11303	1.50	1.51	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	82	17585	0.3000	0.2784	
48 Carbon disulfide	76	5.252	5.252	0.000	99	49116	0.3000	0.3176	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	1	1833	3.00	2.27	
50 Methylene Chloride	84	5.322	5.322	0.000	94	16743	0.3000	0.3003	
52 Acrylonitrile	53	5.462	5.462	0.000	97	9861	3.00	2.66	
51 Methyl tert-butyl ether	73	5.518	5.518	0.000	96	12824	0.3000	0.2670	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	96	11411	0.3000	0.2990	
54 Hexane	57	5.714	5.714	0.000	92	19793	0.3000	0.3003	
55 Vinyl acetate	43	5.797	5.798	-0.001	98	14177	0.6000	0.6074	
57 1,1-Dichloroethane	63	5.853	5.853	0.000	95	19855	0.3000	0.2906	
61 2-Butanone (MEK)	43		6.222				ND	ND	
62 sec-Butyl Alcohol	45	6.265	6.272	-0.007	47	4886	9.00	7.77	
63 cis-1,2-Dichloroethene	96	6.280	6.280	0.000	80	11164	0.3000	0.2945	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
64 2,2-Dichloropropane	77	6.315	6.315	0.000	86	12342	0.3000	0.3131	
67 Chlorobromomethane	128	6.473	6.466	0.007	93	3032	0.3000	0.2727	
68 Chloroform	83	6.480	6.480	0.000	93	16958	0.3000	0.2892	
69 Tetrahydrofuran	42		6.509				ND	ND	
70 Isobutyl alcohol	41	6.681	6.681	0.000	65	1409	7.50	7.39	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	97	15293	0.3000	0.2760	
72 Cyclohexane	56	6.781	6.781	0.000	88	22524	0.3000	0.2899	
73 1,1-Dichloropropene	75	6.802	6.803	0.000	94	16745	0.3000	0.2939	
74 Carbon tetrachloride	117	6.845	6.845	0.000	92	12279	0.3000	0.2640	
76 1,2-Dichloroethane	62	6.946	6.953	-0.007	94	9677	0.3000	0.3172	
77 Benzene	78	6.982	6.982	0.000	95	46134	0.3000	0.2973	
14 n-Heptane	43	7.082	7.082	0.000	91	20087	0.3000	0.2819	
79 Trichloroethene	95	7.440	7.440	0.000	98	11932	0.3000	0.3042	
80 2-Pentanone	43	7.483	7.476	0.007	98	15094	1.20	1.08	
83 1,2-Dichloropropane	63	7.619	7.619	0.000	92	10044	0.3000	0.2928	
82 Methylcyclohexane	55	7.648	7.648	0.000	93	18490	0.3000	0.2889	
84 1,4-Dioxane	88		7.684				ND	ND	
85 Dibromomethane	93	7.727	7.719	0.007	90	2557	0.3000	0.2404	
86 Dichlorobromomethane	83	7.798	7.798	0.000	96	8257	0.3000	0.3087	
87 2-Chloroethyl vinyl ether	63	7.956	7.956	0.000	79	1564	0.3000	0.5072	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	93	9248	0.3000	0.3140	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.199	0.000	95	9527	1.20	1.24	
91 Toluene	91	8.436	8.436	0.000	98	52170	0.3000	0.3115	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	93	6456	0.3000	0.3900	
92 Ethyl methacrylate	69	8.529	8.529	0.000	55	3855	0.3000	0.3138	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	88	4460	0.3000	0.2792	
95 2-Hexanone	43	8.808	8.808	0.000	96	6310	1.20	1.25	
96 1,3-Dichloropropane	76	8.830	8.822	0.008	96	9021	0.3000	0.2876	
97 Tetrachloroethene	164	8.858	8.858	0.000	95	9035	0.3000	0.2928	
98 Chlorodibromomethane	129	9.016	9.016	0.000	84	3832	0.3000	0.3138	
100 Ethylene Dibromide	107	9.138	9.138	0.000	93	3691	0.3000	0.2685	
101 1-Chlorohexane	91	9.374	9.374	0.000	94	16152	0.3000	0.2746	
102 Chlorobenzene	112	9.474	9.474	0.000	96	29327	0.3000	0.3018	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.503	0.000	76	6621	0.3000	0.2515	
103 Ethylbenzene	106	9.517	9.517	0.000	98	17770	0.3000	0.2924	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	21038	0.3000	0.2858	
107 o-Xylene	106	9.897	9.897	0.000	89	18622	0.3000	0.2790	
106 Styrene	104	9.897	9.897	0.000	84	24127	0.3000	0.3073	
108 Bromoform	173	10.076	10.083	-0.007	71	1223	0.3000	0.5654	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	52955	0.3000	0.2923	
111 Cyclohexanone	55	10.255	10.262	-0.007	79	2617	12.0	12.5	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	87	4587	0.3000	0.3005	
113 trans-1,4-Dichloro-2-buten	53		10.377				ND	ND	
114 1,2,3-Trichloropropane	110		10.406				ND	ND	
116 Bromobenzene	156	10.448	10.448	0.000	95	8767	0.3000	0.2839	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	14817	0.3000	0.2931	
118 2-Chlorotoluene	126	10.577	10.570	0.007	91	11628	0.3000	0.3002	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	87	41507	0.3000	0.2837	
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	11364	0.3000	0.2925	
120 tert-Butylbenzene	119	10.857	10.857	0.000	92	41808	0.3000	0.2817	
121 1,2,4-Trimethylbenzene	105	10.885	10.885	0.000	93	40071	0.3000	0.2753	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	11667	0.3000	0.2882	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	46472	0.3000	0.2779	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	95	20501	0.3000	0.2978	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	95	19897	0.3000	0.2994	
127 n-Butylbenzene	91	11.458	11.458	0.000	98	46943	0.3000	0.2835	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	94	15865	0.3000	0.2936	
129 1,2-Dibromo-3-Chloropropan	157		12.261				ND	ND	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	90	10555	0.3000	0.2859	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	92	8247	0.3000	0.2903	
132 Naphthalene	128		13.478				ND	ND	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	93	7662	0.3000	0.2762	
S 140 1,2-Dichloroethene, Total	96				0		0.6000	0.5935	
S 134 Trihalomethanes, Total	1				0		1.20	1.48	
S 135 Xylenes, Total (URS)	1				0		0.6000	0.5648	
S 137 1,3-Dichloropropene, Total	1				0		0.6000	0.7040	
S 139 Xylenes, Total	106				0		0.6000	0.5648	
S 138 1,2-Dichloroethene, Total	1				0		0.6000	0.5935	
S 136 Total BTEX	1				0			1.47	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL
MV-Gas/Ket A_00071	Amount Added:	0.15	Units: uL
MV-Main A_00034	Amount Added:	0.15	Units: uL
MV-SS 2-Cleve_00042	Amount Added:	0.15	Units: uL

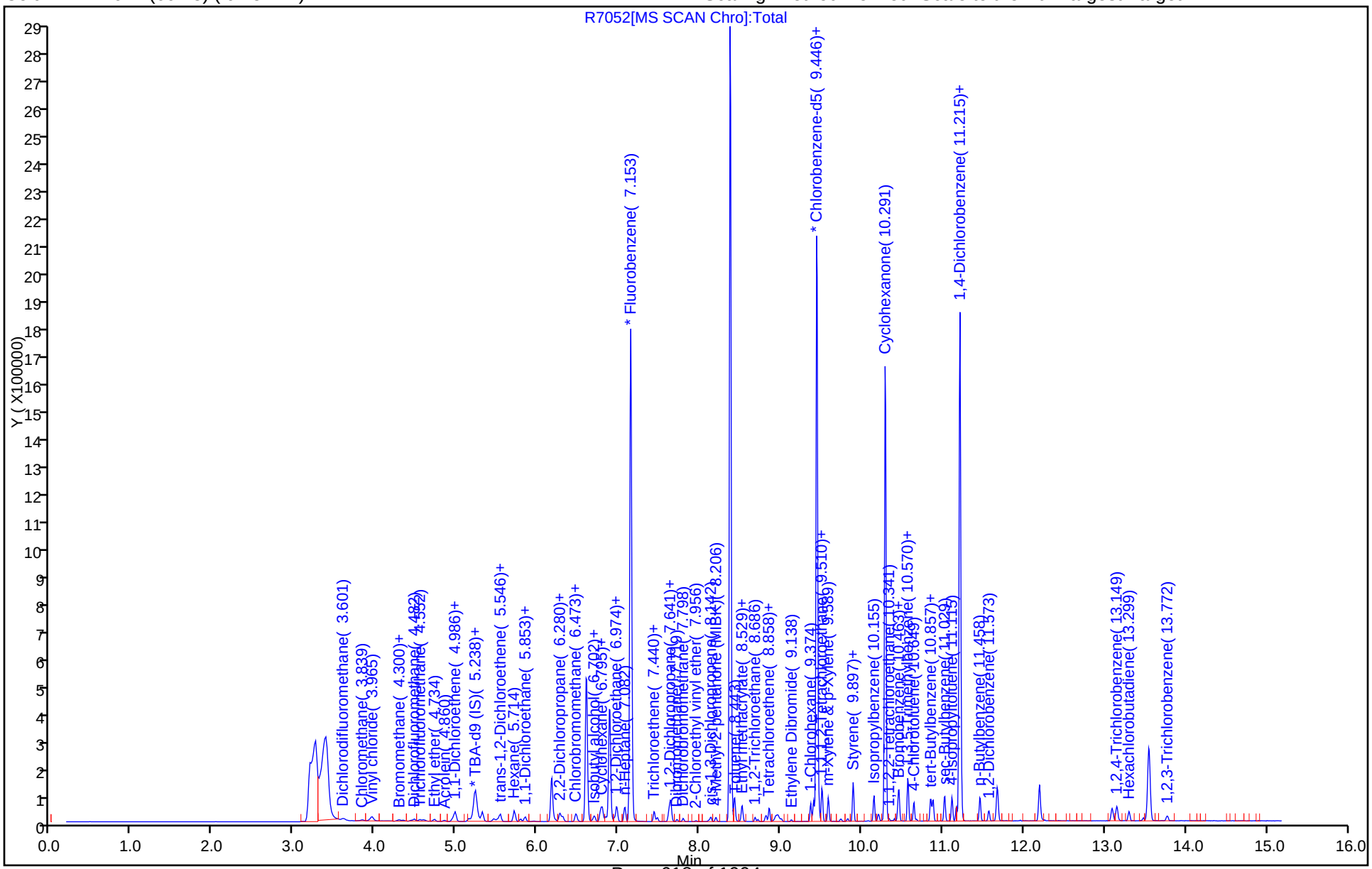
Report Date: 08-Mar-2018 22:12:01 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7052.D

Injection Date:	08-Mar-2018 19:13:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	std003			Worklist Smp#:	11
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7053.D
Lims ID: std01
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 08-Mar-2018 19:33:30 ALS Bottle#: 12 Worklist Smp#: 12
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD1
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub62

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 08-Mar-2018 22:12:03 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: linesj Date: 08-Mar-2018 20:45:14

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	134107	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.153	0.001	98	1443646	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	88	302969	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	429209	12.5	12.5	
23 Dichlorodifluoromethane	85	3.601	3.601	0.000	99	37907	1.00	0.9375	
26 Chloromethane	50	3.839	3.839	0.000	96	33511	1.00	1.01	
27 Vinyl chloride	62	3.965	3.965	0.000	90	35950	1.00	0.9786	
29 Bromomethane	94	4.287	4.300	-0.014	91	26038	1.00	0.99	
30 Chloroethane	64	4.342	4.342	0.000	98	24790	1.00	1.06	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	55958	1.00	0.9854	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	97	53144	1.00	0.9710	
35 Ethyl ether	59	4.734	4.734	0.000	89	16086	1.00	0.9609	
39 Acrolein	56	4.846	4.860	-0.014	98	17013	10.0	9.87	
41 Acetone	43	4.944	4.958	-0.014	99	14451	4.00	4.00	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.972	0.000	95	26971	1.00	0.9656	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	96	33379	1.00	0.9486	
44 Iodomethane	142	5.154	5.154	0.000	99	46335	1.00	0.9417	
45 Methyl acetate	43	5.182	5.182	0.000	96	39273	5.00	5.31	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	82	59315	1.00	0.9477	
48 Carbon disulfide	76	5.252	5.252	0.000	99	151847	1.00	0.99	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	91	7626	10.0	9.51	
50 Methylene Chloride	84	5.322	5.322	0.000	96	38134	1.00	1.01	
52 Acrylonitrile	53	5.462	5.462	0.000	97	35616	10.0	9.69	
51 Methyl tert-butyl ether	73	5.504	5.518	-0.014	96	45239	1.00	0.9506	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	96	35825	1.00	0.9473	
54 Hexane	57	5.714	5.714	0.000	90	65625	1.00	0.9824	
55 Vinyl acetate	43	5.798	5.798	0.000	97	51445	2.00	1.95	
57 1,1-Dichloroethane	63	5.854	5.853	0.001	96	67209	1.00	0.99	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	99	18922	4.00	4.24	
62 sec-Butyl Alcohol	45	6.273	6.272	0.001	48	16995	30.0	27.4	
63 cis-1,2-Dichloroethene	96	6.273	6.280	-0.007	83	36632	1.00	0.9752	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
64 2,2-Dichloropropane	77	6.308	6.315	-0.007	88	40606	1.00	0.8986	
67 Chlorobromomethane	128	6.466	6.466	0.000	93	10421	1.00	0.9459	
68 Chloroform	83	6.480	6.480	0.000	94	56766	1.00	0.9769	
69 Tetrahydrofuran	42	6.509	6.509	0.000	90	5543	2.00	1.96	
70 Isobutyl alcohol	41	6.681	6.681	0.000	91	6781	25.0	26.3	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	98	50092	1.00	0.9124	
72 Cyclohexane	56	6.781	6.781	0.000	91	72497	1.00	0.9416	
73 1,1-Dichloropropene	75	6.803	6.803	0.001	98	54571	1.00	0.9666	
74 Carbon tetrachloride	117	6.846	6.845	0.001	94	40773	1.00	0.8847	
76 1,2-Dichloroethane	62	6.953	6.953	0.000	97	30631	1.00	1.01	
77 Benzene	78	6.982	6.982	0.000	95	153008	1.00	1.00	
14 n-Heptane	43	7.082	7.082	0.000	92	67777	1.00	0.9598	
79 Trichloroethene	95	7.440	7.440	0.000	97	37150	1.00	0.9558	
80 2-Pentanone	43	7.483	7.476	0.007	99	52165	4.00	3.77	
83 1,2-Dichloropropane	63	7.626	7.619	0.007	95	34108	1.00	1.00	
82 Methylcyclohexane	55	7.648	7.648	0.000	94	60307	1.00	0.9511	
84 1,4-Dioxane	88		7.684				ND	ND	
85 Dibromomethane	93	7.727	7.719	0.008	94	10404	1.00	0.9873	
86 Dichlorobromomethane	83	7.798	7.798	0.000	99	29931	1.00	0.9363	
87 2-Chloroethyl vinyl ether	63	7.963	7.956	0.007	89	6486	1.00	1.05	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	94	33184	1.00	0.8889	
90 4-Methyl-2-pentanone (MIBK	43	8.207	8.199	0.008	96	34660	4.00	3.65	
91 Toluene	91	8.436	8.436	0.000	98	165194	1.00	1.00	
92 Ethyl methacrylate	69	8.529	8.529	0.000	63	14473	1.00	0.8938	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	23309	1.00	0.8967	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	91	15516	1.00	0.9803	
95 2-Hexanone	43	8.815	8.808	0.007	95	21606	4.00	3.52	
96 1,3-Dichloropropane	76	8.830	8.822	0.008	97	30312	1.00	0.9853	
97 Tetrachloroethene	164	8.866	8.858	0.008	95	29542	1.00	0.9762	
98 Chlorodibromomethane	129	9.016	9.016	0.000	89	14345	1.00	0.9021	
100 Ethylene Dibromide	107	9.138	9.138	0.000	97	12544	1.00	0.9303	
101 1-Chlorohexane	91	9.374	9.374	0.000	96	53316	1.00	0.9242	
102 Chlorobenzene	112	9.474	9.474	0.000	94	95837	1.00	1.01	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.503	0.000	88	24424	1.00	0.9461	
103 Ethylbenzene	106	9.517	9.517	0.000	98	58269	1.00	0.9775	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	70281	1.00	0.9734	
106 Styrene	104	9.897	9.897	0.000	84	86413	1.00	0.9380	
107 o-Xylene	106	9.897	9.897	0.000	90	64091	1.00	0.9791	
108 Bromoform	173	10.083	10.083	0.000	91	5224	1.00	1.06	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	178387	1.00	0.9756	
111 Cyclohexanone	55	10.262	10.262	0.000	86	10785	40.0	36.8	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	92	15185	1.00	0.9858	
113 trans-1,4-Dichloro-2-buten	53	10.370	10.377	-0.007	60	2838	1.00	0.8097	
114 1,2,3-Trichloropropane	110	10.406	10.406	0.000	84	3970	1.00	0.9653	
116 Bromobenzene	156	10.456	10.448	0.008	95	30281	1.00	0.9716	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	48419	1.00	0.9491	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	88	143714	1.00	0.9733	
118 2-Chlorotoluene	126	10.570	10.570	0.000	90	37948	1.00	0.9707	
119 4-Chlorotoluene	126	10.649	10.649	0.000	99	37943	1.00	0.9677	
120 tert-Butylbenzene	119	10.857	10.857	0.000	93	146796	1.00	0.9801	
121 1,2,4-Trimethylbenzene	105	10.886	10.885	0.001	95	145220	1.00	0.9887	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	38233	1.00	0.9358	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	162683	1.00	0.9640	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	68893	1.00	0.99	
126 1,4-Dichlorobenzene	146	11.237	11.236	0.001	94	67706	1.00	1.01	
127 n-Butylbenzene	91	11.459	11.458	0.001	98	162667	1.00	0.9733	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	96	53534	1.00	0.9816	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	70	995	1.00	1.05	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	35103	1.00	0.9421	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	97	27842	1.00	0.9712	
132 Naphthalene	128	13.479	13.478	0.001	98	38843	1.00	0.8343	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	94	26745	1.00	0.9552	
S 140 1,2-Dichloroethene, Total	96				0		2.00	1.92	
S 138 1,2-Dichloroethene, Total	1				0		2.00	1.92	
S 136 Total BTEX	1				0			4.92	
S 139 Xylenes, Total	106				0		2.00	1.95	
S 134 Trihalomethanes, Total	1				0		4.00	3.87	
S 135 Xylenes, Total (URS)	1				0		2.00	1.95	
S 137 1,3-Dichloropropene, Total	1				0		2.00	1.79	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL
MV-Gas/Ket A_00071	Amount Added:	0.50	Units: uL
MV-Main A_00034	Amount Added:	0.50	Units: uL
MV-SS 2-Cleve_00042	Amount Added:	0.50	Units: uL

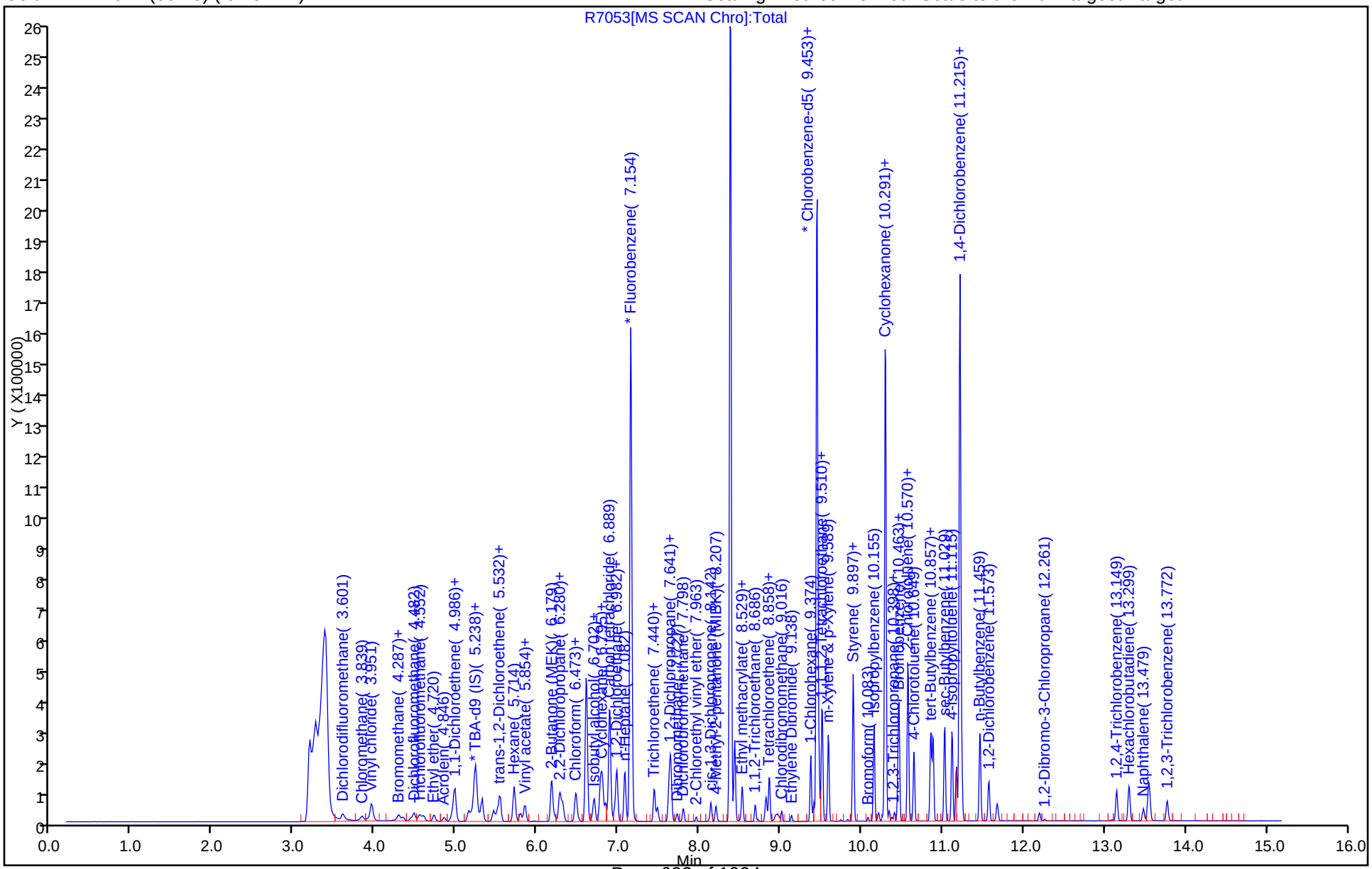
Report Date: 08-Mar-2018 22:12:04 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7053.D

Injection Date:	08-Mar-2018 19:33:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	std01			Worklist Smp#:	12
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	12
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7054.D
Lims ID: std02
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 08-Mar-2018 19:52:30 ALS Bottle#: 13 Worklist Smp#: 13
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD2
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub62

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 08-Mar-2018 22:12:06 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: linesj Date: 08-Mar-2018 20:47:22

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	138581	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	99	1427204	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.453	-0.007	88	301406	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	429420	12.5	12.5	
23 Dichlorodifluoromethane	85	3.601	3.601	0.000	99	76891	2.00	1.83	
26 Chloromethane	50	3.839	3.839	0.000	98	64446	2.00	1.96	
27 Vinyl chloride	62	3.965	3.965	0.000	97	72156	2.00	1.99	
29 Bromomethane	94	4.286	4.300	-0.014	91	51397	2.00	1.98	
30 Chloroethane	64	4.342	4.342	0.000	99	45171	2.00	1.95	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	111653	2.00	1.99	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	97	108486	2.00	2.01	
35 Ethyl ether	59	4.720	4.734	-0.014	92	31588	2.00	1.91	
39 Acrolein	56	4.846	4.860	-0.014	99	33511	20.0	19.7	
41 Acetone	43	4.944	4.958	-0.014	100	24557	8.00	7.83	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.972	0.000	95	53913	2.00	1.95	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	96	68376	2.00	1.97	
44 Iodomethane	142	5.154	5.154	0.000	98	93725	2.00	1.93	
45 Methyl acetate	43	5.182	5.182	0.000	96	72651	10.0	9.93	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	84	125635	2.00	2.03	
48 Carbon disulfide	76	5.252	5.252	0.000	99	298745	2.00	1.97	
49 2-Methyl-2-propanol	59	5.280	5.294	-0.014	92	14968	20.0	18.9	
50 Methylene Chloride	84	5.322	5.322	0.000	95	66248	2.00	1.95	
52 Acrylonitrile	53	5.462	5.462	0.000	98	71766	20.0	19.8	
51 Methyl tert-butyl ether	73	5.504	5.518	-0.014	96	91102	2.00	1.94	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	96	73413	2.00	1.96	
54 Hexane	57	5.714	5.714	0.000	91	136995	2.00	2.05	
55 Vinyl acetate	43	5.783	5.798	-0.015	97	102770	4.00	3.84	
57 1,1-Dichloroethane	63	5.839	5.853	-0.014	96	133614	2.00	2.00	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	99	33371	8.00	7.56	
62 sec-Butyl Alcohol	45	6.265	6.272	-0.007	95	35837	60.0	56.0	
63 cis-1,2-Dichloroethene	96	6.280	6.280	0.000	81	71899	2.00	1.94	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
64 2,2-Dichloropropane	77	6.308	6.315	-0.007	90	84529	2.00	1.82	
67 Chlorobromomethane	128	6.466	6.466	0.000	96	21084	2.00	1.94	
68 Chloroform	83	6.480	6.480	0.000	93	113679	2.00	1.98	
69 Tetrahydrofuran	42	6.509	6.509	0.000	88	10590	4.00	3.78	
70 Isobutyl alcohol	41	6.681	6.681	0.000	92	13888	50.0	49.6	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	99	106908	2.00	1.97	
72 Cyclohexane	56	6.781	6.781	0.000	91	154519	2.00	2.03	
73 1,1-Dichloropropene	75	6.802	6.803	0.000	97	111836	2.00	2.00	
74 Carbon tetrachloride	117	6.845	6.845	0.000	96	88847	2.00	1.95	
76 1,2-Dichloroethane	62	6.946	6.953	-0.007	98	58706	2.00	1.96	
77 Benzene	78	6.974	6.982	-0.008	95	303818	2.00	2.00	
14 n-Heptane	43	7.075	7.082	-0.007	92	144578	2.00	2.07	
79 Trichloroethene	95	7.440	7.440	0.000	98	74990	2.00	1.95	
80 2-Pentanone	43	7.476	7.476	0.000	99	108160	8.00	7.91	
83 1,2-Dichloropropane	63	7.619	7.619	0.000	95	66013	2.00	1.96	
82 Methylcyclohexane	55	7.641	7.648	-0.007	93	126875	2.00	2.02	
84 1,4-Dioxane	88	7.683	7.684	-0.001	83	3339	40.0	41.8	
85 Dibromomethane	93	7.719	7.719	0.000	94	20792	2.00	2.00	
86 Dichlorobromomethane	83	7.798	7.798	0.000	98	61595	2.00	1.87	
87 2-Chloroethyl vinyl ether	63	7.956	7.956	0.000	90	14027	2.00	1.89	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	95	71129	2.00	1.80	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.199	0.000	97	73711	8.00	7.47	
91 Toluene	91	8.436	8.436	0.000	98	328718	2.00	2.00	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	50834	2.00	1.74	
92 Ethyl methacrylate	69	8.529	8.529	0.000	63	31009	2.00	1.80	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	92	30923	2.00	1.98	
95 2-Hexanone	43	8.808	8.808	0.000	97	48099	8.00	7.46	
96 1,3-Dichloropropane	76	8.822	8.822	0.000	98	61116	2.00	2.00	
97 Tetrachloroethene	164	8.858	8.858	0.000	96	59488	2.00	1.98	
98 Chlorodibromomethane	129	9.016	9.016	0.000	91	29898	2.00	1.78	
100 Ethylene Dibromide	107	9.130	9.138	-0.008	98	26308	2.00	1.96	
101 1-Chlorohexane	91	9.374	9.374	0.000	97	116158	2.00	2.02	
102 Chlorobenzene	112	9.474	9.474	0.000	94	189706	2.00	2.00	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.503	0.000	92	48903	2.00	1.90	
103 Ethylbenzene	106	9.517	9.517	0.000	98	116873	2.00	1.97	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	142600	2.00	1.99	
107 o-Xylene	106	9.897	9.897	0.000	90	131472	2.00	2.02	
106 Styrene	104	9.897	9.897	0.000	84	180187	2.00	1.89	
108 Bromoform	173	10.076	10.083	-0.007	94	11684	2.00	1.85	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	373871	2.00	2.04	
111 Cyclohexanone	55	10.262	10.262	0.000	86	23011	80.0	73.3	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	92	30102	2.00	1.95	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	66	6566	2.00	1.87	
114 1,2,3-Trichloropropane	110	10.405	10.406	-0.001	84	7855	2.00	1.91	
116 Bromobenzene	156	10.448	10.448	0.000	95	60871	2.00	1.95	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	101032	2.00	1.98	
118 2-Chlorotoluene	126	10.570	10.570	0.000	89	78580	2.00	2.01	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	88	298066	2.00	2.02	
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	78154	2.00	1.99	
120 tert-Butylbenzene	119	10.857	10.857	0.000	93	302294	2.00	2.02	
121 1,2,4-Trimethylbenzene	105	10.878	10.885	-0.007	98	297313	2.00	2.02	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	82051	2.00	2.01	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	346317	2.00	2.05	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	139528	2.00	2.01	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	96	133595	2.00	1.99	
127 n-Butylbenzene	91	11.458	11.458	0.000	99	341308	2.00	2.04	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	96	108111	2.00	1.98	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	72	2640	2.00	1.85	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	71878	2.00	1.93	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	55878	2.00	1.95	
132 Naphthalene	128	13.478	13.478	0.000	97	82518	2.00	1.77	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	54924	2.00	1.96	
S 140 1,2-Dichloroethene, Total	96				0		4.00	3.90	
S 134 Trihalomethanes, Total	1				0		8.00	7.48	
S 135 Xylenes, Total (URS)	1				0		4.00	4.00	
S 137 1,3-Dichloropropene, Total	1				0		4.00	3.54	
S 139 Xylenes, Total	106				0		4.00	4.00	
S 138 1,2-Dichloroethene, Total	1				0		4.00	3.90	
S 136 Total BTEX	1				0			9.98	

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL
MV-Gas/Ket A_00071	Amount Added:	1.00	Units: uL
MV-Main A_00034	Amount Added:	1.00	Units: uL
MV-SS 2-Cleve_00042	Amount Added:	1.00	Units: uL

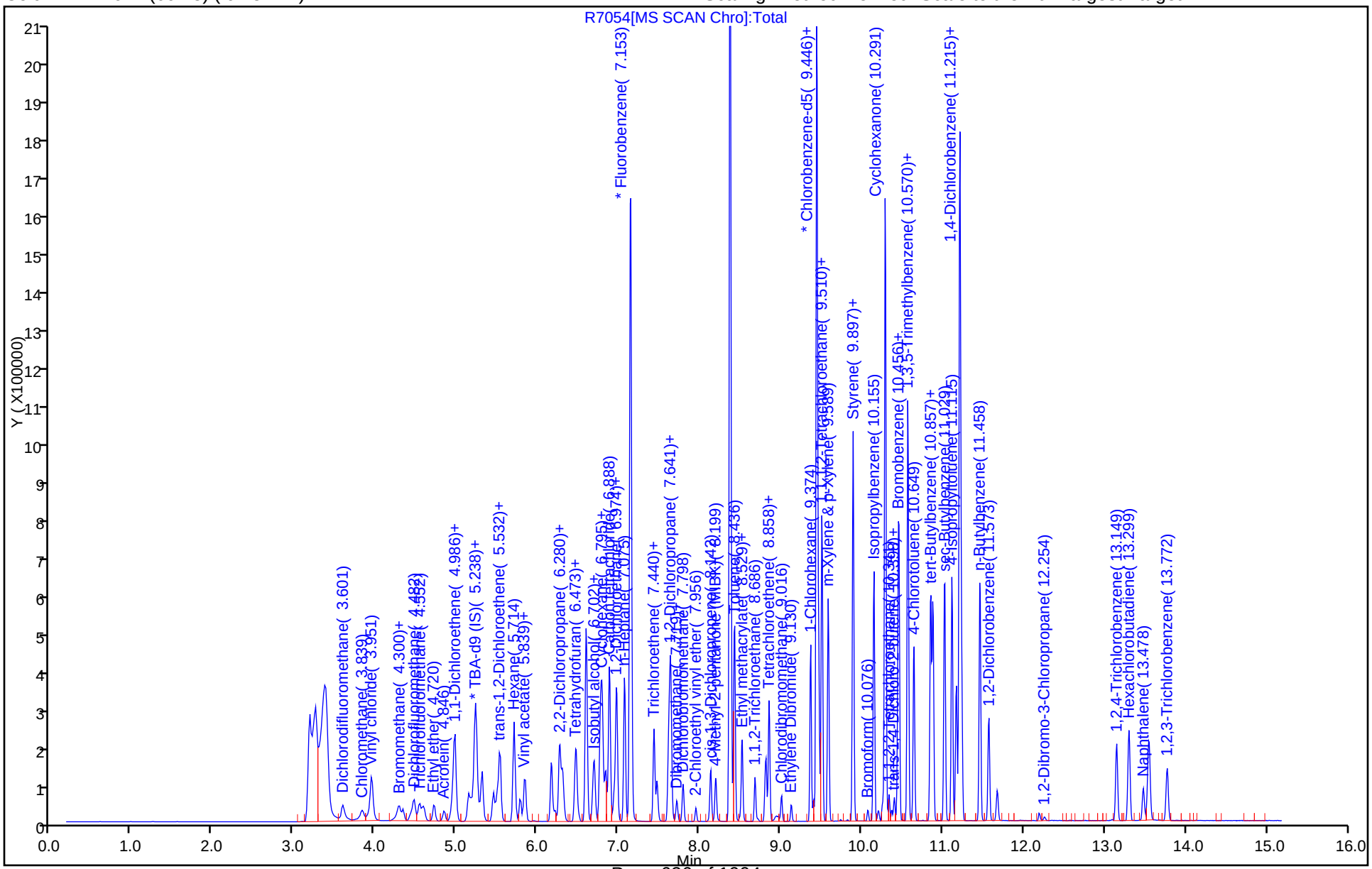
Report Date: 08-Mar-2018 22:12:07 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7054.D

Injection Date:	08-Mar-2018 19:52:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	std02			Worklist Smp#:	13
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	13
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7055.D
Lims ID: std05
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 08-Mar-2018 20:11:30 ALS Bottle#: 14 Worklist Smp#: 14
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD5
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub62

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 08-Mar-2018 22:12:09 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: linesj Date: 08-Mar-2018 20:48:20

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	143168	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.153	0.001	98	1434741	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	88	305508	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	441131	12.5	12.5	
23 Dichlorodifluoromethane	85	3.601	3.601	0.000	99	194250	5.00	4.48	
26 Chloromethane	50	3.839	3.839	0.000	99	160473	5.00	4.86	
27 Vinyl chloride	62	3.951	3.965	-0.014	98	177322	5.00	4.86	
29 Bromomethane	94	4.286	4.300	-0.014	90	129731	5.00	4.98	
30 Chloroethane	64	4.342	4.342	0.000	99	107816	5.00	4.64	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	279336	5.00	4.95	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	97	271767	5.00	5.00	
35 Ethyl ether	59	4.720	4.734	-0.014	91	81449	5.00	4.90	
39 Acrolein	56	4.846	4.860	-0.014	100	86278	50.0	50.4	
41 Acetone	43	4.944	4.958	-0.014	100	58642	20.0	20.4	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.972	0.000	96	134861	5.00	4.86	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	96	169497	5.00	4.85	
44 Iodomethane	142	5.154	5.154	0.000	98	241861	5.00	4.95	
45 Methyl acetate	43	5.182	5.182	0.000	98	184677	25.0	25.1	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	84	318220	5.00	5.12	
48 Carbon disulfide	76	5.252	5.252	0.000	99	738771	5.00	4.85	
49 2-Methyl-2-propanol	59	5.280	5.294	-0.014	94	40444	50.0	50.8	
50 Methylene Chloride	84	5.322	5.322	0.000	95	158678	5.00	4.99	
52 Acrylonitrile	53	5.462	5.462	0.000	100	188669	50.0	51.7	
51 Methyl tert-butyl ether	73	5.504	5.518	-0.014	96	238968	5.00	5.05	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	97	187072	5.00	4.98	
54 Hexane	57	5.714	5.714	0.000	92	338920	5.00	4.97	
55 Vinyl acetate	43	5.784	5.798	-0.014	97	268473	10.0	9.80	
57 1,1-Dichloroethane	63	5.840	5.853	-0.013	96	340136	5.00	5.06	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	100	84974	20.0	19.1	
62 sec-Butyl Alcohol	45	6.265	6.272	-0.007	95	98743	150.0	149.3	
63 cis-1,2-Dichloroethene	96	6.272	6.280	-0.008	81	185493	5.00	4.97	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
64 2,2-Dichloropropane	77	6.308	6.315	-0.007	93	227067	5.00	4.77	
67 Chlorobromomethane	128	6.466	6.466	0.000	93	54552	5.00	4.98	
68 Chloroform	83	6.480	6.480	0.000	93	290836	5.00	5.04	
69 Tetrahydrofuran	42	6.509	6.509	0.000	88	27841	10.0	9.89	
70 Isobutyl alcohol	41	6.681	6.681	0.000	94	37237	125.0	124.8	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	99	272916	5.00	5.00	
72 Cyclohexane	56	6.781	6.781	0.000	91	382180	5.00	4.99	
73 1,1-Dichloropropene	75	6.803	6.803	0.001	97	279684	5.00	4.98	
74 Carbon tetrachloride	117	6.846	6.845	0.001	96	228726	5.00	4.99	
76 1,2-Dichloroethane	62	6.946	6.953	-0.007	97	149208	5.00	4.97	
77 Benzene	78	6.982	6.982	0.000	95	765679	5.00	5.01	
14 n-Heptane	43	7.075	7.082	-0.007	93	358293	5.00	5.11	
79 Trichloroethene	95	7.440	7.440	0.000	98	190640	5.00	4.94	
80 2-Pentanone	43	7.476	7.476	0.000	99	293742	20.0	21.4	
83 1,2-Dichloropropane	63	7.619	7.619	0.000	97	168228	5.00	4.98	
82 Methylcyclohexane	55	7.641	7.648	-0.007	94	315987	5.00	5.01	
84 1,4-Dioxane	88	7.676	7.684	-0.008	92	8807	100.0	90.5	
85 Dibromomethane	93	7.719	7.719	0.000	94	53518	5.00	5.11	
86 Dichlorobromomethane	83	7.798	7.798	0.000	99	164301	5.00	4.84	
87 2-Chloroethyl vinyl ether	63	7.956	7.956	0.000	92	38286	5.00	4.54	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	95	204223	5.00	4.93	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.199	0.000	97	204909	20.0	20.1	
91 Toluene	91	8.436	8.436	0.000	98	819102	5.00	4.97	
92 Ethyl methacrylate	69	8.529	8.529	0.000	64	88920	5.00	4.89	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	144698	5.00	4.56	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	92	78529	5.00	4.99	
95 2-Hexanone	43	8.808	8.808	0.000	96	137437	20.0	20.4	
96 1,3-Dichloropropane	76	8.823	8.822	0.001	97	158426	5.00	5.11	
97 Tetrachloroethene	164	8.858	8.858	0.000	96	150548	5.00	4.93	
98 Chlorodibromomethane	129	9.016	9.016	0.000	90	85781	5.00	4.83	
100 Ethylene Dibromide	107	9.138	9.138	0.000	99	68903	5.00	5.07	
101 1-Chlorohexane	91	9.374	9.374	0.000	97	293643	5.00	5.05	
102 Chlorobenzene	112	9.474	9.474	0.000	94	478781	5.00	4.98	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.503	0.000	94	131522	5.00	5.05	
103 Ethylbenzene	106	9.517	9.517	0.000	98	301025	5.00	5.01	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	367452	5.00	5.05	
106 Styrene	104	9.897	9.897	0.000	86	497525	5.00	5.03	
107 o-Xylene	106	9.897	9.897	0.000	88	338462	5.00	5.13	
108 Bromoform	173	10.076	10.083	-0.007	95	33597	5.00	4.49	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	955486	5.00	5.08	
111 Cyclohexanone	55	10.262	10.262	0.000	89	61386	200.0	184.9	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	94	80121	5.00	5.06	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	81	17436	5.00	4.84	
114 1,2,3-Trichloropropane	110	10.406	10.406	0.000	85	21337	5.00	5.05	
116 Bromobenzene	156	10.449	10.448	0.001	95	161180	5.00	5.03	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	263366	5.00	5.02	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	88	780156	5.00	5.14	
118 2-Chlorotoluene	126	10.577	10.570	0.007	92	202336	5.00	5.04	
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	201891	5.00	5.01	
120 tert-Butylbenzene	119	10.857	10.857	0.000	93	783027	5.00	5.09	
121 1,2,4-Trimethylbenzene	105	10.885	10.885	0.000	98	772624	5.00	5.12	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	210856	5.00	5.02	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	887807	5.00	5.12	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	356673	5.00	5.00	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	94	343904	5.00	4.99	
127 n-Butylbenzene	91	11.459	11.458	0.001	98	883090	5.00	5.14	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	96	281967	5.00	5.03	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	78	8833	5.00	4.76	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	192258	5.00	5.02	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	144833	5.00	4.92	
132 Naphthalene	128	13.478	13.478	0.000	97	238949	5.00	4.99	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	94	145941	5.00	5.07	
S 140 1,2-Dichloroethene, Total	96				0		10.0	9.95	
S 138 1,2-Dichloroethene, Total	1				0		10.0	9.95	
S 136 Total BTEX	1				0			25.2	
S 139 Xylenes, Total	106				0		10.0	10.2	
S 134 Trihalomethanes, Total	1				0		20.0	19.2	
S 135 Xylenes, Total (URS)	1				0		10.0	10.2	
S 137 1,3-Dichloropropene, Total	1				0		10.0	9.49	

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL
MV-Gas/Ket A_00071	Amount Added:	2.50	Units: uL
MV-Main A_00034	Amount Added:	2.50	Units: uL
MV-SS 2-Cleve_00042	Amount Added:	2.50	Units: uL

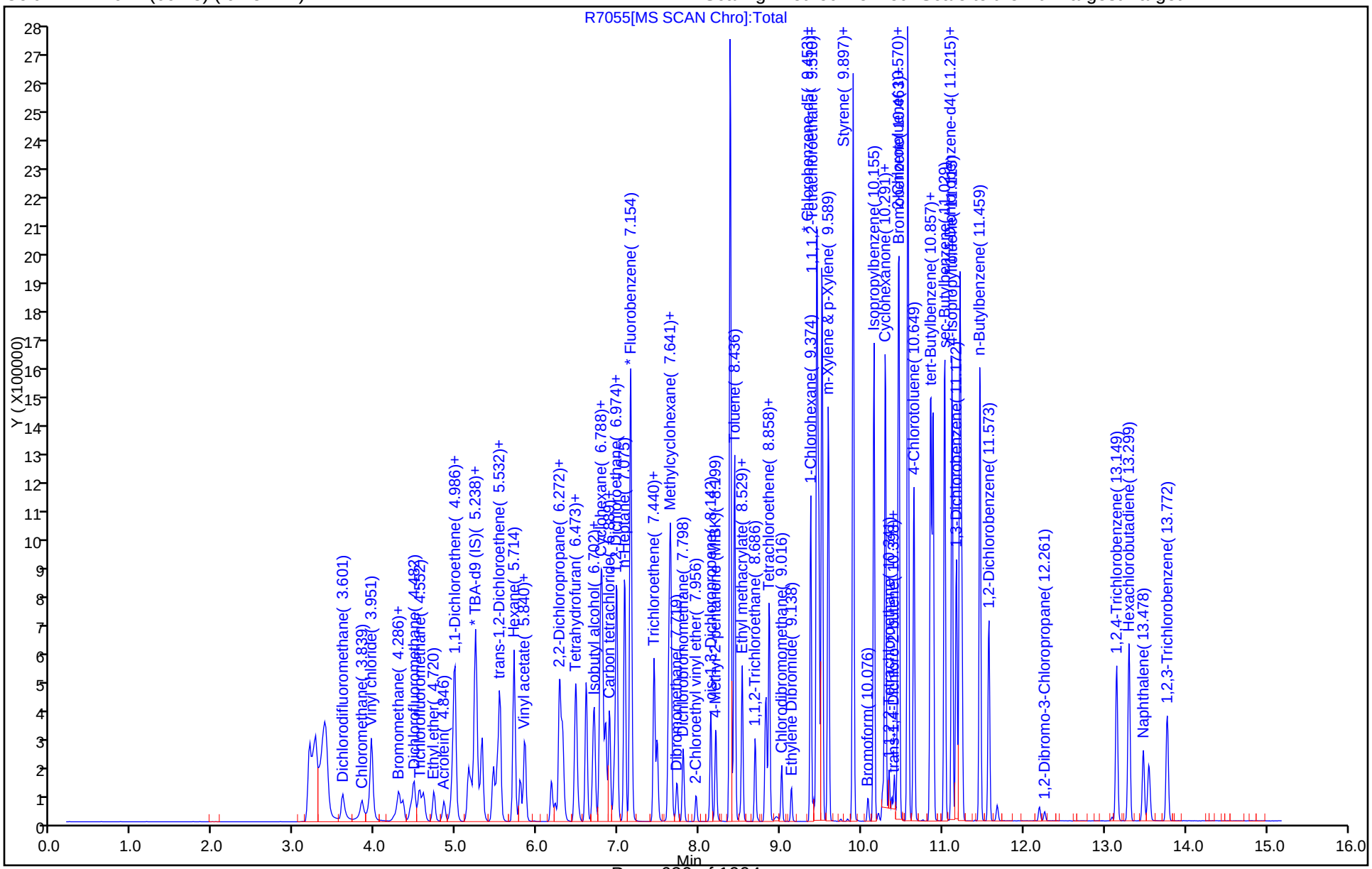
Report Date: 08-Mar-2018 22:12:10 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7055.D

Injection Date:	08-Mar-2018 20:11:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	std05			Worklist Smp#:	14
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	14
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7056.D
Lims ID: ICIS
Client ID:
Sample Type: ICIS Calib Level: 5
Inject. Date: 08-Mar-2018 20:30:30 ALS Bottle#: 15 Worklist Smp#: 15
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD10
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub62

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 08-Mar-2018 22:12:13 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: linesj Date: 08-Mar-2018 21:19:43

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	144888	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	98	1471333	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	92	319333	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	461607	12.5	12.5	
23 Dichlorodifluoromethane	85	3.601	3.601	0.000	99	489220	10.0	10.9	
26 Chloromethane	50	3.839	3.839	0.000	99	352479	10.0	10.4	
27 Vinyl chloride	62	3.965	3.965	0.000	98	402815	10.0	10.8	
29 Bromomethane	94	4.300	4.300	0.000	90	282248	10.0	10.6	
30 Chloroethane	64	4.342	4.342	0.000	99	233127	10.0	9.78	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	601720	10.0	10.4	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	98	579481	10.0	10.4	
35 Ethyl ether	59	4.734	4.734	0.000	91	181688	10.0	10.6	
39 Acrolein	56	4.860	4.860	0.000	99	185996	100.0	105.9	
41 Acetone	43	4.958	4.958	0.000	100	116800	40.0	40.9	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.972	0.000	95	298457	10.0	10.5	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	95	373809	10.0	10.4	
44 Iodomethane	142	5.154	5.154	0.000	99	523661	10.0	10.4	
45 Methyl acetate	43	5.182	5.182	0.000	98	381694	50.0	50.6	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	87	691678	10.0	10.8	
48 Carbon disulfide	76	5.252	5.252	0.000	99	1610803	10.0	10.3	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	92	88859	100.0	108.8	
50 Methylene Chloride	84	5.322	5.322	0.000	94	325408	10.0	10.2	
52 Acrylonitrile	53	5.462	5.462	0.000	99	393644	100.0	105.1	
51 Methyl tert-butyl ether	73	5.518	5.518	0.000	96	511562	10.0	10.5	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	96	403300	10.0	10.5	
54 Hexane	57	5.714	5.714	0.000	92	743543	10.0	10.4	
55 Vinyl acetate	43	5.798	5.798	0.000	97	611047	20.0	21.6	
57 1,1-Dichloroethane	63	5.853	5.853	0.000	96	721524	10.0	10.5	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	100	186189	40.0	40.9	
62 sec-Butyl Alcohol	45	6.272	6.272	0.000	95	222223	300.0	332.1	
63 cis-1,2-Dichloroethene	96	6.280	6.280	0.000	86	397957	10.0	10.4	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
64 2,2-Dichloropropane	77	6.315	6.315	0.000	92	513941	10.0	10.5	
67 Chlorobromomethane	128	6.466	6.466	0.000	93	118862	10.0	10.6	
68 Chloroform	83	6.480	6.480	0.000	94	617976	10.0	10.4	
69 Tetrahydrofuran	42	6.509	6.509	0.000	88	58948	20.0	20.4	
70 Isobutyl alcohol	41	6.681	6.681	0.000	95	78408	250.0	256.9	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	99	599191	10.0	10.7	
72 Cyclohexane	56	6.781	6.781	0.000	92	836863	10.0	10.7	
73 1,1-Dichloropropene	75	6.803	6.803	0.000	97	605984	10.0	10.5	
74 Carbon tetrachloride	117	6.845	6.845	0.000	97	510789	10.0	10.9	
76 1,2-Dichloroethane	62	6.953	6.953	0.000	97	314222	10.0	10.2	
77 Benzene	78	6.982	6.982	0.000	96	1624774	10.0	10.4	
14 n-Heptane	43	7.082	7.082	0.000	92	779390	10.0	10.8	
79 Trichloroethene	95	7.440	7.440	0.000	98	407171	10.0	10.3	
80 2-Pentanone	43	7.476	7.476	0.000	99	549831	40.0	39.0	
83 1,2-Dichloropropane	63	7.619	7.619	0.000	97	361933	10.0	10.4	
82 Methylcyclohexane	55	7.648	7.648	0.000	93	684563	10.0	10.6	
84 1,4-Dioxane	88	7.684	7.684	0.000	93	20020	200.0	186.2	
85 Dibromomethane	93	7.719	7.719	0.000	94	115856	10.0	10.8	
86 Dichlorobromomethane	83	7.798	7.798	0.000	99	364357	10.0	10.4	
87 2-Chloroethyl vinyl ether	63	7.956	7.956	0.000	91	88551	10.0	9.82	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	95	460101	10.0	10.5	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.199	0.000	96	439761	40.0	41.6	
91 Toluene	91	8.436	8.436	0.000	98	1741404	10.0	10.3	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	333255	10.0	10.0	
92 Ethyl methacrylate	69	8.529	8.529	0.000	67	199023	10.0	10.4	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	92	166542	10.0	10.3	
95 2-Hexanone	43	8.808	8.808	0.000	96	295312	40.0	41.6	
96 1,3-Dichloropropane	76	8.822	8.822	0.000	97	337246	10.0	10.4	
97 Tetrachloroethene	164	8.858	8.858	0.000	96	329244	10.0	10.3	
98 Chlorodibromomethane	129	9.016	9.016	0.000	91	194233	10.0	10.3	
100 Ethylene Dibromide	107	9.138	9.138	0.000	98	149941	10.0	10.5	
101 1-Chlorohexane	91	9.374	9.374	0.000	98	650628	10.0	10.7	
102 Chlorobenzene	112	9.474	9.474	0.000	94	1025761	10.0	10.2	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.503	0.000	95	291600	10.0	10.7	
103 Ethylbenzene	106	9.517	9.517	0.000	98	653395	10.0	10.4	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	795080	10.0	10.4	
107 o-Xylene	106	9.897	9.897	0.000	88	729576	10.0	10.6	
106 Styrene	104	9.897	9.897	0.000	87	1100593	10.0	10.6	
108 Bromoform	173	10.083	10.083	0.000	95	78646	10.0	9.54	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	2080782	10.0	10.6	
111 Cyclohexanone	55	10.262	10.262	0.000	92	141114	400.0	400.8	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	93	171445	10.0	10.3	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	89	39824	10.0	10.6	
114 1,2,3-Trichloropropane	110	10.406	10.406	0.000	84	45672	10.0	10.3	
116 Bromobenzene	156	10.448	10.448	0.000	96	347372	10.0	10.4	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	574445	10.0	10.5	
118 2-Chlorotoluene	126	10.570	10.570	0.000	88	438455	10.0	10.4	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	1687476	10.0	10.6	
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	438987	10.0	10.4	
120 tert-Butylbenzene	119	10.857	10.857	0.000	93	1699988	10.0	10.6	
121 1,2,4-Trimethylbenzene	105	10.885	10.885	0.000	97	1658541	10.0	10.5	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	459082	10.0	10.4	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	1918015	10.0	10.6	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	762628	10.0	10.2	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	96	731584	10.0	10.1	
127 n-Butylbenzene	91	11.458	11.458	0.000	98	1912636	10.0	10.6	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	96	603839	10.0	10.3	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	76	19595	10.0	9.45	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	416440	10.0	10.4	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	317652	10.0	10.3	
132 Naphthalene	128	13.478	13.478	0.000	97	535141	10.0	10.7	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	314458	10.0	10.4	
S 140 1,2-Dichloroethene, Total	96				0		20.0	20.9	
S 134 Trihalomethanes, Total	1				0		40.0	40.7	
S 135 Xylenes, Total (URS)	1				0		20.0	21.0	
S 137 1,3-Dichloropropene, Total	1				0		20.0	20.5	
S 139 Xylenes, Total	106				0		20.0	21.0	
S 138 1,2-Dichloroethene, Total	1				0		20.0	20.9	

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL
MV-Gas/Ket A_00071	Amount Added:	5.00	Units: uL
MV-Main A_00034	Amount Added:	5.00	Units: uL
MV-SS 2-Cleve_00042	Amount Added:	5.00	Units: uL

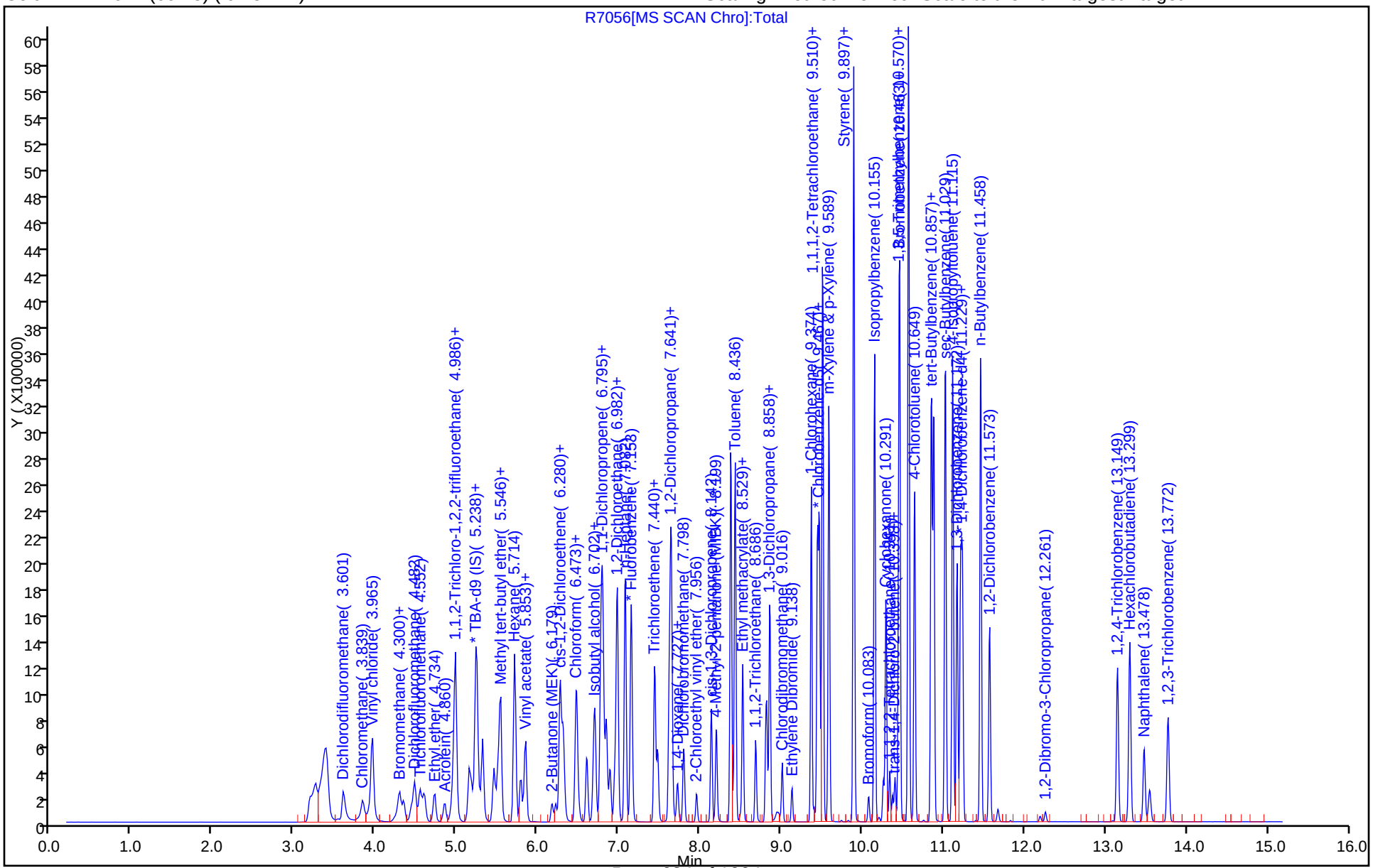
Report Date: 08-Mar-2018 22:12:14 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7056.D

Injection Date:	08-Mar-2018 20:30:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	ICIS			Worklist Smp#:	15
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	15
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7057.D
Lims ID: std30
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 08-Mar-2018 20:49:30 ALS Bottle#: 16 Worklist Smp#: 16
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD30
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub62

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 08-Mar-2018 22:12:17 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: linesj Date: 08-Mar-2018 21:26:28

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	151944	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.153	0.001	99	1511735	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.453	-0.007	88	329235	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	488218	12.5	12.5	
23 Dichlorodifluoromethane	85	3.601	3.601	0.000	99	1524345	30.0	32.8	
26 Chloromethane	50	3.839	3.839	0.000	98	1099222	30.0	31.6	
27 Vinyl chloride	62	3.965	3.965	0.000	97	1214043	30.0	31.6	
29 Bromomethane	94	4.286	4.300	-0.014	90	864003	30.0	31.5	
30 Chloroethane	64	4.342	4.342	0.000	99	699569	30.0	28.6	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	97	1822487	30.0	30.6	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	98	1772885	30.0	30.9	
35 Ethyl ether	59	4.720	4.734	-0.014	91	548079	30.0	31.3	
39 Acrolein	56	4.846	4.860	-0.014	100	578073	300.0	320.4	
41 Acetone	43	4.944	4.958	-0.014	100	349195	120.0	121.6	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.972	0.000	95	928005	30.0	31.7	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	97	1159872	30.0	31.5	
44 Iodomethane	142	5.154	5.154	0.000	99	1625729	30.0	31.6	
45 Methyl acetate	43	5.182	5.182	0.000	98	1134092	150.0	146.4	
47 3-Chloro-1-propene	41	5.224	5.238	-0.014	87	2037889	30.0	31.1	
48 Carbon disulfide	76	5.252	5.252	0.000	99	4835580	30.0	30.1	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	94	281729	300.0	335.6	
50 Methylene Chloride	84	5.322	5.322	0.000	94	974496	30.0	30.3	
52 Acrylonitrile	53	5.462	5.462	0.000	99	1212252	300.0	315.1	
51 Methyl tert-butyl ether	73	5.504	5.518	-0.014	95	1601072	30.0	32.1	
53 trans-1,2-Dichloroethene	96	5.532	5.546	-0.014	97	1219884	30.0	30.8	
54 Hexane	57	5.714	5.714	0.000	91	2214412	30.0	30.1	
55 Vinyl acetate	43	5.784	5.798	-0.014	97	1782343	60.0	61.2	
57 1,1-Dichloroethane	63	5.840	5.853	-0.013	96	2148910	30.0	30.3	
61 2-Butanone (MEK)	43	6.215	6.222	-0.007	100	563338	120.0	120.4	
62 sec-Butyl Alcohol	45	6.265	6.272	-0.007	96	708461	900.0	1009.6	
63 cis-1,2-Dichloroethene	96	6.272	6.280	-0.008	80	1209785	30.0	30.8	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
64 2,2-Dichloropropane	77	6.308	6.315	-0.007	91	1645692	30.0	32.5	
67 Chlorobromomethane	128	6.466	6.466	0.000	94	367301	30.0	31.8	
68 Chloroform	83	6.480	6.480	0.000	93	1866844	30.0	30.7	
69 Tetrahydrofuran	42	6.502	6.509	-0.007	89	184439	60.0	62.2	
70 Isobutyl alcohol	41	6.681	6.681	0.000	95	247046	750.0	766.7	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	98	1849691	30.0	32.2	
72 Cyclohexane	56	6.781	6.781	0.000	91	2524292	30.0	31.3	
73 1,1-Dichloropropene	75	6.803	6.803	0.001	97	1815809	30.0	30.7	
74 Carbon tetrachloride	117	6.845	6.845	0.000	97	1598521	30.0	33.1	
76 1,2-Dichloroethane	62	6.946	6.953	-0.007	97	936043	30.0	29.6	
77 Benzene	78	6.974	6.982	-0.008	97	4836001	30.0	30.0	
14 n-Heptane	43	7.075	7.082	-0.007	91	2261066	30.0	30.6	
79 Trichloroethene	95	7.440	7.440	0.000	99	1248958	30.0	30.7	
80 2-Pentanone	43	7.476	7.476	0.000	99	1875886	120.0	129.5	
83 1,2-Dichloropropane	63	7.619	7.619	0.000	97	1085055	30.0	30.5	
82 Methylcyclohexane	55	7.641	7.648	-0.007	93	2082251	30.0	31.4	
84 1,4-Dioxane	88	7.676	7.684	-0.008	95	73446	600.0	634.2	
85 Dibromomethane	93	7.719	7.719	0.000	95	350696	30.0	31.8	
86 Dichlorobromomethane	83	7.798	7.798	0.000	99	1137146	30.0	31.4	
87 2-Chloroethyl vinyl ether	63	7.956	7.956	0.000	91	302124	30.0	31.8	
89 cis-1,3-Dichloropropene	75	8.135	8.142	-0.007	96	1447880	30.0	31.9	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.199	0.000	96	1389520	120.0	127.3	
91 Toluene	91	8.436	8.436	0.000	99	5173013	30.0	29.8	
92 Ethyl methacrylate	69	8.522	8.529	-0.007	92	643677	30.0	32.2	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	1062795	30.0	30.6	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	91	519081	30.0	31.3	
95 2-Hexanone	43	8.808	8.808	0.000	96	943980	120.0	128.2	
96 1,3-Dichloropropane	76	8.822	8.822	0.000	94	1016399	30.0	30.4	
97 Tetrachloroethene	164	8.858	8.858	0.000	96	1010743	30.0	30.7	
98 Chlorodibromomethane	129	9.016	9.016	0.000	91	628683	30.0	32.3	
100 Ethylene Dibromide	107	9.131	9.138	-0.008	98	468358	30.0	32.0	
101 1-Chlorohexane	91	9.374	9.374	0.000	98	1976647	30.0	31.5	
102 Chlorobenzene	112	9.474	9.474	0.000	94	3096216	30.0	29.9	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.503	0.000	95	923735	30.0	32.9	
103 Ethylbenzene	106	9.517	9.517	0.000	98	2004115	30.0	30.9	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	2418777	30.0	30.8	
106 Styrene	104	9.897	9.897	0.000	87	3386423	30.0	31.4	
107 o-Xylene	106	9.897	9.897	0.000	88	2201717	30.0	31.0	
108 Bromoform	173	10.076	10.083	-0.007	96	281168	30.0	32.1	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	6266010	30.0	30.1	
111 Cyclohexanone	55	10.255	10.262	-0.007	92	485261	1200.0	1325.4	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	94	526089	30.0	30.0	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	91	134422	30.0	33.7	
114 1,2,3-Trichloropropane	110	10.406	10.406	0.000	85	145335	30.0	31.1	
116 Bromobenzene	156	10.449	10.448	0.000	96	1096731	30.0	30.9	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	1783839	30.0	30.7	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	5140553	30.0	30.6	
118 2-Chlorotoluene	126	10.570	10.570	0.000	88	1344303	30.0	30.2	
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	1352114	30.0	30.3	
120 tert-Butylbenzene	119	10.857	10.857	0.000	92	5177405	30.0	30.4	
121 1,2,4-Trimethylbenzene	105	10.885	10.885	0.000	97	5104757	30.0	30.6	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	1440406	30.0	31.0	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	5898768	30.0	30.7	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	2350329	30.0	29.7	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	93	2272638	30.0	29.8	
127 n-Butylbenzene	91	11.458	11.458	0.000	98	5761491	30.0	30.3	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	97	1865842	30.0	30.1	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	81	72008	30.0	31.5	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	1316631	30.0	31.1	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	1002193	30.0	30.7	
132 Naphthalene	128	13.478	13.478	0.000	97	1744645	30.0	32.9	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	984667	30.0	30.9	
S 140 1,2-Dichloroethene, Total	96				0		60.0	61.6	
S 138 1,2-Dichloroethene, Total	1				0		60.0	61.6	
S 136 Total BTEX	1				0			152.5	
S 139 Xylenes, Total	106				0		60.0	61.8	
S 134 Trihalomethanes, Total	1				0		120.0	126.4	
S 135 Xylenes, Total (URS)	1				0		60.0	61.8	
S 137 1,3-Dichloropropene, Total	1				0		60.0	62.5	

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL
MV-Gas/Ket A_00071	Amount Added:	15.00	Units: uL
MV-Main A_00034	Amount Added:	15.00	Units: uL
MV-SS 2-Cleve_00042	Amount Added:	15.00	Units: uL

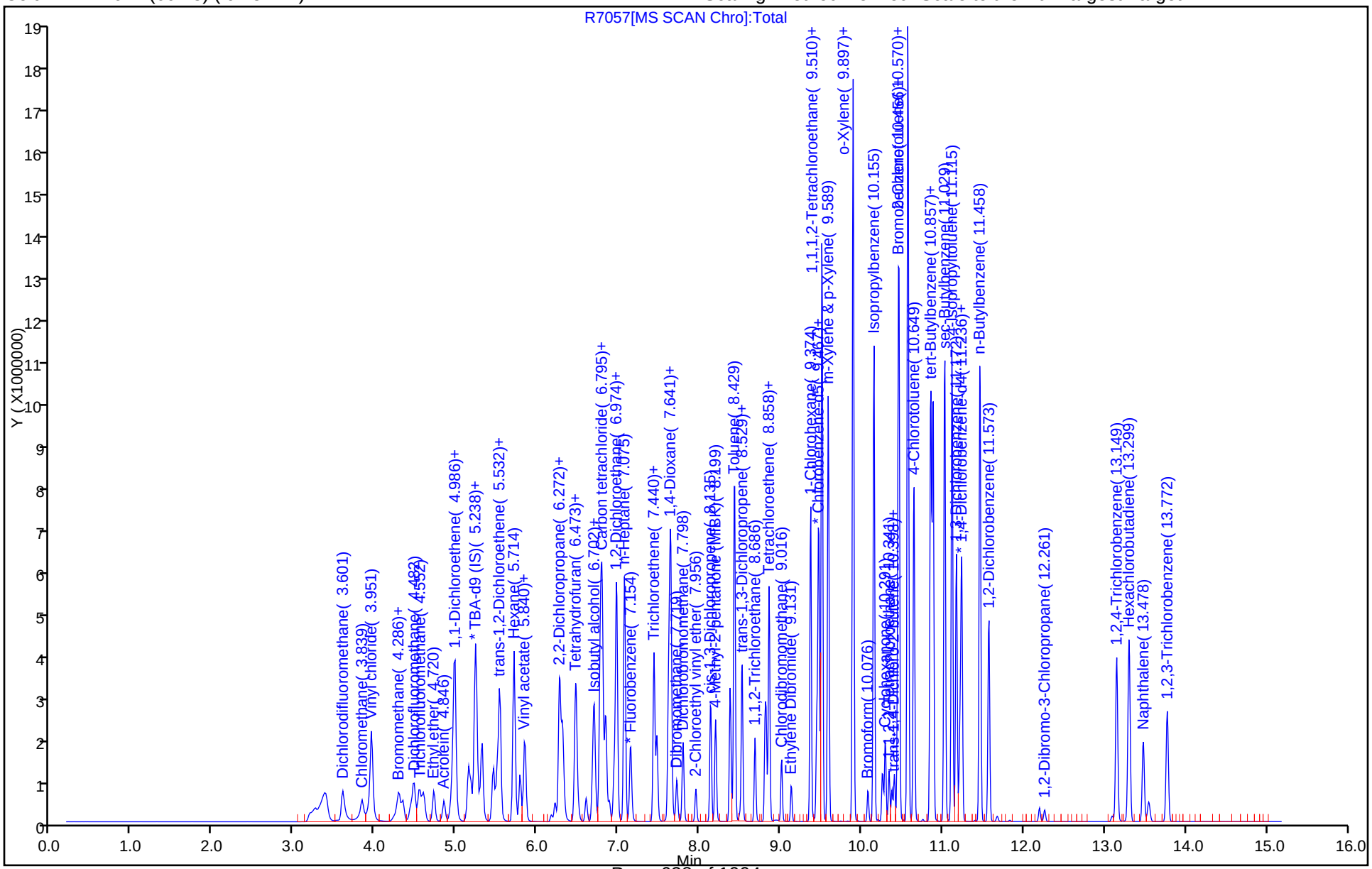
Report Date: 08-Mar-2018 22:12:18 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7057.D

Injection Date:	08-Mar-2018 20:49:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	std30			Worklist Smp#:	16
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	16
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D
Lims ID: std60
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 08-Mar-2018 21:08:30 ALS Bottle#: 17 Worklist Smp#: 17
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD60
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub62

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 08-Mar-2018 22:12:21 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: linesj Date: 08-Mar-2018 21:29:43

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	170739	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	99	1612558	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	86	350047	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	511223	12.5	12.5	
23 Dichlorodifluoromethane	85	3.587	3.601	-0.014	99	3071855	60.0	62.0	
26 Chloromethane	50	3.825	3.839	-0.014	99	2241673	60.0	60.4	
27 Vinyl chloride	62	3.951	3.965	-0.014	97	2440703	60.0	59.5	
29 Bromomethane	94	4.286	4.300	-0.014	89	1678958	60.0	57.3	
30 Chloroethane	64	4.328	4.342	-0.014	99	1343182	60.0	51.4	
31 Dichlorofluoromethane	67	4.468	4.482	-0.014	97	3657988	60.0	57.7	
32 Trichlorofluoromethane	101	4.538	4.552	-0.014	99	3531006	60.0	57.8	
35 Ethyl ether	59	4.720	4.734	-0.014	91	1163886	60.0	62.2	
39 Acrolein	56	4.846	4.860	-0.014	100	1192724	599.9	619.7	
41 Acetone	43	4.944	4.958	-0.014	100	704168	240.0	231.1	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.972	0.000	95	1933714	60.0	62.0	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	98	2397453	60.0	61.0	
44 Iodomethane	142	5.140	5.154	-0.014	99	3432643	60.0	62.5	
45 Methyl acetate	43	5.182	5.182	0.000	98	2336674	300.0	282.8	
47 3-Chloro-1-propene	41	5.224	5.238	-0.014	84	4049537	60.0	57.9	
48 Carbon disulfide	76	5.238	5.252	-0.014	99	9836483	60.0	57.5	
49 2-Methyl-2-propanol	59	5.280	5.294	-0.014	93	605696	600.0	676.4	
50 Methylene Chloride	84	5.322	5.322	0.000	93	2026463	60.0	59.2	
52 Acrylonitrile	53	5.462	5.462	0.000	100	2514598	600.0	612.7	
51 Methyl tert-butyl ether	73	5.504	5.518	-0.014	95	3366216	60.0	63.3	
53 trans-1,2-Dichloroethene	96	5.532	5.546	-0.014	98	2549077	60.0	60.3	
54 Hexane	57	5.714	5.714	0.000	90	4473506	60.0	57.2	
55 Vinyl acetate	43	5.784	5.798	-0.014	97	3625730	120.0	116.6	
57 1,1-Dichloroethane	63	5.839	5.853	-0.014	96	4412148	60.0	58.4	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	100	1212766	240.0	243.1	
62 sec-Butyl Alcohol	45	6.265	6.272	-0.007	96	1510327	1800.0	1915.4	
63 cis-1,2-Dichloroethene	96	6.272	6.280	-0.008	80	2559165	60.0	61.0	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
64 2,2-Dichloropropane	77	6.308	6.315	-0.007	90	3442672	60.0	63.7	
67 Chlorobromomethane	128	6.466	6.466	0.000	96	783569	60.0	63.7	
68 Chloroform	83	6.480	6.480	0.000	93	3880927	60.0	59.8	
69 Tetrahydrofuran	42	6.509	6.509	0.000	88	390600	120.0	123.5	
70 Isobutyl alcohol	41	6.681	6.681	0.000	95	502120	1500.0	1384.7	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	98	3822120	60.0	62.3	
72 Cyclohexane	56	6.781	6.781	0.000	90	4994108	60.0	58.1	
73 1,1-Dichloropropene	75	6.802	6.803	0.000	98	3700705	60.0	58.7	
74 Carbon tetrachloride	117	6.845	6.845	0.000	97	3305281	60.0	64.2	
76 1,2-Dichloroethane	62	6.946	6.953	-0.007	97	1920230	60.0	56.9	
77 Benzene	78	6.974	6.982	-0.008	96	10034765	60.0	58.4	
14 n-Heptane	43	7.075	7.082	-0.007	90	4457260	60.0	56.5	
79 Trichloroethene	95	7.440	7.440	0.000	99	2648012	60.0	61.0	
80 2-Pentanone	43	7.476	7.476	0.000	99	3884206	240.0	251.3	
83 1,2-Dichloropropane	63	7.619	7.619	0.000	98	2234834	60.0	58.9	
82 Methylcyclohexane	55	7.641	7.648	-0.007	92	4106102	60.0	58.0	
84 1,4-Dioxane	88	7.676	7.684	-0.008	88	158832	1200.0	1273.5	
85 Dibromomethane	93	7.719	7.719	0.000	96	743756	60.0	63.2	
86 Dichlorobromomethane	83	7.798	7.798	0.000	100	2424712	60.0	62.7	
87 2-Chloroethyl vinyl ether	63	7.956	7.956	0.000	91	648436	60.0	63.7	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	96	3093022	60.0	63.9	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.199	0.000	95	2832822	240.0	243.1	
91 Toluene	91	8.436	8.436	0.000	99	10547255	60.0	56.9	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	97	2233451	60.0	60.1	
92 Ethyl methacrylate	69	8.529	8.529	0.000	86	1368481	60.0	64.4	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	91	1088152	60.0	61.6	
95 2-Hexanone	43	8.808	8.808	0.000	95	1911731	240.0	243.9	
96 1,3-Dichloropropane	76	8.822	8.822	0.000	96	2095454	60.0	59.0	
97 Tetrachloroethene	164	8.858	8.858	0.000	96	2132908	60.0	61.0	
98 Chlorodibromomethane	129	9.016	9.016	0.000	91	1355421	60.0	65.3	
100 Ethylene Dibromide	107	9.138	9.138	0.000	98	991175	60.0	63.6	
101 1-Chlorohexane	91	9.374	9.374	0.000	97	4069634	60.0	61.1	
102 Chlorobenzene	112	9.474	9.474	0.000	94	6440496	60.0	58.5	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.503	0.000	96	1939562	60.0	65.0	
103 Ethylbenzene	106	9.517	9.517	0.000	98	4089822	60.0	59.4	e
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	5003358	60.0	60.0	a
107 o-Xylene	106	9.897	9.897	0.000	88	4386133	60.0	58.0	
106 Styrene	104	9.897	9.897	0.000	87	6778615	60.0	59.0	
108 Bromoform	173	10.083	10.083	0.000	97	616623	60.0	65.7	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	12401600	60.0	56.9	e
111 Cyclohexanone	55	10.262	10.262	0.000	92	1023654	2400.0	2624.9	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	94	1087312	60.0	59.3	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	91	277051	60.0	66.4	
114 1,2,3-Trichloropropane	110	10.405	10.406	-0.001	84	294570	60.0	60.1	
116 Bromobenzene	156	10.448	10.448	0.000	97	2299285	60.0	61.9	
115 N-Propylbenzene	120	10.463	10.463	0.000	97	3675265	60.0	60.5	
118 2-Chlorotoluene	126	10.577	10.570	0.007	92	2701049	60.0	58.0	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	10141640	60.0	57.7	
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	2822630	60.0	60.4	
120 tert-Butylbenzene	119	10.857	10.857	0.000	92	10561973	60.0	59.2	
121 1,2,4-Trimethylbenzene	105	10.885	10.885	0.000	97	10394778	60.0	59.4	
122 sec-Butylbenzene	134	11.029	11.029	0.000	95	2971112	60.0	61.1	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
123 4-Isopropyltoluene	119	11.115	11.115	0.000	96	11811521	60.0	58.8	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	4967931	60.0	60.0	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	94	4753686	60.0	59.5	
127 n-Butylbenzene	91	11.458	11.458	0.000	97	11450883	60.0	57.5	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	97	3939836	60.0	60.7	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	82	156747	60.0	64.8	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	2828450	60.0	63.7	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	2149255	60.0	62.9	
132 Naphthalene	128	13.478	13.478	0.000	97	3708096	60.0	66.9	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	2110570	60.0	63.3	
S 140 1,2-Dichloroethene, Total	96				0		120.0	121.3	
S 134 Trihalomethanes, Total	1				0		240.0	253.5	
S 135 Xylenes, Total (URS)	1				0		120.0	118.0	
S 137 1,3-Dichloropropene, Total	1				0		120.0	124.0	
S 139 Xylenes, Total	106				0		120.0	118.0	
S 138 1,2-Dichloroethene, Total	1				0		120.0	121.3	
S 136 Total BTEX	1				0			292.7	

QC Flag Legend

Processing Flags

e - Potential Peak Saturated

Review Flags

a - User Assigned ID

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL
MV-Gas/Ket A_00071	Amount Added:	30.00	Units: uL
MV-Main A_00034	Amount Added:	30.00	Units: uL
MV-SS 2-Cleve_00042	Amount Added:	30.00	Units: uL

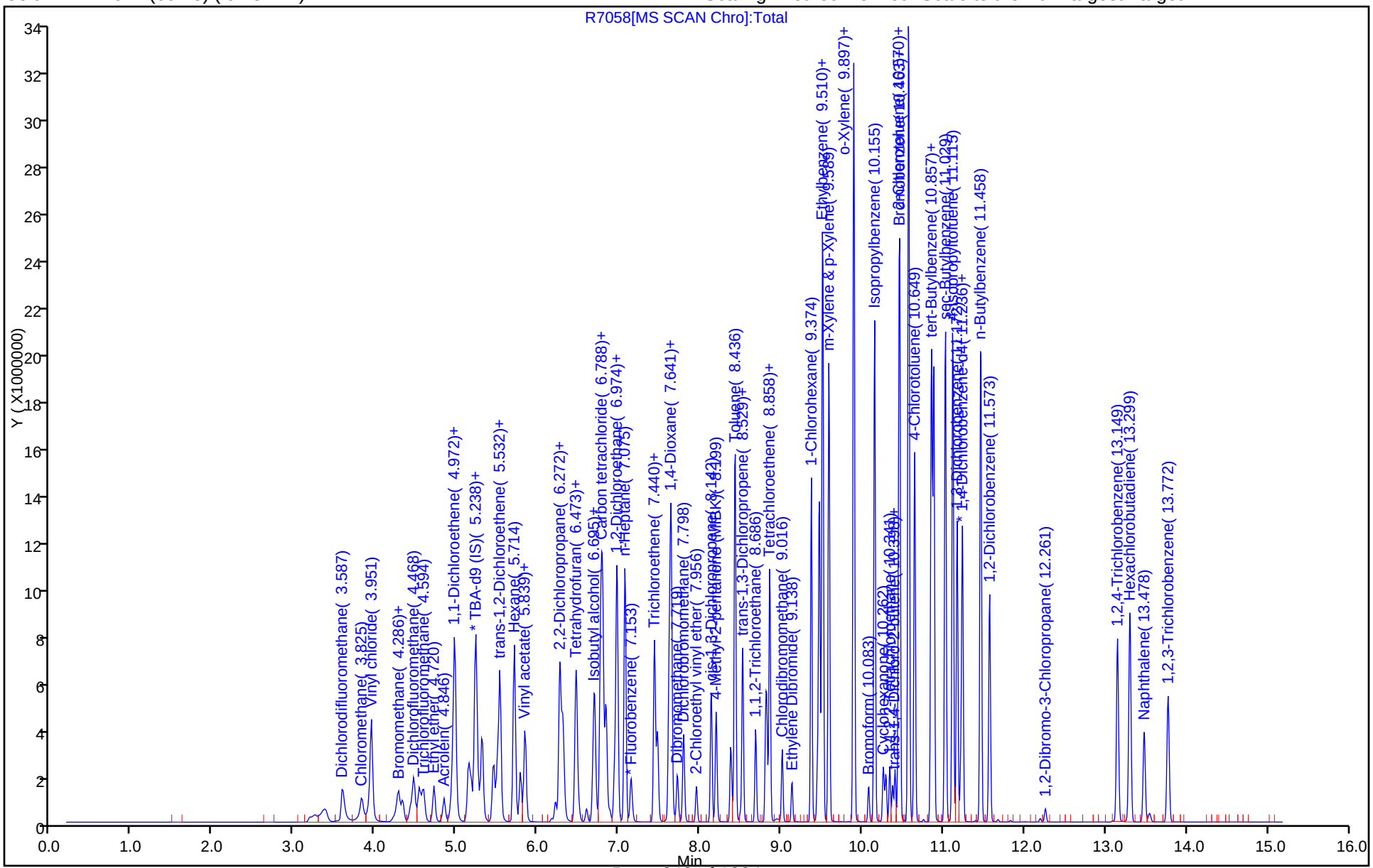
Report Date: 08-Mar-2018 22:12:23 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Injection Date:	08-Mar-2018 21:08:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	std60			Worklist Smp#:	17
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Manual Integration/User Assign Peak Report

TestAmerica Denver

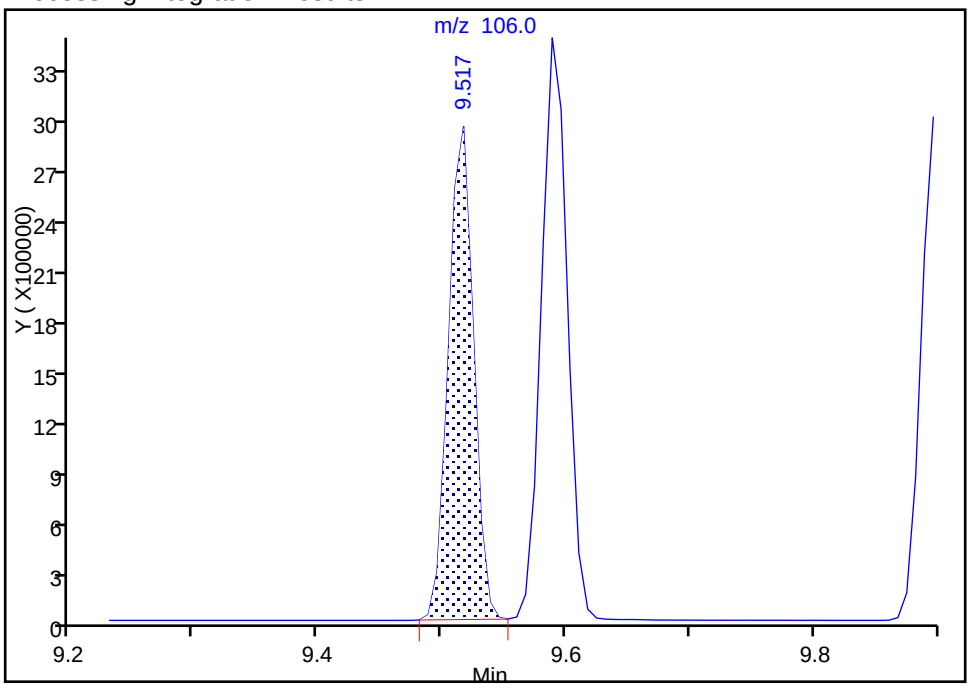
Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D
Injection Date: 08-Mar-2018 21:08:30 Instrument ID: VMS_R1
Lims ID: std60
Client ID:
Operator ID: LINESJ ALS Bottle#: 17 Worklist Smp#: 17
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Method: AQ_VMSR1_8260 Limit Group: MSV - 8260B Water and Solid
Column: DB-624 (60.25) (0.25 mm) Detector MS SCAN

105 m-Xylene & p-Xylene, CAS: 179601-23-1

Signal: 1

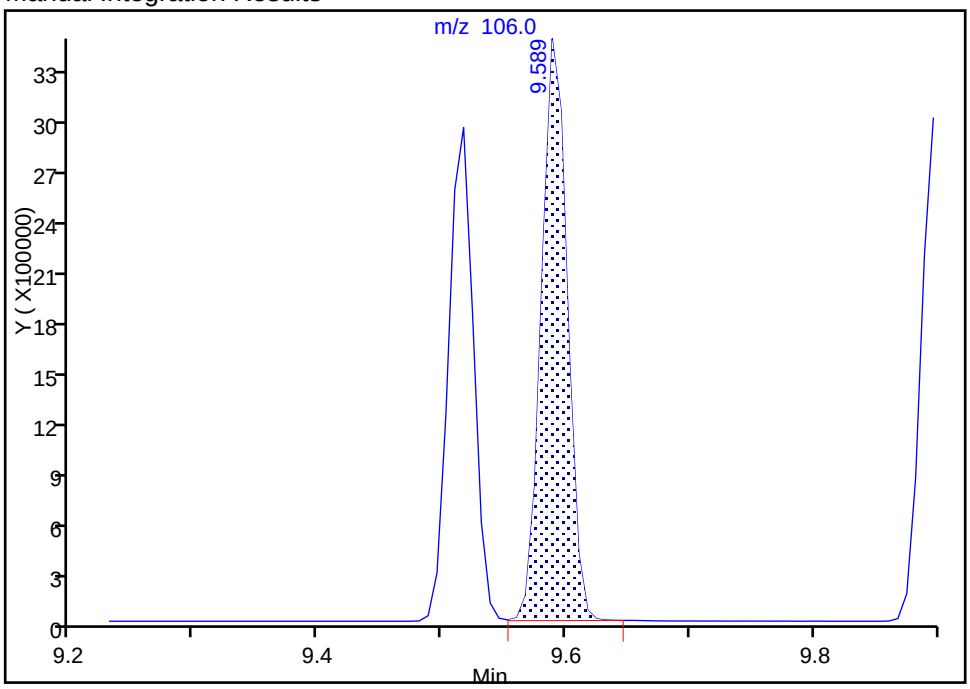
Processing Integration Results

RT: 9.52
Area: 4089822
Amount: 50.338777
Amount Units: ug/l



Manual Integration Results

RT: 9.59
Area: 5003358
Amount: 59.977170
Amount Units: ug/l



Reviewer: linesj, 08-Mar-2018 21:31:15
Audit Action: Assigned Compound ID Audit Reason: Wrong peak

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 408044

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/15/2018 18:53 Calibration End Date: 03/15/2018 20:09 Calibration ID: 31898

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD2 280-408044/10	R7382.D
Level 2	STD5 280-408044/11	R7383.D
Level 3	STD10 280-408044/12	R7384.D
Level 4	STD30 280-408044/13	R7385.D
Level 5	STD60 280-408044/14	R7386.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dibromofluoromethane (Surr)	0.2689	0.2494	0.2665	0.2687	0.2674	Ave		0.2642				3.2		15.0			
1,2-Dichloroethane-d4 (Surr)	0.2626	0.2398	0.2538	0.2462	0.2448	Lin2	0.0312	0.2441							0.9990		0.9900
Toluene-d8 (Surr)	5.8404	5.6203	6.0055	6.2889	6.1772	Ave		5.9865				4.4		15.0			
4-Bromofluorobenzene (Surr)	1.3837	1.2639	1.3590	1.4560	1.5022	Ave		1.3929				6.6		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 320-36960-1 Analy Batch No.: 408044

SDG No.:

Instrument ID: VMS_R1 GC Column: DB-624 (60. ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/15/2018 18:53 Calibration End Date: 03/15/2018 20:09 Calibration ID: 31898

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD2 280-408044/10	R7382.D
Level 2	STD5 280-408044/11	R7383.D
Level 3	STD10 280-408044/12	R7384.D
Level 4	STD30 280-408044/13	R7385.D
Level 5	STD60 280-408044/14	R7386.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
Dibromofluoromethane (Surr)	FB	Ave	64445	150877	287262	895067	1791196	2.00	5.00	10.0	30.0	60.0
1,2-Dichloroethane-d4 (Surr)	FB	Lin2	62929	145103	273551	820345	1639477	2.00	5.00	10.0	30.0	60.0
Toluene-d8 (Surr)	CBNZd	Ave	289193	708520	1351473	4344370	8594042	2.00	5.00	10.0	30.0	60.0
4-Bromofluorobenzene (Surr)	DCBd4	Ave	93455	215822	422772	1392611	2848500	2.00	5.00	10.0	30.0	60.0

Curve Type Legend:

Ave = Average ISTD
Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7382.D
Lims ID: STD2
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 15-Mar-2018 18:53:30 ALS Bottle#: 13 Worklist Smp#: 10
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD2
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub84

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 16-Mar-2018 19:54:26 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK027

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	134003	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.153	0.001	98	1497928	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.446	0.007	89	309477	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	422119	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	92	64445	2.00	2.04	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	62929	2.00	2.02	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	94	289193	2.00	1.95	
$ 8 4-Bromofluorobenzene (Surr	95	10.298	10.291	0.007	84	93455	2.00	1.99	

Reagents:

MV-568718-D_00014 Amount Added: 1.00 Units: uL
MV-ARCH SS A_00091 Amount Added: 0.16 Units: uL

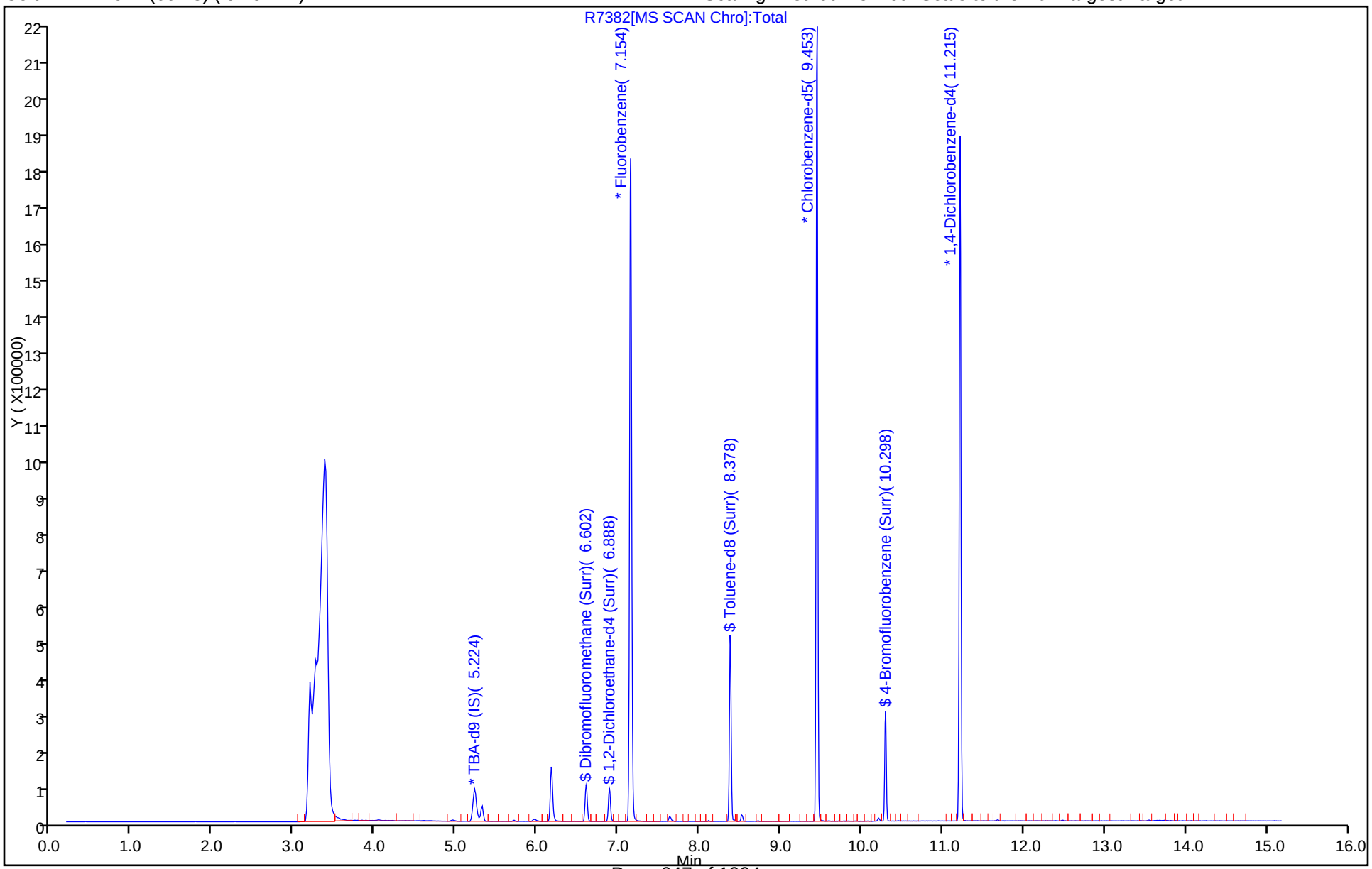
Report Date: 16-Mar-2018 19:54:26 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7382.D

Injection Date:	15-Mar-2018 18:53:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	STD2			Worklist Smp#:	10
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	13
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7383.D
Lims ID: STD5
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 15-Mar-2018 19:12:30 ALS Bottle#: 14 Worklist Smp#: 11
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD5
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub84

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 16-Mar-2018 19:54:28 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK027

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	139207	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.153	0.001	98	1512667	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.446	0.007	89	315163	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	426905	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	150877	5.00	4.72	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.889	6.888	0.001	0	145103	5.00	4.78	
$ 7 Toluene-d8 (Surr)	98	8.379	8.378	0.001	94	708520	5.00	4.69	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	84	215822	5.00	4.54	

Reagents:

MV-568718-D_00014 Amount Added: 1.00 Units: uL
MV-ARCH SS A_00091 Amount Added: 0.40 Units: uL

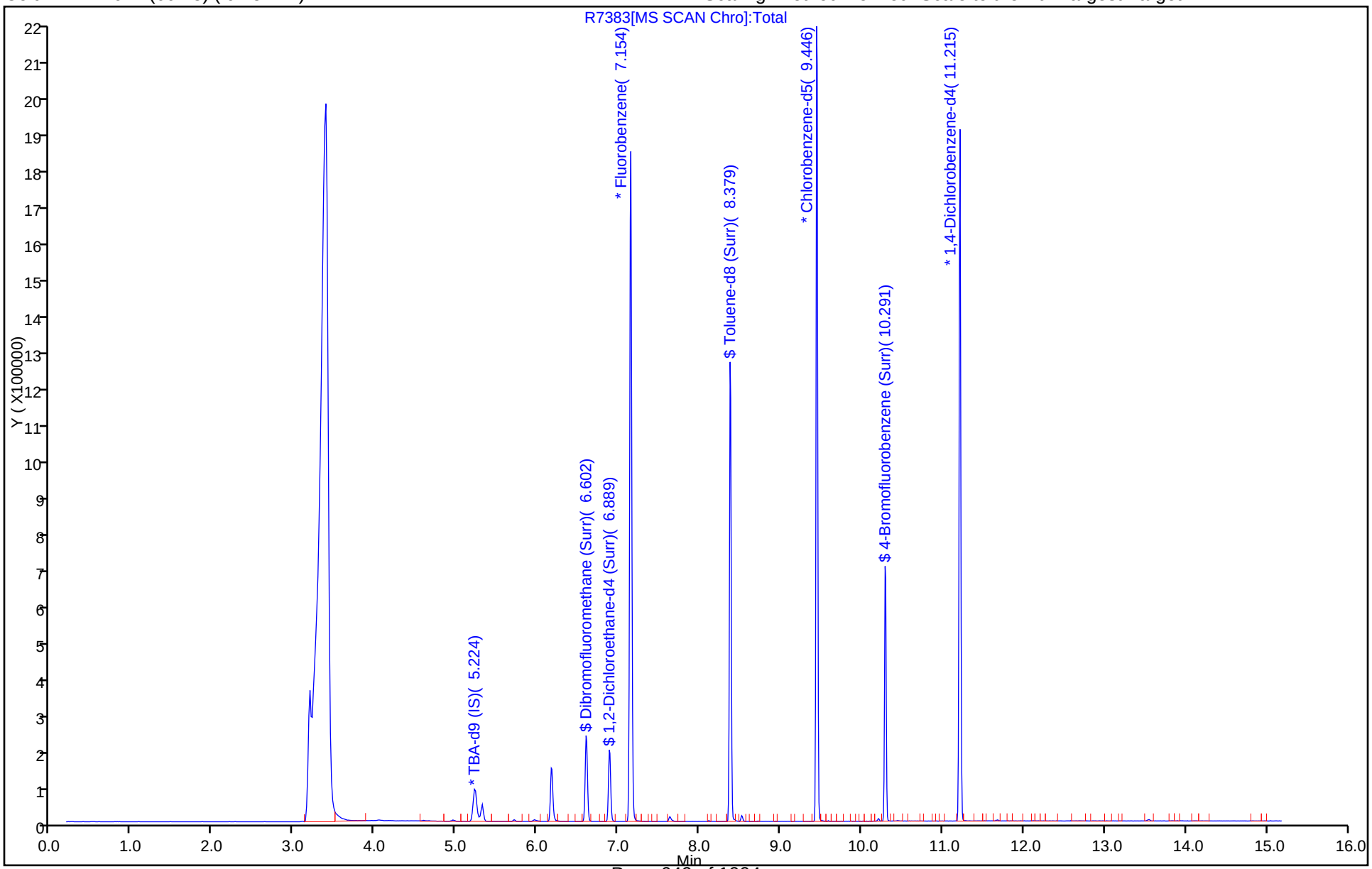
Report Date: 16-Mar-2018 19:54:28 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7383.D

Injection Date:	15-Mar-2018 19:12:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	STD5			Worklist Smp#:	11
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	14
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7384.D
Lims ID: STD10
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 15-Mar-2018 19:31:30 ALS Bottle#: 15 Worklist Smp#: 12
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD10
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub84

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 16-Mar-2018 19:54:30 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK027

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	125939	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.154	0.000	98	1347224	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	89	281297	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	388875	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	287262	10.0	10.1	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	273551	10.0	10.3	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	94	1351473	10.0	10.0	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	84	422772	10.0	9.76	

Reagents:

MV-568718-D_00014 Amount Added: 1.00 Units: uL
MV-ARCH SS A_00091 Amount Added: 0.80 Units: uL

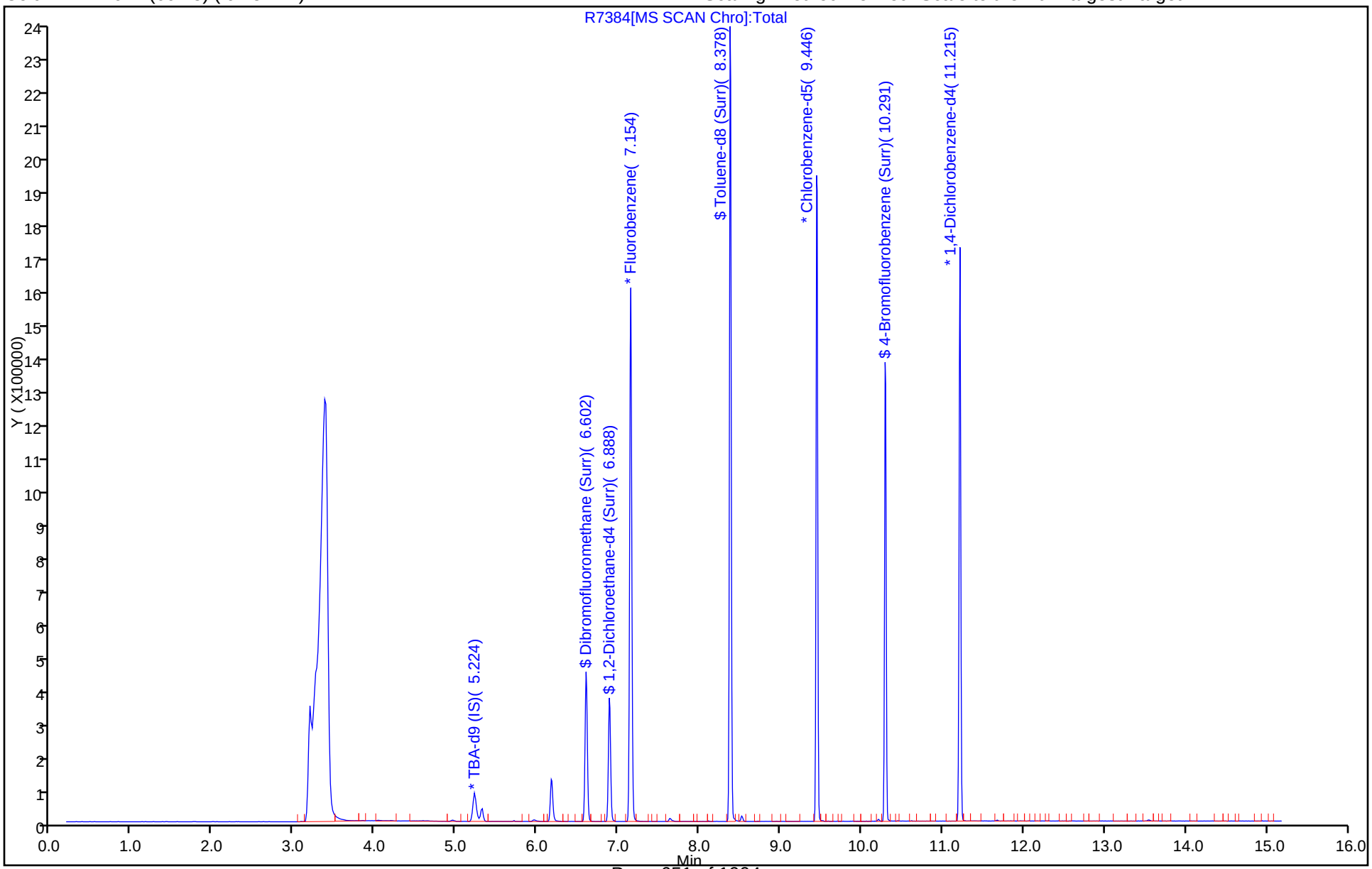
Report Date: 16-Mar-2018 19:54:30 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7384.D

Injection Date:	15-Mar-2018 19:31:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	STD10			Worklist Smp#:	12
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	15
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7385.D
Lims ID: STD30
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 15-Mar-2018 19:50:30 ALS Bottle#: 16 Worklist Smp#: 13
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD30
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub84

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 16-Mar-2018 19:54:31 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK027

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	126428	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.154	-0.001	98	1388151	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.453	-0.007	89	287832	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	398537	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	895067	30.0	30.5	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	820345	30.0	30.1	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	94	4344370	30.0	31.5	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	85	1392611	30.0	31.4	

Reagents:

MV-568718-D_00014 Amount Added: 1.00 Units: uL
MV-ARCH SS A_00091 Amount Added: 2.40 Units: uL

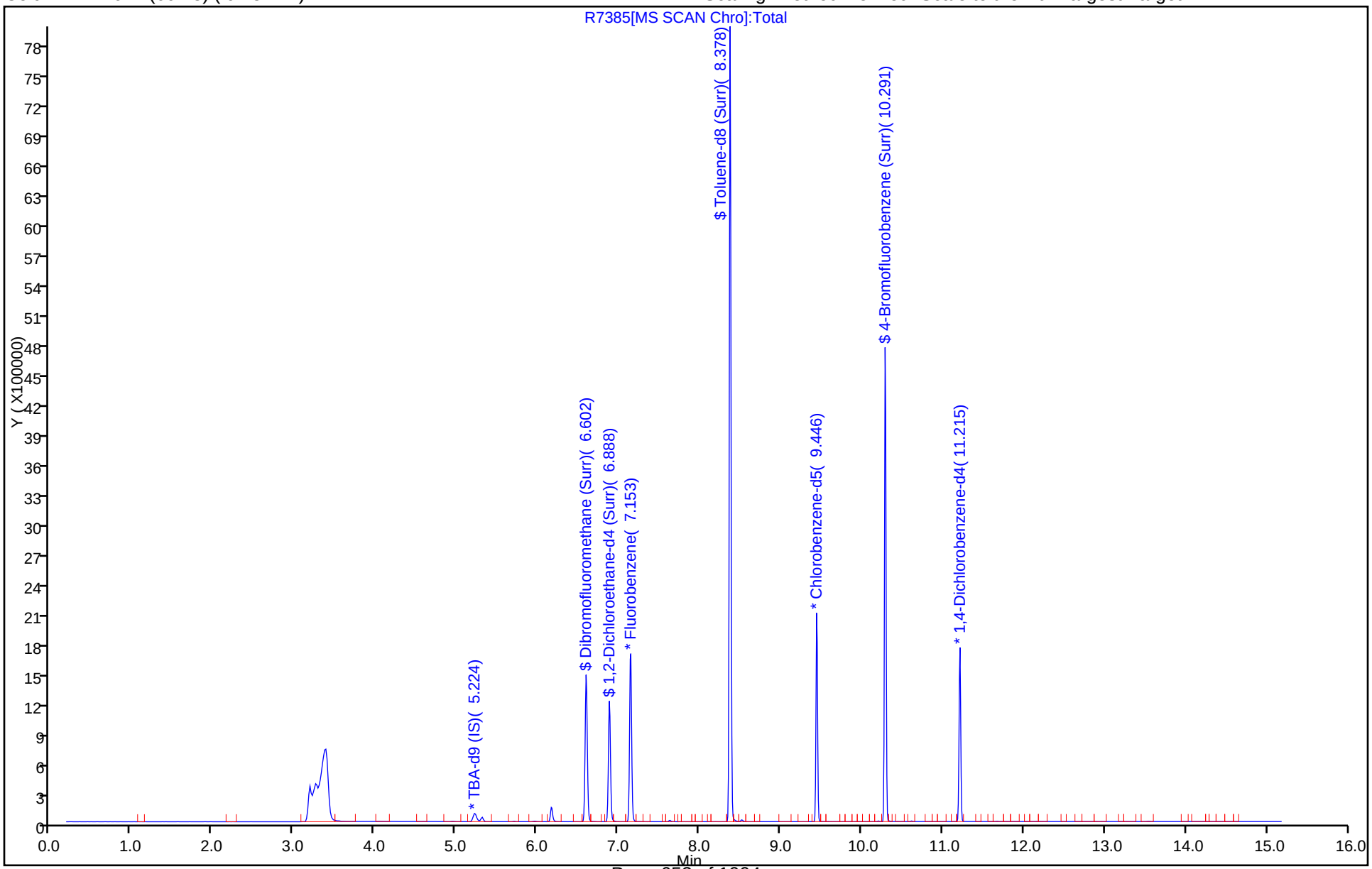
Report Date: 16-Mar-2018 19:54:32 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7385.D

Injection Date:	15-Mar-2018 19:50:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	STD30			Worklist Smp#:	13
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	16
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D
Lims ID: STD60
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 15-Mar-2018 20:09:30 ALS Bottle#: 17 Worklist Smp#: 14
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: STD60
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub84

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 16-Mar-2018 19:54:33 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK027

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	123044	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.154	0.000	98	1395384	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	89	289845	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	395050	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	93	1791196	60.0	60.7	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.889	6.888	0.001	0	1639477	60.0	60.0	
$ 7 Toluene-d8 (Surr)	98	8.379	8.378	0.000	94	8594042	60.0	61.9	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	86	2848500	60.0	64.7	

Reagents:

MV-568718-D_00014 Amount Added: 1.00 Units: uL
MV-ARCH SS A_00091 Amount Added: 4.80 Units: uL

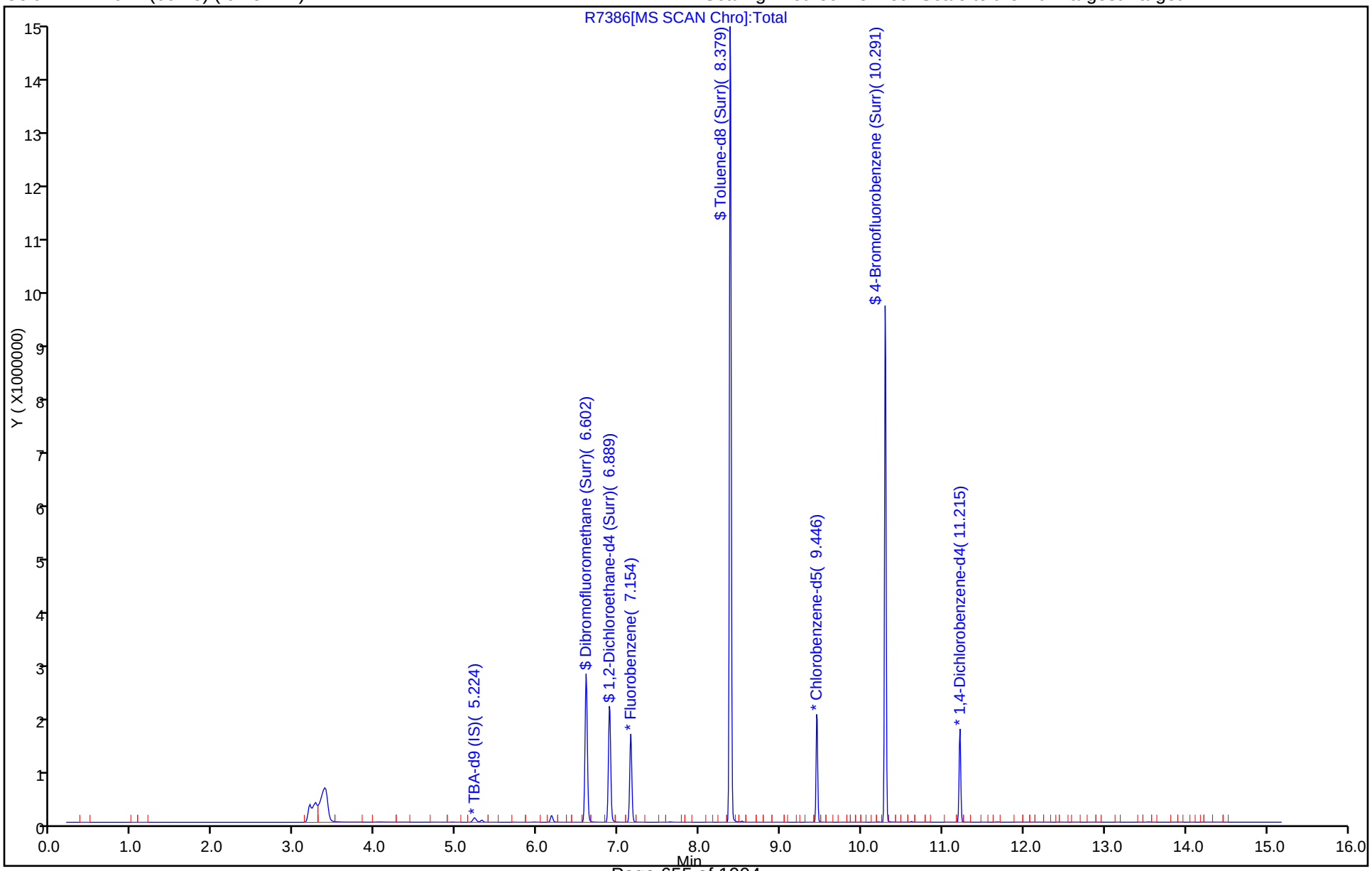
Report Date: 16-Mar-2018 19:54:34 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Injection Date:	15-Mar-2018 20:09:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	STD60			Worklist Smp#:	14
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 580-269589/3	C211803.D
Level 2	IC 580-269589/4	C211804.D
Level 3	IC 580-269589/5	C211805.D
Level 4	IC 580-269589/6	C211806.D
Level 5	ICIS 580-269589/7	C211807.D
Level 6	IC 580-269589/8	C211808.D
Level 7	IC 580-269589/9	C211809.D
Level 8	IC 580-269589/10	C211810.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 5		B	M1	M2								
Dichlorodifluoromethane	+++++ 0.3933	0.5500 0.3922	0.3918 0.3942	0.3972	0.4587	Ave		0.4254				14.1		15.0			
Chloromethane	0.5209 0.4090	0.5164 0.4005	0.4224 0.4017	0.4042	0.4373	Qua2	0.0570	0.4233	-0.000258		0.1000	5.3			0.9970		0.9900
Vinyl chloride	0.8306 0.7232	0.9994 +++++	0.8032 +++++	0.7722	0.8931	Ave		0.8369				11.7		15.0			
Butadiene	+++++ 0.3733	+++++ 0.3651	0.4183 0.3679	0.3874	0.4278	Ave		0.3900				6.9		15.0			
Bromomethane	0.6219 0.4970	0.6603 0.4920	0.5061 0.5000	0.5110	0.5800	Ave		0.5460				12.0		15.0			
Chloroethane	+++++ 0.2011	0.2464 0.1998	0.2121 0.2035	0.1911	0.2238	Ave		0.2111				8.8		15.0			
Dichlorofluoromethane	0.5658 0.4922	0.6316 0.4941	0.5051 0.5091	0.4878	0.5472	Ave		0.5291				9.4		15.0			
Acrolein	+++++ 0.0808	0.0962 0.0790	0.0838 0.0667	0.0808	+++++	Ave		0.0812				11.7		15.0			
Acetonitrile	+++++ 0.0649	0.0815 0.0615	0.0720 +++++	0.0646	0.0461	Qua1	0.4486	0.0537	0.0000093			19.8			0.9900		0.9900
Trichlorofluoromethane	0.9630 0.9010	1.1114 0.8939	0.9279 0.9103	0.9120	1.0518	Ave		0.9589				8.4		15.0			
Isopropyl alcohol	0.0605 0.0323	0.0444 0.0305	0.0379 +++++	0.0330	0.0243	Qua1	0.1767	0.0282	0.0000036			16.3			0.9920		0.9900
Acetone	+++++ 0.1204	0.1784 0.1139	0.1349 +++++	0.1124	0.0872	Qua1	0.4674	0.0959	0.0000527			17.3			0.9920		0.9900
Ethyl ether	0.3289 0.2767	0.3655 0.2733	0.2914 0.2676	0.2689	0.2874	Ave		0.2949				11.8		15.0			
1,1-Dichloroethene	+++++ 0.5462	0.7767 0.5491	0.5660 0.5783	0.5706	0.6550	Ave		0.6060				13.8		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

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 5		B	M1	M2								
t-Butyl alcohol	0.0674 0.0483	0.0565 0.0430	0.0500 +++++	0.0467	0.0352	Qua1	0.1404	0.0421	0.0000028			13.2			0.9900		0.9900
Acrylonitrile	0.1507 0.1502	0.1656 0.1371	0.1469 0.1205	0.1313	0.1109	Ave		0.1391				12.8		15.0			
Iodomethane	0.5115 0.4860	0.5339 0.4962	0.5040 0.5179	0.4709	0.5382	Ave		0.5073				4.5		15.0			
Methylene Chloride	+++++ 0.2953	0.4994 0.2969	0.3357 0.3168	0.3004	0.3281	Qua2	0.2064	0.2926	0.0001423			5.0			0.9980		0.9900
Methyl acetate	0.4182 0.3652	0.3876 0.3352	0.3656 0.2960	0.3604	0.2859	Ave		0.3518				12.6		15.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	0.4677 0.4069	0.5110 0.4183	0.4224 0.4297	0.3981	0.4627	Ave		0.4396				8.6		15.0			
3-Chloro-1-propene	0.4577 0.3393	0.4588 0.3324	0.3758 0.3343	0.3612	0.4065	Ave		0.3832				13.7		15.0			
Carbon disulfide	0.9151 0.8960	0.9505 0.9118	0.8566 0.9652	0.8575	0.9792	Ave		0.9165				5.0		15.0			
trans-1,2-Dichloroethene	+++++ 0.2525	0.3681 0.2539	0.2645 0.2562	0.2458	0.2746	Qua2	0.1207	0.2458	0.0001042			5.1			0.9980		0.9900
Methyl tert-butyl ether	0.9610 0.8970	0.9679 0.8766	0.8995 0.8594	0.8502	0.8704	Ave		0.8978				5.0		15.0			
Propionitrile	0.0827 0.0683	0.0750 0.0634	0.0679 +++++	0.0658	0.0474	Qua1	0.2045	0.0568	0.0000088			15.2			0.9900		0.9900
1,1-Dichloroethane	1.5296 1.2111	1.5029 1.1924	1.2452 1.1952	1.2450	1.4039	Ave		1.3157			0.1000	10.7		15.0			
Vinyl acetate	0.0744 0.0534	+++++ 0.0618	0.0639 0.0487	0.0573	0.0546	Ave		0.0596				13.3		15.0			
2-Chloro-1,3-butadiene	1.0525 0.9658	1.0916 1.0086	0.9769 1.0031	0.9585	1.0789	Ave		1.0170				5.1		15.0			
Hexane	0.4009 0.3599	0.4019 0.3495	0.3724 0.3473	0.3314	0.3510	Ave		0.3643				7.0		15.0			
2-Butanone (MEK)	+++++ 0.0907	0.0981 0.0862	0.1003 0.0756	0.0932	0.0715	Ave		0.0880				12.4		15.0			
Diisopropyl ether	1.3105 1.2011	1.4124 1.1944	1.2476 1.1856	1.1533	1.2938	Ave		1.2498				6.8		15.0			
Methacrylonitrile	0.0540 0.0519	0.0562 0.0501	0.0524 0.0454	0.0490	0.0422	Ave		0.0502				9.1		15.0			
cis-1,2-Dichloroethene	1.6420 0.6768	1.4377 0.6720	0.7338 0.6701	0.6859	0.7942	Qua1	0.5363	0.6992	-0.000387			17.3			0.9980		0.9900
Ethyl acetate	0.8332 0.3981	0.4800 0.3953	0.4476 0.3452	0.3756	0.3152	Qua1	0.3594	0.3777	-0.000079			18.2			0.9930		0.9900

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

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 5		B	M1	M2								
Bromochloromethane	0.1710 0.1474	0.1806 0.1474	0.1497 0.1461	0.1389	0.1533	Ave		0.1543				9.1		15.0			
Chloroform	1.2787 1.0691	1.4155 1.0595	1.1125 1.0597	1.1110	1.2457	Ave		1.1690				11.2		15.0			
Tert-butyl ethyl ether	1.1455 1.0732	1.1847 1.0645	1.0446 1.0638	0.9724	1.1106	Ave		1.0824				6.0		15.0			
Isobutanol	+++++ 0.0345	0.0321 0.0313	0.0327 0.0303	0.0326	0.0259	Qua1	-0.033	0.0320	0			11.0			0.9950		0.9900
2,2-Dichloropropane	0.3963 0.3499	0.4580 0.3496	0.3582 0.3404	0.3386	0.3742	Ave		0.3707				10.8		15.0			
Tetrahydrofuran	+++++ 0.1531	0.1501 0.1428	0.1532 0.1254	0.1435	0.1139	Ave		0.1403				10.7		15.0			
1,2-Dichloroethane	+++++ 0.3901	0.5302 0.3938	0.4182 0.3858	0.3815	0.4002	Ave		0.4143				12.7		15.0			
1,1,1-Trichloroethane	0.4471 0.3898	0.4559 0.3959	0.3945 0.4002	0.3755	0.4166	Ave		0.4094				6.9		15.0			
n-Butyl alcohol	+++++ 0.0155	+++++ 0.0140	0.0144 0.0130	0.0136	0.0098	Ave		0.0134				14.4		15.0			
1,1-Dichloropropene	0.4267 0.3419	0.4058 0.3532	0.3535 0.3526	0.3240	0.3663	Ave		0.3655				9.3		15.0			
Cyclohexane	0.8829 0.7776	0.9788 0.7932	0.7889 0.7960	0.7705	0.8822	Ave		0.8338				8.8		15.0			
Carbon tetrachloride	0.3338 0.3017	0.3460 0.3077	0.2796 0.3109	0.2760	0.3089	Ave		0.3081				7.7		15.0			
Benzene	2.8419 2.3936	2.9752 2.4221	2.5240 2.4206	2.4588	2.7770	Ave		2.6017				8.7		15.0			
Tert-amyl methyl ether	+++++ 0.8991	1.0194 0.8889	0.8792 0.8909	0.8198	0.8904	Ave		0.8982				6.6		15.0			
Ethyl acrylate	+++++ 0.4616	0.4478 0.4911	0.4846 0.4538	0.4014	0.3867	Ave		0.4467				8.8		15.0			
n-Heptane	0.3168 0.2697	0.3034 0.2881	0.2913 0.2802	0.2348	0.2709	Ave		0.2819				8.8		15.0			
Dibromomethane	+++++ 0.1831	0.2169 0.1855	0.1881 0.1774	0.1731	0.1770	Ave		0.1859				7.9		15.0			
1,2-Dichloropropane	0.8571 0.7148	0.8265 0.7247	0.7356 0.7316	0.6860	0.7937	Ave		0.7588				7.9		15.0			
2-Nitropropane	0.1205 0.1261	0.1132 0.1274	0.1191 0.1074	0.1084	0.0889	Ave		0.1139				11.0		15.0			
Trichloroethene	0.7213 0.6588	0.7505 0.6453	0.6611 0.6640	0.6353	0.7373	Ave		0.6842				6.6		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

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 5		B	M1	M2								
Bromodichloromethane	+++++ 0.7850	0.8327 0.8093	0.7362 0.8036	0.7339	0.8463	Ave		0.7924				5.5		15.0			
Methyl methacrylate	+++++ 0.3437	0.3400 0.3558	0.3634 +++++	0.2965	0.2925	Ave		0.3320				9.1		15.0			
2-Chloroethyl vinyl ether	+++++ 0.3881	0.4002 0.4093	0.4182 0.3718	0.3554	0.3529	Ave		0.3851				6.7		15.0			
Methylcyclohexane	0.7872 0.7452	0.9218 0.7470	0.7243 0.7449	0.7136	0.8172	Ave		0.7752				8.8		15.0			
cis-1,3-Dichloropropene	0.8625 0.8587	0.9268 0.9385	0.9225 0.9338	0.7960	0.9377	Ave		0.8971				5.8		15.0			
4-Methyl-2-pentanone	+++++ 1.0258	1.0715 0.9458	1.0079 0.8537	0.9967	0.8422	Lin1	1.2145	0.9150				9.3			0.9940		0.9900
trans-1,3-Dichloropropene	0.9662 0.9242	1.0316 0.9721	0.9804 +++++	0.8796	0.9685	Qua1	0.0647	0.9141	0.0006489			6.8			0.9990		0.9900
1,1,2-Trichloroethane	+++++ 0.5392	0.6217 0.5572	0.5871 0.5385	0.5322	0.5608	Lin1	0.0909	0.5443				3.3			1.0000		0.9900
Ethyl methacrylate	+++++ 0.7990	0.8225 0.8330	0.7634 0.7697	0.7016	0.7223	Lin2	0.0504	0.7630				6.6			0.9960		0.9900
Toluene	1.7292 1.4229	1.6970 1.4772	1.5227 1.4753	1.4156	1.6263	Ave		1.5458				7.9		15.0			
1,3-Dichloropropane	+++++ 0.9699	1.0986 0.9659	1.0392 0.9708	0.9442	1.0119	Ave		1.0001				5.4		15.0			
2-Hexanone	+++++ 0.3125	+++++ 0.3012	0.3098 0.2685	0.2875	0.2406	Lin1	-0.016	0.2859				9.1			0.9940		0.9900
Dibromochloromethane	+++++ 0.6138	0.4272 0.6535	0.4940 0.6427	0.4986	0.5949	Lin2	-0.191	0.5987				9.8			0.9910		0.9900
n-Butyl acetate	+++++ 1.3747	1.4413 1.3615	1.3874 1.2155	1.2378	1.1701	Lin1	0.1343	1.2859				7.2			0.9960		0.9900
1,2-Dibromoethane	+++++ 0.6040	0.6828 0.6222	0.6333 0.5865	0.5814	0.5785	Ave		0.6127				6.1		15.0			
Tetrachloroethene	0.2158 0.2057	0.2146 0.2176	0.2178 0.2190	0.1925	0.2189	Ave		0.2127				4.3		15.0			
1,1,1,2-Tetrachloroethane	+++++ 0.6779	0.7911 0.6800	0.6546 0.6858	0.6463	0.7444	Ave		0.6972				7.5		15.0			
Chlorobenzene	+++++ 1.6500	1.9786 1.7069	1.7187 1.7103	1.6028	1.8342	Ave		1.7431			0.3000	7.2		15.0			
Ethylbenzene	+++++ 0.8614	1.0324 0.8990	0.8723 0.8952	0.8247	0.9502	Ave		0.9050				7.5		15.0			
m-Xylene & p-Xylene	+++++ 2.1699	2.7188 2.2555	2.1961 2.2247	2.0444	2.3499	Ave		2.2799				9.4		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

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 5		B	M1	M2								
Bromoform	+++++ 0.4299	0.1434 0.4683	0.2343 0.4497	0.2856	0.3224	Qua1	-0.315	0.3501	0.0012347		0.1000	19.3			0.9950		0.9900
Styrene	+++++ 1.7710	1.7514 1.8555	1.6468 1.8598	1.5652	1.8507	Ave		1.7572				6.5		15.0			
o-Xylene	+++++ 1.1254	1.3290 1.1393	1.1287 1.1456	1.0912	1.2520	Ave		1.1730				7.2		15.0			
1,1,2,2-Tetrachloroethane	+++++ 0.7376	0.8332 0.7704	0.7939 0.6991	0.7250	0.6822	Qua1	0.0762	0.7409	-0.000195		0.3000	6.2			0.9980		0.9900
trans-1,4-Dichloro-2-butene	+++++ 0.2243	0.2350 0.2358	0.2163 0.2060	0.1968	0.1804	Qua2	0.0409	0.1949	0.0002808			8.9			0.9930		0.9900
1,2,3-Trichloropropane	+++++ 0.2279	0.2600 0.2280	0.2429 0.2093	0.2146	0.1929	Lin2	0.0461	0.2159				7.5			0.9950		0.9900
Isopropylbenzene	+++++ 2.7289	3.0971 2.7423	2.6378 2.7609	2.5871	3.0232	Ave		2.7967				6.8		15.0			
Bromobenzene	+++++ 0.6882	0.7507 0.7314	0.7176 0.7367	0.6441	0.7258	Lin2	0.0409	0.7054				5.1			0.9970		0.9900
N-Propylbenzene	+++++ 0.5898	0.6386 0.6261	0.5902 0.6334	0.5435	0.6287	Ave		0.6072				5.7		15.0			
2-Chlorotoluene	+++++ 0.5939	0.6481 0.6191	0.5992 0.6266	0.5669	0.6447	Lin2	0.0356	0.6070				4.7			0.9980		0.9900
4-Chlorotoluene	+++++ 1.7139	1.8361 1.7981	1.7353 1.8486	1.5903	1.8352	Ave		1.7654				5.3		15.0			
1,3,5-Trimethylbenzene	+++++ 1.9746	2.0601 2.0547	1.9443 2.1096	1.8339	2.1304	Ave		2.0154				5.2		15.0			
t-Butylbenzene	+++++ 1.5702	1.5253 1.6674	1.5462 1.7040	1.4093	1.7001	Ave		1.5889				6.8		15.0			
1,2,4-Trimethylbenzene	+++++ 2.1131	2.2484 2.2009	2.0915 2.2436	1.9738	2.2824	Ave		2.1648				5.1		15.0			
sec-Butylbenzene	+++++ 2.1990	2.3218 2.2938	2.1467 2.3646	2.0151	2.3741	Ave		2.2450				5.9		15.0			
Benzyl chloride	+++++ 1.5835	1.8295 1.5772	1.6103 1.4355	1.5246	1.4283	Lin2	0.3289	1.5044				4.7			0.9980		0.9900
1,3-Dichlorobenzene	+++++ 0.6535	0.7729 0.6697	0.6539 0.6706	0.5997	0.6702	Lin2	0.1189	0.6464				4.9			0.9980		0.9900
4-Isopropyltoluene	+++++ 1.9554	2.1375 2.0447	1.9654 2.0884	1.8309	2.1010	Lin1	-0.126	2.0427				7.1			0.9990		0.9900
1,4-Dichlorobenzene	+++++ 1.3417	1.5257 1.3718	1.3639 1.4041	1.2492	1.4427	Lin2	0.1600	1.3537				5.2			0.9970		0.9900
1,2,3-Trimethylbenzene	+++++ 2.3412	2.6124 2.4238	2.3326 2.4863	2.1971	2.5415	Lin2	0.2048	2.3785				5.6			0.9970		0.9900

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

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 5		B	M1	M2								
1,2-Dichlorobenzene	+++++ 1.3394	1.5788 1.3883	1.3569 1.4093	1.2832	1.4346	Lin2	0.2073	1.3574				4.6			0.9980		0.9900
n-Butylbenzene	+++++ 1.6337	1.7899 1.7054	1.5838 1.7437	1.5117	1.7282	Lin2	0.1147	1.6481				5.9			0.9970		0.9900
1,2-Dibromo-3-Chloropropane	+++++ 0.2334	0.1962 0.2266	0.1920 0.2091	0.2007	0.1721	Ave		0.2043				10.2		15.0			
1,3,5-Trichlorobenzene	+++++ 0.9228	1.0664 0.9491	0.9142 0.9834	0.8839	0.9969	Lin2	0.1179	0.9361				5.2			0.9970		0.9900
1,2,4-Trichlorobenzene	+++++ 1.1018	1.3144 1.0809	1.0469 1.1102	1.0878	1.1735	Ave		1.1308				7.9		15.0			
Naphthalene	+++++ 2.7487	2.9938 2.6937	2.6605 2.5844	2.7223	2.4674	Lin1	0.2856	2.6390				4.2			0.9990		0.9900
Hexachlorobutadiene	+++++ 0.1426	0.1685 0.1515	0.1384 0.1556	0.1485	0.1528	Lin1	0	0.1512				7.1			0.9990		0.9900
1,2,3-Trichlorobenzene	+++++ 0.8495	1.0388 0.8666	0.8437 0.8871	0.8290	0.8588	Lin1	0.0730	0.8674				6.1			0.9990		0.9900
Dibromofluoromethane (Surr)	0.2620 0.2597	0.2661 0.2554	0.2548 0.2531	0.2644	0.2624	Ave		0.2597				1.8		15.0			
1,2-Dichloroethane-d4 (Surr)	0.3269 0.3204	0.3255 0.3157	0.3228 0.3012	0.3269	0.3030	Ave		0.3178				3.3		15.0			
Trifluorotoluene (Surr)	0.5024 0.5004	0.5002 0.4994	0.5076 0.4966	0.4993	0.4996	Ave		0.5007				0.6		15.0			
Toluene-d8 (Surr)	2.1870 2.1769	2.2377 2.1755	2.2066 2.1427	2.2399	2.3021	Ave		2.2085				2.3		15.0			
4-Bromofluorobenzene (Surr)	0.9582 0.9391	0.9706 0.9199	0.9472 0.9222	0.9522	0.9552	Ave		0.9456				1.9		15.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 580-269589/3	C211803.D
Level 2	IC 580-269589/4	C211804.D
Level 3	IC 580-269589/5	C211805.D
Level 4	IC 580-269589/6	C211806.D
Level 5	ICIS 580-269589/7	C211807.D
Level 6	IC 580-269589/8	C211808.D
Level 7	IC 580-269589/9	C211809.D
Level 8	IC 580-269589/10	C211810.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 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Dichlorodifluoromethane	CBNZ d5	Ave	+++++ 244192	6151 388543	24443 510730	44716	103229	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Chloromethane	FB	Qua2	7404 589742	14404 907792	61650 1190234	112632	244839	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Vinyl chloride	CBNZ d5	Ave	4923 449009	11176 +++++	50101 +++++	86926	200967	0.500 50.0	1.00 +++++	5.00 +++++	10.0	20.0
Butadiene	FB	Ave	+++++ 538242	+++++ 827509	61048 1090174	107975	239533	+++++ 50.0	+++++ 75.0	5.00 100	10.0	20.0
Bromomethane	CBNZ d5	Ave	3686 308594	7384 487482	31569 647767	57519	130530	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Chloroethane	FB	Ave	+++++ 290000	6873 452890	30960 602894	53264	125293	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Dichlorofluoromethane	FB	Ave	8043 709631	17619 1119776	73710 1508480	135952	306367	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Acrolein	FB	Ave	+++++ 698953	16104 1074307	73379 1185155	135082	+++++	+++++ 300	6.00 450	30.0 600	60.0	+++++
Acetonitrile	FB	Qua1	+++++ 1170046	28432 1742932	131281 +++++	225058	322756	+++++ 625	12.5 938	62.5 +++++	125	250
Trichlorofluoromethane	CBNZ d5	Ave	5708 559438	12429 885643	57879 1179430	102665	236695	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Isopropyl alcohol	FB	Qua1	8596 465488	12383 691824	55310 +++++	91861	135809	5.00 500	10.0 750	50.0 +++++	100	200
Acetone	FB	Qua1	+++++ 867796	24882 1290905	98469 +++++	156594	244168	+++++ 250	5.00 375	25.0 +++++	50.0	100
Ethyl ether	FB	Ave	4675 398939	10195 619333	42529 792976	74930	160908	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
1,1-Dichloroethene	CBNZ d5	Ave	+++++ 339128	8686 544035	35306 749236	64231	147393	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
t-Butyl alcohol	FB	Qua1	9582 696313	15771 973788	72970 +++++	130139	196823	5.00 500	10.0 750	50.0 +++++	100	200

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Acrylonitrile	FB	Ave	21420 2165225	46202 3106774	214430 3570570	365972	620711	5.00 500	10.0 750	50.0 1000	100	200
Iodomethane	FB	Ave	7271 700786	14894 1124564	73549 1534603	131237	301317	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Methylene Chloride	FB	Qua2	+++++ 425780	13931 672919	48998 938734	83726	183712	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Methyl acetate	FB	Ave	29722 2632696	54062 3798194	266755 4385982	502136	800498	2.50 250	5.00 375	25.0 500	50.0	100
1,1,2-Trichloro-1,2,2-trifluoroethane	DCBd4	Ave	3417 300844	7311 473398	30851 633485	55016	126163	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
3-Chloro-1-propene	CBNZd5	Ave	2713 210636	5131 329376	23441 433106	40659	91467	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Carbon disulfide	FB	Ave	13008 1291868	26513 2066497	125022 2859942	238960	548269	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
trans-1,2-Dichloroethene	FB	Qua2	+++++ 364002	10267 575434	38604 759239	68515	153777	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Methyl tert-butyl ether	FB	Ave	13661 1293289	27000 1986831	131278 2546516	236940	487337	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Propionitrile	FB	Qua1	14694 1230846	26134 1797507	123879 +++++	229117	331538	6.25 625	12.5 938	62.5 +++++	125	250
1,1-Dichloroethane	CBNZd5	Ave	9066 751940	16807 1181376	77671 1548519	140150	315932	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Vinyl acetate	FB	Ave	2645 192369	+++++ 350075	23311 360675	39917	76411	1.25 125	+++++ 188	12.5 250	25.0	50.0
2-Chloro-1,3-butadiene	DCBd4	Ave	7689 714058	15619 1141552	71355 1478672	132457	294195	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Hexane	FB	Ave	5699 518856	11210 792175	54346 1029185	92365	196528	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
2-Butanone (MEK)	CBNZd5	Ave	+++++ 281543	5486 426986	31296 489886	52440	80497	+++++ 250	5.00 375	25.0 500	50.0	100
Diisopropyl ether	FB	Ave	23285 2164727	49249 3383878	227604 4391579	401750	905497	0.625 62.5	1.25 93.8	6.25 125	12.5	25.0
Methacrylonitrile	FB	Ave	7673 748916	15672 1136313	76469 1345692	136490	236217	5.00 500	10.0 750	50.0 1000	100	200
cis-1,2-Dichloroethene	CBNZd5	Qua1	9732 420207	16078 665757	45775 868217	77208	178721	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Ethyl acetate	FB	Qua1	23689 1147984	26778 1791862	130634 2045836	209362	352917	1.00 100	2.00 150	10.0 200	20.0	40.0
Bromochloromethane	FB	Ave	2431 212478	5038 334117	21849 432808	38705	85806	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Chloroform	CBNZd5	Ave	7579 663786	15829 1049709	69398 1372897	125063	280320	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Tert-butyl ethyl ether	FB	Ave	20354 1934175	41308 3015710	190561 3940145	338751	777292	0.625 62.5	1.25 93.8	6.25 125	12.5	25.0
Isobutanol	FB	Qual	+++++ 1243783	22404 1775963	119158 2240946	227115	362479	+++++ 1250	25.0 1875	125 2500	250	500
2,2-Dichloropropane	FB	Ave	5634 504457	12775 792458	52284 1008620	94363	209527	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Tetrahydrofuran	FB	Ave	+++++ 441372	8373 647219	44712 743088	79989	127509	+++++ 100	2.00 150	10.0 200	20.0	40.0
1,2-Dichloroethane	FB	Ave	+++++ 562464	14789 892448	61035 1143334	106328	224064	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,1,1-Trichloroethane	FB	Ave	6356 562008	12717 897287	57575 1185884	104659	233268	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
n-Butyl alcohol	FB	Ave	+++++ 557296	+++++ 793890	52371 965370	94588	137470	+++++ 1250	+++++ 1875	125 2500	250	500
1,1-Dichloropropene	FB	Ave	6065 492957	11319 800434	51587 1044684	90284	205120	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Cyclohexane	CBNZ d5	Ave	5233 482824	10946 785876	49213 1031269	86738	198518	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Carbon tetrachloride	FB	Ave	4745 434946	9652 697381	40806 921339	76929	172962	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Benzene	CBNZ d5	Ave	16844 1486143	33272 2399740	157443 3136191	276791	624911	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Tert-amyl methyl ether	FB	Ave	+++++ 1620345	35543 2518323	160384 3299894	285576	623196	+++++ 62.5	1.25 93.8	6.25 125	12.5	25.0
Ethyl acrylate	FB	Ave	+++++ 665522	12492 1113061	70728 1344676	111854	216489	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
n-Heptane	FB	Ave	4503 388916	8462 652989	42514 830263	65423	151660	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Dibromomethane	FB	Ave	+++++ 263942	6049 420383	27456 525696	48247	99076	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2-Dichloropropane	CBNZ d5	Ave	5080 443814	9243 717987	45885 947838	77229	178619	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
2-Nitropropane	FB	Ave	3427 363621	6318 577515	34775 636475	60411	99524	1.00 100	2.00 150	10.0 200	20.0	40.0
Trichloroethene	CBNZ d5	Ave	4275 409034	8393 639293	41237 860224	71516	165910	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
Bromodichloromethane	CBNZ d5	Ave	+++++ 487394	9312 801818	45926 1041083	82618	190456	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Methyl methacrylate	FB	Ave	+++++ 991144	18967 1612785	106058 +++++	165268	327572	+++++ 100	2.00 150	10.0 +++++	20.0	40.0
2-Chloroethyl vinyl ether	CBNZ d5	Ave	+++++ 240992	4475 405482	26088 481672	40006	79415	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Methylcyclohexane	CBNZ d5	Ave	4666 462665	10309 740114	45179 965116	80330	183902	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
cis-1,3-Dichloropropene	DCBd 4	Ave	6301 634848	13261 1062179	67383 1376527	109995	255709	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
4-Methyl-2-pentanone	CBNZ d5	Lin1	+++++ 3184628	59912 4685472	314354 5530440	561015	947575	+++++ 250	5.00 375	25.0 500	50.0	100
trans-1,3-Dichloropropene	CBNZ d5	Qua1	5727 573842	11536 963095	61157 +++++	99016	217936	0.500 50.0	1.00 75.0	5.00 +++++	10.0	20.0
1,1,2-Trichloroethane	CBNZ d5	Lin1	+++++ 334790	6953 552094	36622 697658	59911	126196	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Ethyl methacrylate	CBNZ d5	Lin2	+++++ 496088	9198 825302	47617 997246	78979	162532	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Toluene	CBNZ d5	Ave	10249 883426	18978 1463511	94981 1911378	159359	365964	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
1,3-Dichloropropane	CBNZ d5	Ave	+++++ 602211	12286 956951	64824 1257791	106290	227721	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
2-Hexanone	CBNZ d5	Lin1	+++++ 970166	+++++ 1492112	96623 1739641	161849	270736	+++++ 250	+++++ 375	25.0 500	50.0	100
Dibromochloromethane	CBNZ d5	Lin2	+++++ 381068	4777 647420	30814 832657	56125	133883	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
n-Butyl acetate	CBNZ d5	Lin1	+++++ 853503	16118 1348917	86542 1574793	139344	263310	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2-Dibromoethane	CBNZ d5	Ave	+++++ 375043	7636 616419	39507 759917	65454	130190	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Tetrachloroethene	FB	Ave	3068 296597	5985 493207	31791 649037	53653	122562	0.500 50.0	1.00 75.0	5.00 100	10.0	20.0
1,1,1,2-Tetrachloroethane	CBNZ d5	Ave	+++++ 420869	8847 673720	40834 888570	72754	167513	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Chlorobenzene	CBNZ d5	Ave	+++++ 1024435	22127 1691166	107211 2215906	180424	412749	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Ethylbenzene	CBNZ d5	Ave	+++++ 534820	11545 890707	54411 1159829	92841	213817	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
m-Xylene & p-Xylene	CBNZ d5	Ave	+++++ 1347245	30404 2234704	136990 2882366	230140	528796	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Bromoform	CBNZ d5	Qua1	+++++ 266942	1604 463938	14618 582570	32152	72541	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Styrene	CBNZ d5	Ave	+++++ 1099590	19586 1838329	102722 2409515	176195	416464	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
o-Xylene	CBNZ d5	Ave	+++++ 698726	14862 1128797	70407 1484227	122840	281750	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,1,2,2-Tetrachloroethane	DCBd 4	Qua1	+++++ 545328	11922 871950	57986 1030620	100186	186015	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
trans-1,4-Dichloro-2-butene	DCBd 4	Qua2	+++++ 165868	3362 266849	15802 303656	27197	49182	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2,3-Trichloropropane	DCBd 4	Lin2	+++++ 168466	3720 258086	17743 308507	29658	52607	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Isopropylbenzene	CBNZ d5	Ave	+++++ 1694322	34635 2716930	164539 3577058	291229	680324	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Bromobenzene	DCBd 4	Lin2	+++++ 508850	10742 827775	52415 1085971	89008	197918	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
N-Propylbenzene	DCBd 4	Ave	+++++ 436049	9137 708608	43111 933657	75100	171434	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
2-Chlorotoluene	DCBd 4	Lin2	+++++ 439123	9273 700715	43770 923733	78343	175791	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
4-Chlorotoluene	DCBd 4	Ave	+++++ 1267158	26272 2035052	126749 2725081	219770	500444	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,3,5-Trimethylbenzene	DCBd 4	Ave	+++++ 1459945	29477 2325565	142019 3109843	253427	580924	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
t-Butylbenzene	DCBd 4	Ave	+++++ 1160957	21825 1887133	112940 2511867	194745	463606	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2,4-Trimethylbenzene	DCBd 4	Ave	+++++ 1562331	32171 2491023	152768 3307370	272766	622374	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
sec-Butylbenzene	DCBd 4	Ave	+++++ 1625850	33221 2596131	156803 3485769	278472	647397	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Benzyl chloride	DCBd 4	Lin2	+++++ 1170774	26177 1785129	117624 2116102	210679	389487	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,3-Dichlorobenzene	FB	Lin2	+++++ 942282	21560 1517874	95430 1987167	167125	375235	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
4-Isopropyltoluene	DCBd 4	Lin1	+++++ 1445757	30584 2314251	143557 3078496	253010	572921	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,4-Dichlorobenzene	DCBd 4	Lin2	+++++ 991981	21830 1552564	99624 2069815	172624	393408	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2,3-Trimethylbenzene	DCBd 4	Lin2	+++++ 1730995	37380 2743324	170379 3665075	303622	693047	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2-Dichlorobenzene	DCBd 4	Lin2	+++++ 990284	22590 1571295	99113 2077448	177323	391194	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
n-Butylbenzene	DCBd 4	Lin2	+++++ 1207912	25611 1930219	115685 2570393	208907	471259	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2-Dibromo-3-Chloropropane	DCBd 4	Ave	+++++ 172542	2808 256469	14025 308186	27729	46934	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,3,5-Trichlorobenzene	DCBd 4	Lin2	+++++ 682259	15259 1074189	66778 1449706	122149	271833	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2,4-Trichlorobenzene	CBNZ d5	Ave	+++++ 684100	14699 1070891	65306 1438329	122453	264073	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Seattle Job No.: 320-36960-1 Analy Batch No.: 269589

SDG No.:

Instrument ID: SEA102 GC Column: DB-VRX ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 12:09 Calibration End Date: 03/21/2018 15:30 Calibration ID: 26096

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Naphthalene	DCBd 4	Lin1	+++++ 2032286	42837 3048768	194331 3809782	376193	672821	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Hexachlorobutadiene	DCBd 4	Lin1	+++++ 105410	2411 171476	10106 229327	20521	41679	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
1,2,3-Trichlorobenzene	DCBd 4	Lin1	+++++ 628098	14864 980798	61625 1307636	114554	234194	+++++ 50.0	1.00 75.0	5.00 100	10.0	20.0
Dibromofluoromethane (Surr)	FB	Ave	363081 365027	361880 376228	362621 365628	359155	358180	48.8 48.8	48.8 48.8	48.8 48.8	48.8	48.8
1,2-Dichloroethane-d4 (Surr)	FB	Ave	453047 450388	442680 465067	459258 435039	444132	413535	48.8 48.8	48.8 48.8	48.8 48.8	48.8	48.8
Trifluorotoluene (Surr)	FB	Ave	713827 721195	697355 754278	740530 735513	695481	699078	50.0 50.0	50.0 50.0	50.0 50.0	50.0	50.0
Toluene-d8 (Surr)	CBNZ d5	Ave	1263822 1317806	1219953 1401022	1342022 1353324	1229200	1262735	48.8 48.8	48.8 48.8	48.8 48.8	48.8	48.8
4-Bromofluorobenzene (Surr)	CBNZ d5	Ave	553706 568487	529147 592419	576076 582488	522549	523968	48.8 48.8	48.8 48.8	48.8 48.8	48.8	48.8

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD
Lin2 = Linear 1/conc^2 ISTD
Qua1 = Quadratic 1/conc ISTD
Qua2 = Quadratic 1/conc^2 ISTD

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211803.D
Lims ID: IC STD 0.5
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 21-Mar-2018 12:09:30 ALS Bottle#: 3 Worklist Smp#: 3
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ic std 0.5
Operator ID: RSB Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:13 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 14:15:16

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.058	4.058	0.000	47	1924	0.5000	0.3816	
2 Chloromethane	50	4.344	4.344	0.000	95	7404	0.5000	0.4807	M
3 Vinyl chloride	62	4.624	4.624	0.000	87	4923	0.5000	0.4962	M
4 Butadiene	39	4.727	4.727	0.000	98	7743	0.5000	0.6984	
5 Bromomethane	94	5.135	5.135	0.000	87	3686	0.5000	0.5695	
6 Chloroethane	64	5.281	5.281	0.000	96	3620	0.5000	0.6031	
7 Dichlorofluoromethane	67	5.354	5.354	0.000	98	8043	0.5000	0.5347	
10 Acrolein	56	5.907	5.907	0.000	98	9473	3.00	4.10	
12 Acetonitrile	41	5.931	5.931	0.000	86	16530	6.25	2.47	
11 Trichlorofluoromethane	101	5.956	5.956	0.000	64	5708	0.5000	0.5021	
14 Isopropyl alcohol	45	5.968	5.968	0.000	26	8596	5.00	4.46	
13 Acetone	43	6.035	6.035	0.000	98	16893	2.50	1.32	
15 Ethyl ether	59	6.162	6.162	0.000	88	4675	0.5000	0.5575	
* 16 TBA-d9 (IS)	65	6.412	6.412	0.000	0	1277457	975.0	975.0	
17 1,1-Dichloroethene	96	6.497	6.497	0.000	92	5119	0.5000	0.7126	
19 2-Methyl-2-propanol	59	6.497	6.497	0.000	84	9582	5.00	4.66	
18 Acrylonitrile	52	6.527	6.527	0.000	99	21420	5.00	5.41	
20 Iodomethane	142	6.546	6.546	0.000	98	7271	0.5000	0.5041	
21 Methylene Chloride	84	6.637	6.637	0.000	95	9117	0.5000	0.3904	
22 Methyl acetate	43	6.661	6.661	0.000	100	29722	2.50	2.97	
23 1,1,2-Trichloro-1,2,2-trif	151	6.685	6.685	0.000	53	3417	0.5000	0.5320	
9 3-Chloro-1-propene	76	6.716	6.716	0.000	89	2713	0.5000	0.5972	
24 Carbon disulfide	76	6.892	6.892	0.000	99	13008	0.5000	0.4992	
25 trans-1,2-Dichloroethene	96	7.269	7.269	0.000	96	6020	0.5000	0.3703	
26 Methyl tert-butyl ether	73	7.367	7.367	0.000	99	13661	0.5000	0.5352	
29 Propionitrile	54	7.494	7.494	0.000	97	14694	6.25	5.50	
28 1,1-Dichloroethane	63	7.500	7.500	0.000	97	9066	0.5000	0.5813	
30 Vinyl acetate	86	7.592	7.592	0.000	100	2645	1.25	1.55	
31 2-Chloro-1,3-butadiene	53	7.829	7.829	0.000	93	7689	0.5000	0.5175	
32 Hexane	57	7.847	7.847	0.000	91	5699	0.5000	0.5503	
33 Isopropyl ether	45	7.865	7.865	0.000	82	23285	0.6250	0.6553	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
34 2-Butanone (MEK)	72	7.865	7.865	0.000	93	3246	2.50	3.11	
35 Methacrylonitrile	66	7.956	7.956	0.000	97	7673	5.00	5.38	
36 cis-1,2-Dichloroethene	96	8.017	8.017	0.000	86	9732	0.5000	0.4072	
40 Ethyl acetate	43	8.133	8.133	0.000	99	23689	1.00	1.25	
37 Chlorobromomethane	128	8.157	8.157	0.000	91	2431	0.5000	0.5542	
38 Chloroform	83	8.194	8.194	0.000	94	7579	0.5000	0.5469	
39 Tert-butyl ethyl ether	59	8.212	8.212	0.000	97	20354	0.6250	0.6614	
41 Isobutyl alcohol	43	8.242	8.242	0.000	93	13153	12.5	15.5	
42 2,2-Dichloropropane	77	8.261	8.261	0.000	89	5634	0.5000	0.5346	
$ 43 Dibromofluoromethane (Surr	113	8.297	8.297	0.000	94	363081	48.8	49.2	
44 Tetrahydrofuran	42	8.479	8.479	0.000	96	5049	1.00	1.27	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.680	8.680	0.000	0	453047	48.8	50.1	
46 1,2-Dichloroethane	62	8.747	8.747	0.000	96	8007	0.5000	0.6799	
47 1,1,1-Trichloroethane	97	8.838	8.838	0.000	97	6356	0.5000	0.5460	
49 n-Butanol	56	8.856	8.856	0.000	97	8122	12.5	31.2	
48 1,1-Dichloropropene	75	8.978	8.978	0.000	87	6065	0.5000	0.5837	
50 Cyclohexane	84	9.082	9.082	0.000	97	5233	0.5000	0.5295	
51 Carbon tetrachloride	119	9.148	9.148	0.000	95	4745	0.5000	0.5417	
52 Benzene	78	9.173	9.173	0.000	98	16844	0.5000	0.5462	
53 Tert-amyl methyl ether	73	9.270	9.270	0.000	93	16955	0.6250	0.6640	
* 54 Fluorobenzene (IS)	96	9.337	9.337	0.000	98	1385953	48.8	48.8	
56 Ethyl acrylate	55	9.550	9.550	0.000	98	6284	0.5000	0.4948	
57 n-Heptane	43	9.562	9.562	0.000	88	4503	0.5000	0.5619	
58 Dibromomethane	93	9.653	9.653	0.000	91	3135	0.5000	0.5933	
59 1,2-Dichloropropane	63	9.665	9.665	0.000	93	5080	0.5000	0.5648	
60 2-Nitropropane	43	9.684	9.684	0.000	85	3427	1.00	1.06	
61 Trichloroethene	130	9.696	9.696	0.000	95	4275	0.5000	0.5271	
62 Dichlorobromomethane	83	9.744	9.744	0.000	98	4417	0.5000	0.4702	
63 Methyl methacrylate	41	9.799	9.799	0.000	62	9257	1.00	0.9808	a
$ 64 Trifluorotoluene (Surr)	146	9.836	9.836	0.000	90	713827	50.0	50.1	
65 2-Chloroethyl vinyl ether	43	10.048	10.048	0.000	89	2403	0.5000	0.5264	
66 Methylcyclohexane	83	10.140	10.140	0.000	98	4666	0.5000	0.5078	
67 cis-1,3-Dichloropropene	75	10.273	10.273	0.000	90	6301	0.5000	0.4808	
68 4-Methyl-2-pentanone (MIBK	43	10.340	10.340	0.000	99	30605	2.50	1.49	
69 trans-1,3-Dichloropropene	75	10.650	10.650	0.000	97	5727	0.5000	0.4576	
71 1,1,2-Trichloroethane	97	10.821	10.821	0.000	92	4048	0.5000	0.4603	
S 70 Xylenes, Total	106				0		1.00	0.5905	
$ 73 Toluene-d8 (Surr)	98	10.918	10.918	0.000	94	1263822	48.8	48.3	
75 Ethyl methacrylate	69	10.973	10.973	0.000	62	4309	0.5000	0.4104	
76 Toluene	92	10.979	10.979	0.000	98	10249	0.5000	0.5593	
77 1,3-Dichloropropane	76	11.021	11.021	0.000	95	6638	0.5000	0.5599	
78 2-Hexanone	58	11.119	11.113	0.006	97	7946	2.50	0.0195	
79 Chlorodibromomethane	129	11.301	11.301	0.000	92	2229	0.5000	0.6331	
80 n-Butyl acetate	43	11.380	11.380	0.000	97	8388	0.5000	0.4458	
81 Ethylene Dibromide	107	11.538	11.538	0.000	100	4252	0.5000	0.5854	
82 Tetrachloroethene	164	11.666	11.666	0.000	96	3068	0.5000	0.5072	
84 1,1,1,2-Tetrachloroethane	131	12.232	12.232	0.000	76	4360	0.5000	0.5276	
* 85 Chlorobenzene-d5	82	12.274	12.274	0.000	88	577890	48.8	48.8	
86 Chlorobenzene	112	12.311	12.311	0.000	76	10701	0.5000	0.5179	a
87 Ethylbenzene	106	12.469	12.469	0.000	99	5940	0.5000	0.5537	
88 m-Xylene & p-Xylene	91	12.633	12.633	0.000	68	19982	0.5000	0.7394	
89 Bromoform	173	12.809	12.809	0.000	77	773	0.5000	1.08	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.955	12.955	0.000	96	9916	0.5000	0.4760	
91 o-Xylene	106	13.022	13.022	0.000	97	8211	0.5000	0.5905	
92 1,1,2,2-Tetrachloroethane	83	13.022	13.022	0.000	63	6242	0.5000	0.4739	
93 trans-1,4-Dichloro-2-buten	53	13.150	13.150	0.000	70	1645	0.5000	0.3675	
94 1,2,3-Trichloropropane	110	13.162	13.162	0.000	88	1740	0.5000	0.3382	
96 Isopropylbenzene	105	13.351	13.351	0.000	97	15840	0.5000	0.4778	
$ 97 4-Bromofluorobenzene (Surr	95	13.405	13.405	0.000	93	553706	48.8	49.4	
98 Bromobenzene	156	13.612	13.612	0.000	94	5173	0.5000	0.4440	
99 N-Propylbenzene	120	13.746	13.746	0.000	99	4253	0.5000	0.4794	
100 2-Chlorotoluene	126	13.855	13.855	0.000	96	4501	0.5000	0.4489	
101 4-Chlorotoluene	91	13.916	13.916	0.000	98	13522	0.5000	0.5243	
102 1,3,5-Trimethylbenzene	105	13.977	13.977	0.000	95	14881	0.5000	0.5054	
104 tert-Butylbenzene	119	14.245	14.245	0.000	95	11213	0.5000	0.4830	
105 1,2,4-Trimethylbenzene	105	14.336	14.336	0.000	97	15801	0.5000	0.4996	
106 sec-Butylbenzene	105	14.439	14.439	0.000	96	14738	0.5000	0.4493	
107 Benzyl chloride	91	14.530	14.530	0.000	97	13699	0.5000	0.4046	
108 1,3-Dichlorobenzene	146	14.536	14.536	0.000	1	10183	0.5000	0.3702	a
* 109 1,4-Dichlorobenzene-d4	152	14.573	14.573	0.000	96	712257	48.8	48.8	
110 4-Isopropyltoluene	119	14.591	14.591	0.000	95	14593	0.5000	0.5506	
111 1,4-Dichlorobenzene	146	14.597	14.597	0.000	8	10548	0.5000	0.4151	a
112 1,2,3-Trimethylbenzene	105	14.731	14.731	0.000	99	17203	0.5000	0.4089	
113 1,2-Dichlorobenzene	146	14.926	14.926	0.000	97	11286	0.5000	0.4164	
114 n-Butylbenzene	91	14.962	14.962	0.000	97	12633	0.5000	0.4551	
116 1,2-Dibromo-3-Chloropropan	157	15.370	15.370	0.000	50	1417	0.5000	0.4747	
117 1,3,5-Trichlorobenzene	180	16.154	16.154	0.000	96	7227	0.5000	0.4024	
118 1,2,4-Trichlorobenzene	180	16.726	16.726	0.000	95	6913	0.5000	0.5157	
119 Naphthalene	128	17.012	17.012	0.000	97	22162	0.5000	0.4666	
120 Hexachlorobutadiene	190	17.030	17.030	0.000	94	2329	0.5000	1.06	
121 1,2,3-Trichlorobenzene	180	17.237	17.237	0.000	95	7781	0.5000	0.5298	
S 123 1,3-Dichloropropene, Total	1				0			0.9384	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

Reagents:

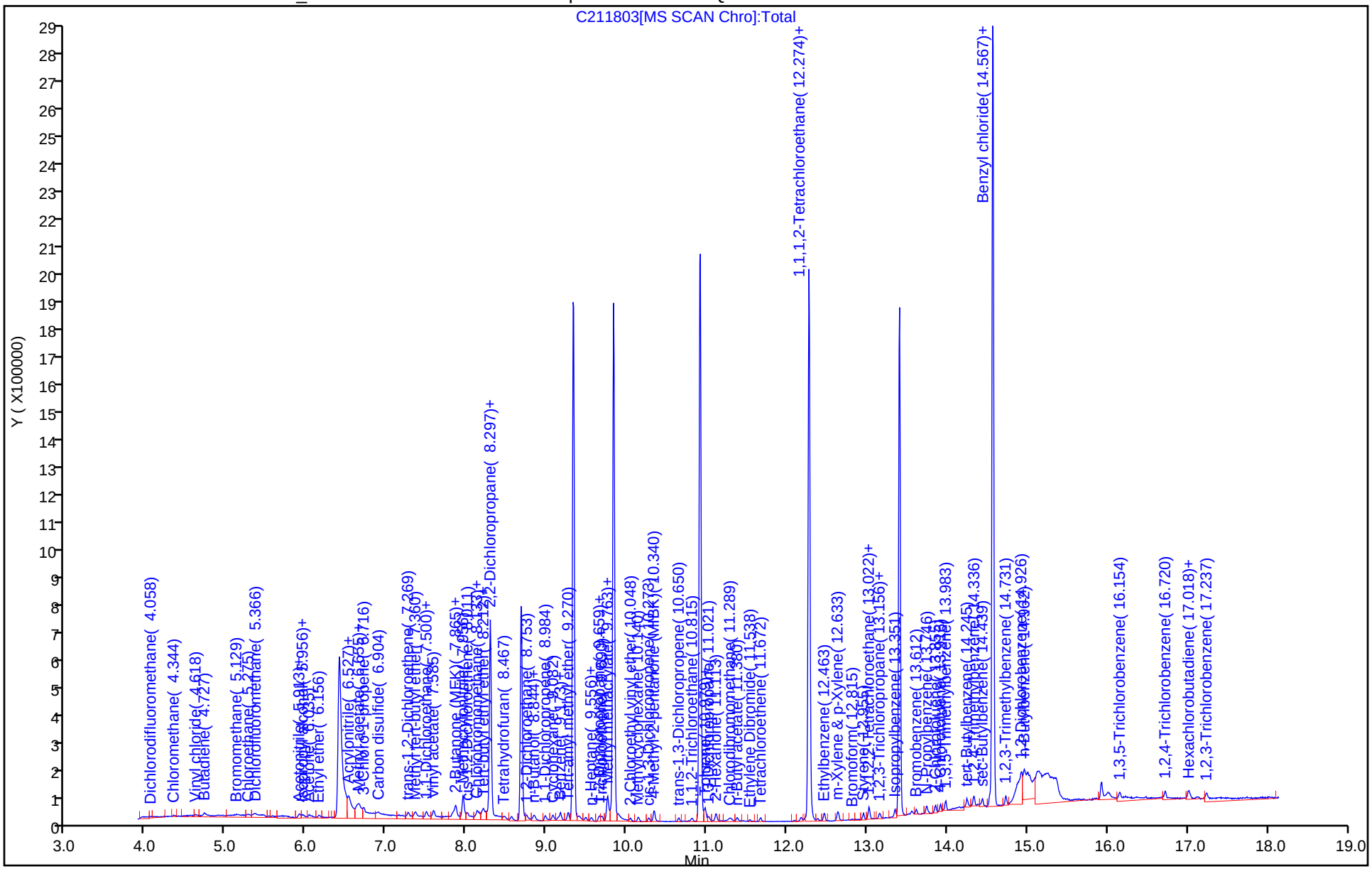
VOAMasterMix_00018	Amount Added:	0.50	Units: uL	
SURR/IS/TFT_00100	Amount Added:	1.00	Units: uL	Run Reagent

Report Date: 22-Mar-2018 15:22:16 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211803.D

Injection Date:	21-Mar-2018 12:09:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	IC STD 0.5			Worklist Smp#:	3
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



Manual Integration/User Assign Peak Report

TestAmerica Seattle

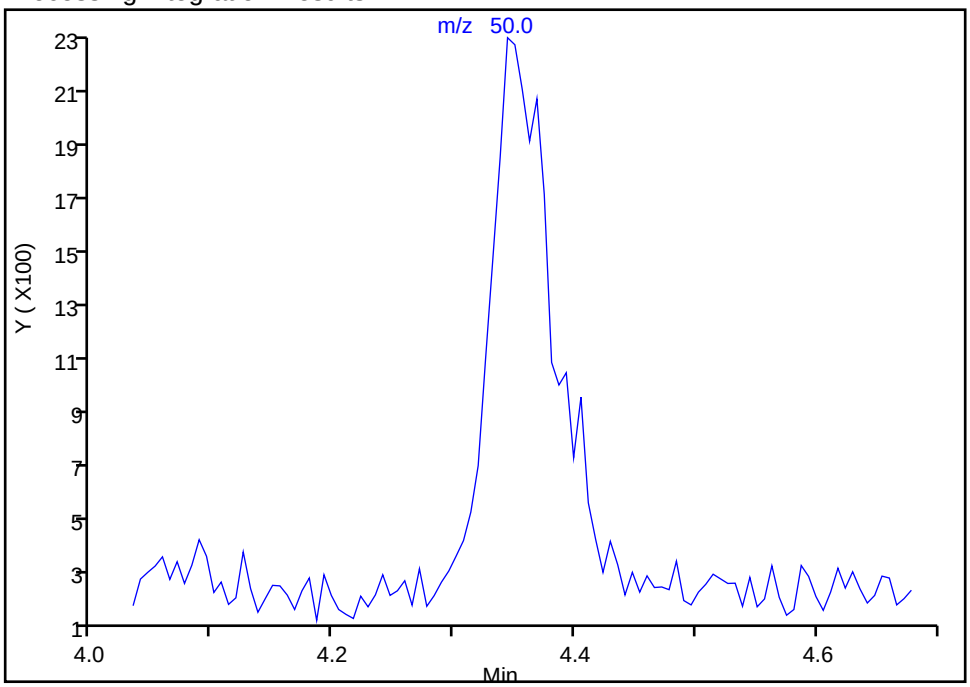
Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211803.D
Injection Date: 21-Mar-2018 12:09:30 Instrument ID: SEA102
Lims ID: IC STD 0.5
Client ID:
Operator ID: RSB ALS Bottle#: 3 Worklist Smp#: 3
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Column: Detector MS SCAN

2 Chloromethane, CAS: 74-87-3

Signal: 1

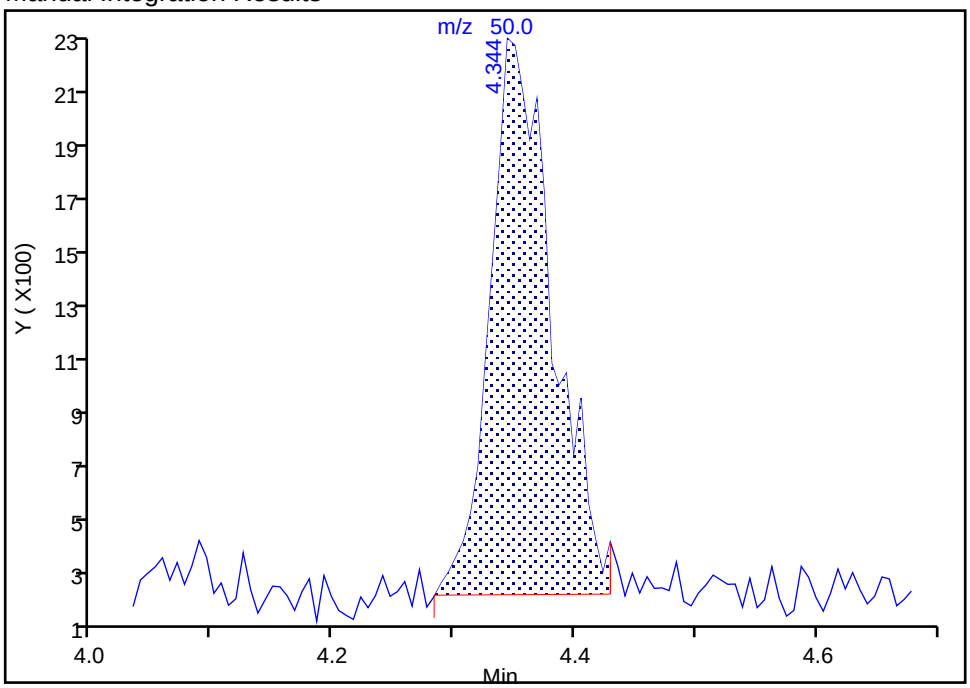
Not Detected
Expected RT: 4.34

Processing Integration Results



Manual Integration Results

RT: 4.34
Area: 7404
Amount: 0.480704
Amount Units: ug/L



Reviewer: brennanr, 22-Mar-2018 09:57:19
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Seattle

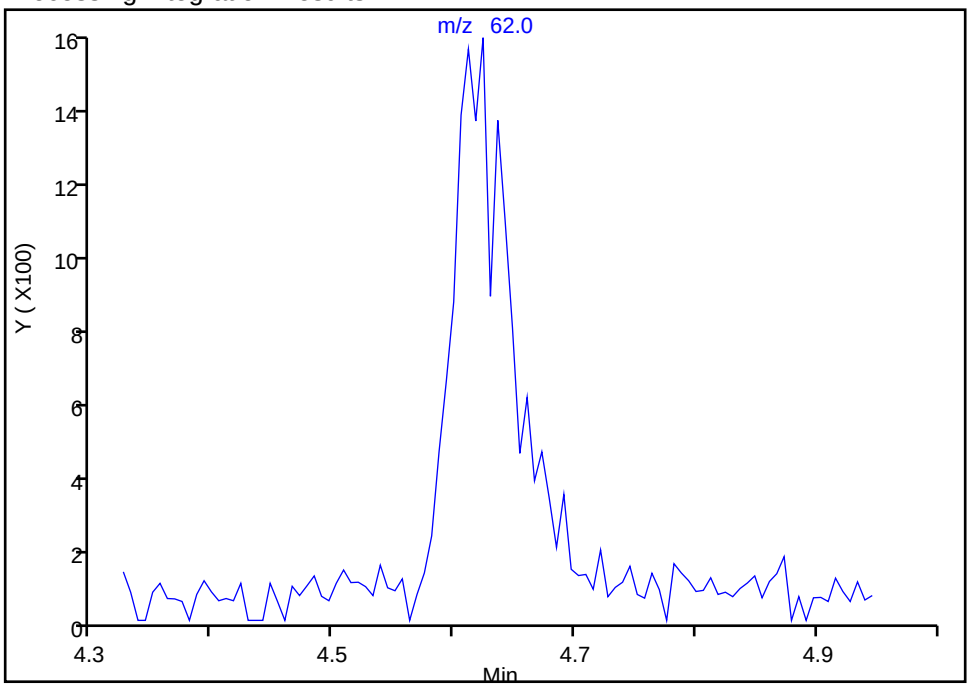
Data File:	\\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211803.D				
Injection Date:	21-Mar-2018 12:09:30	Instrument ID:	SEA102		
Lims ID:	IC STD 0.5				
Client ID:					
Operator ID:	RSB	ALS Bottle#:	3	Worklist Smp#:	3
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		
Column:		Detector	MS SCAN		

3 Vinyl chloride, CAS: 75-01-4

Signal: 1

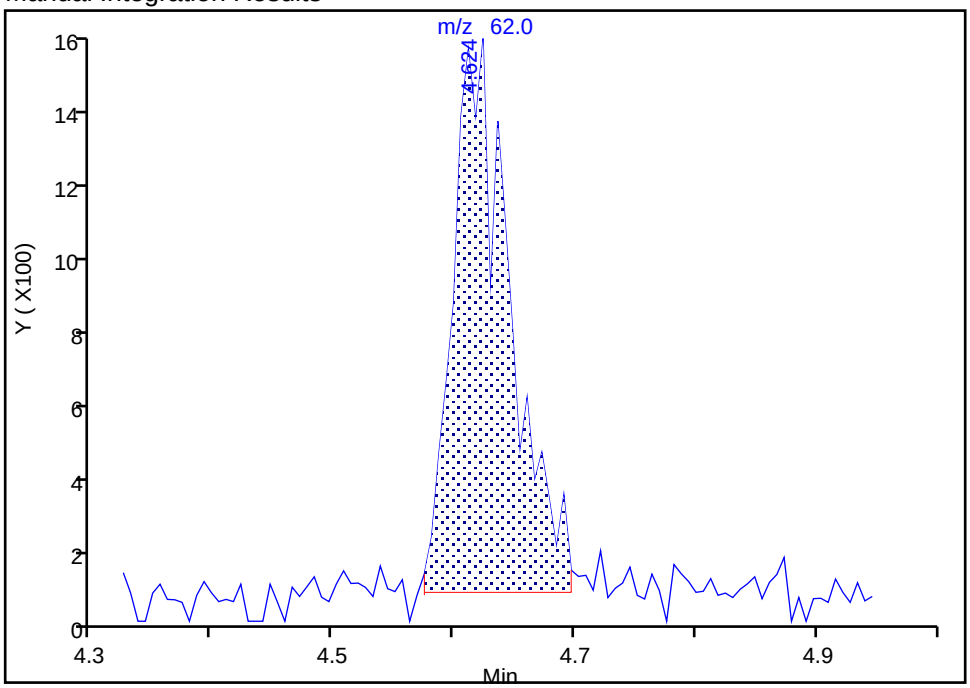
Not Detected
Expected RT: 4.62

Processing Integration Results



Manual Integration Results

RT: 4.62
Area: 4923
Amount: 0.496217
Amount Units: ug/L



Reviewer: brennanr, 22-Mar-2018 09:57:36
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Seattle

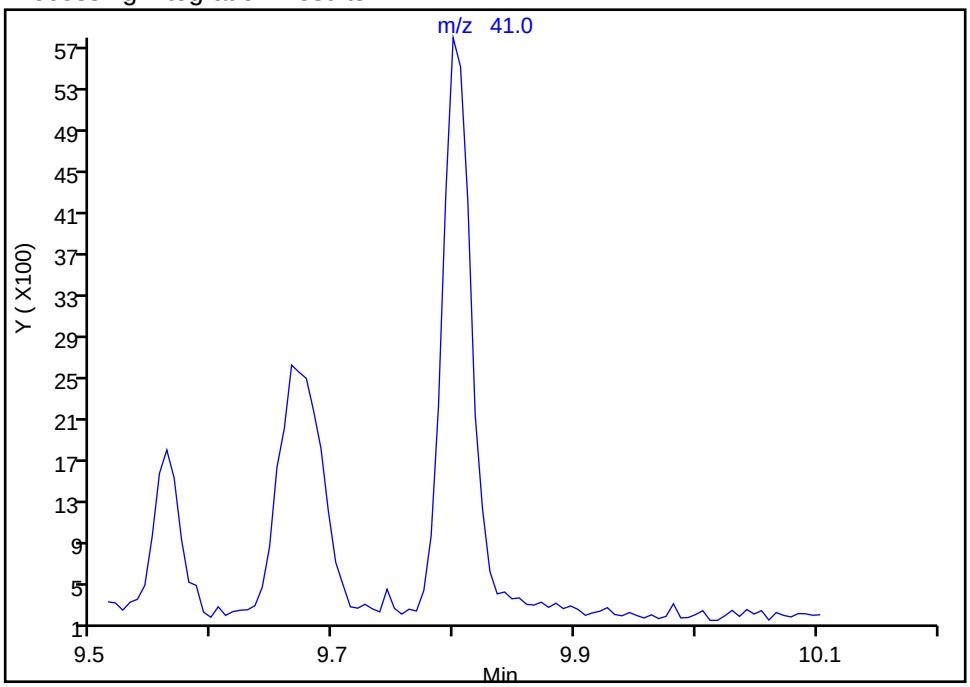
Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211803.D
Injection Date: 21-Mar-2018 12:09:30 Instrument ID: SEA102
Lims ID: IC STD 0.5
Client ID:
Operator ID: RSB ALS Bottle#: 3 Worklist Smp#: 3
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Column: Detector MS SCAN

63 Methyl methacrylate, CAS: 80-62-6

Signal: 1

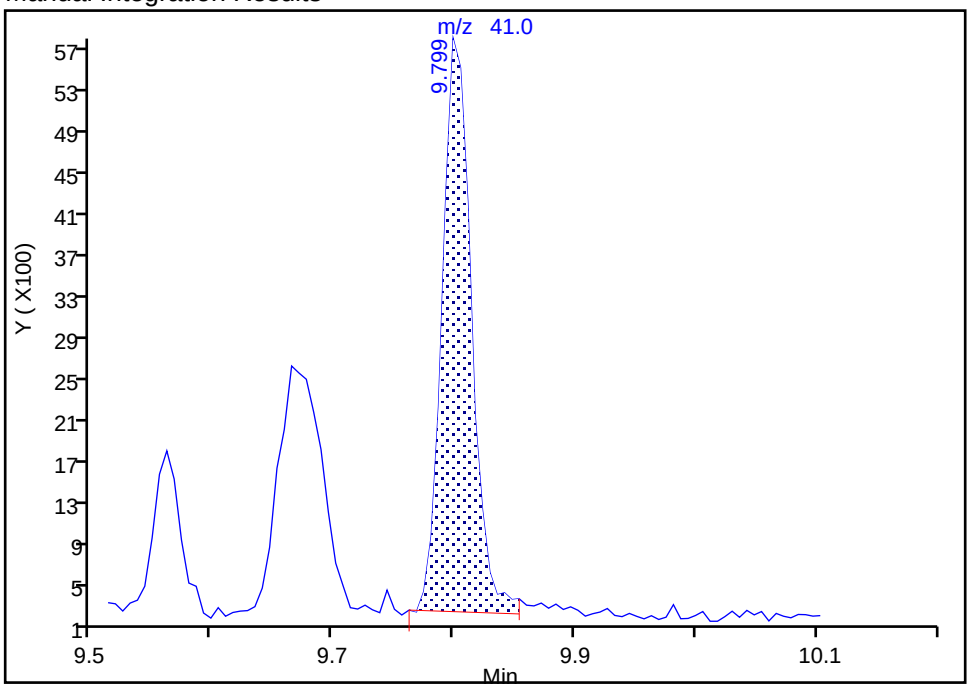
Not Detected
Expected RT: 9.80

Processing Integration Results



Manual Integration Results

RT: 9.80
Area: 9257
Amount: 0.980810
Amount Units: ug/L



Reviewer: brennanr, 22-Mar-2018 09:58:28
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Seattle

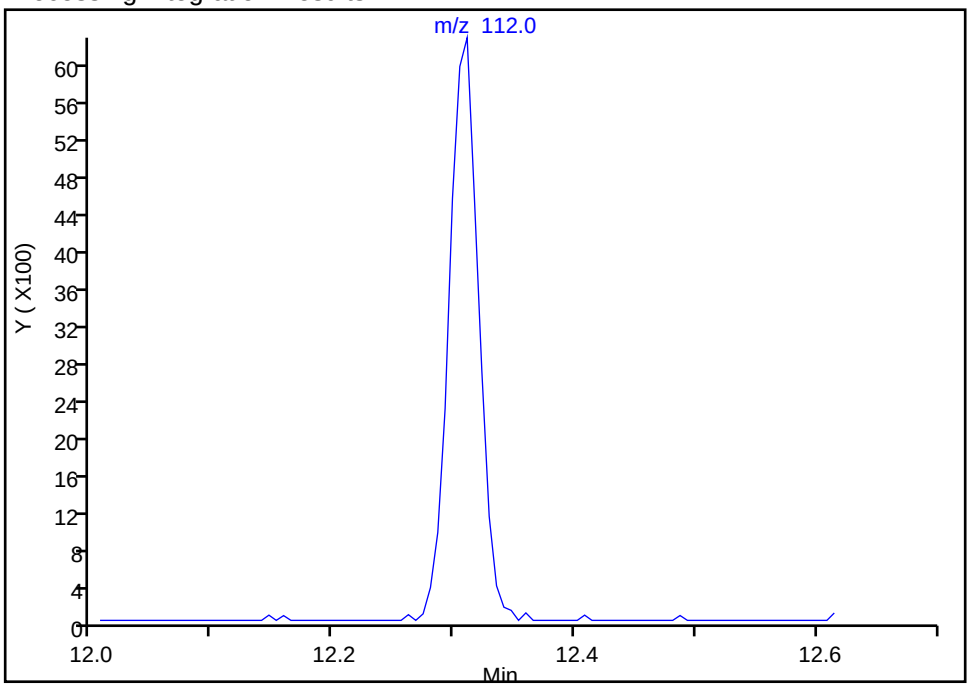
Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211803.D
Injection Date: 21-Mar-2018 12:09:30 Instrument ID: SEA102
Lims ID: IC STD 0.5
Client ID:
Operator ID: RSB ALS Bottle#: 3 Worklist Smp#: 3
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Column: Detector MS SCAN

86 Chlorobenzene, CAS: 108-90-7

Signal: 1

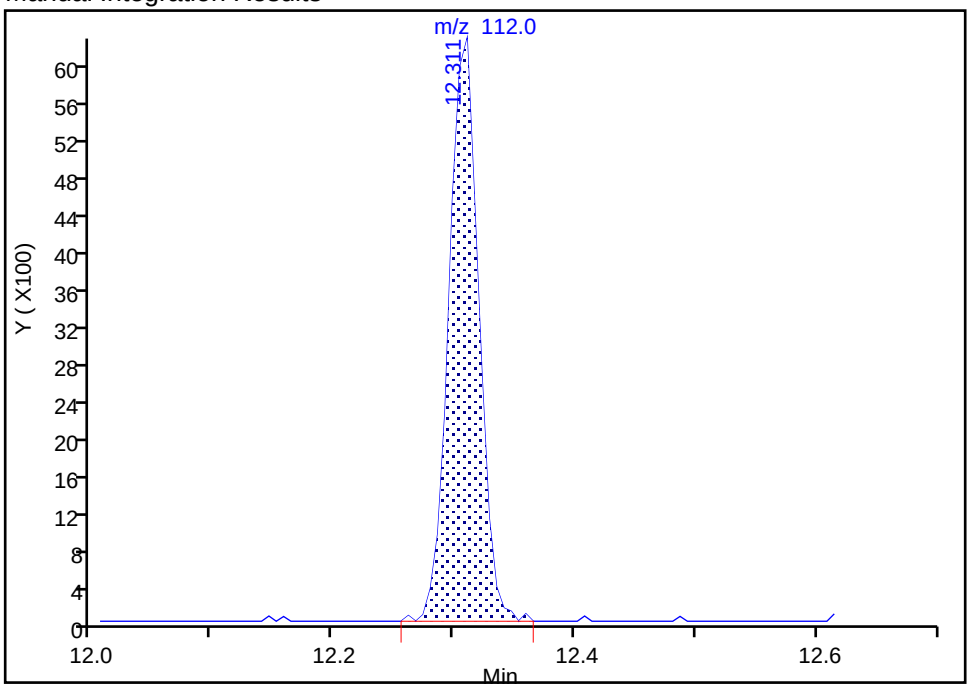
Not Detected
Expected RT: 12.31

Processing Integration Results



Manual Integration Results

RT: 12.31
Area: 10701
Amount: 0.517891
Amount Units: ug/L



Reviewer: brennanr, 22-Mar-2018 09:58:51
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Seattle

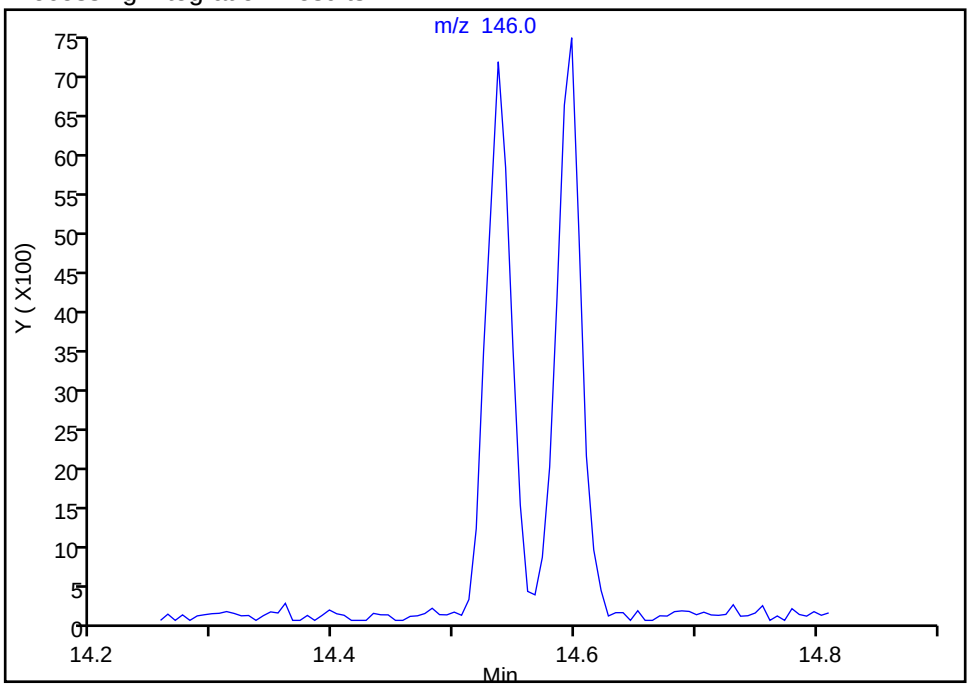
Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211803.D
Injection Date: 21-Mar-2018 12:09:30 Instrument ID: SEA102
Lims ID: IC STD 0.5
Client ID:
Operator ID: RSB ALS Bottle#: 3 Worklist Smp#: 3
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Column: Detector MS SCAN

108 1,3-Dichlorobenzene, CAS: 541-73-1

Signal: 1

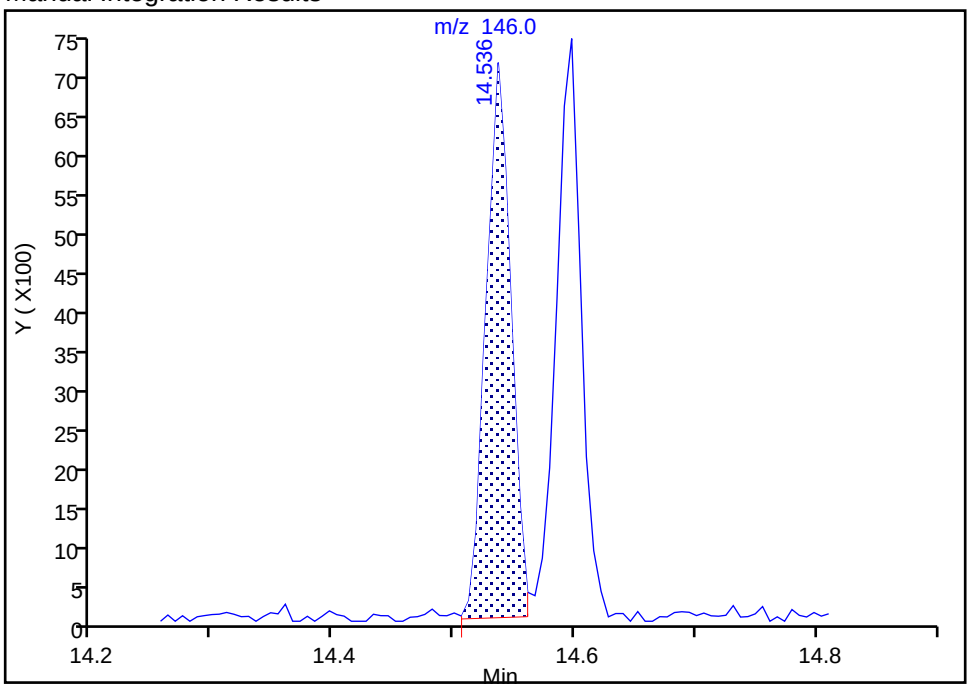
Not Detected
Expected RT: 14.54

Processing Integration Results



Manual Integration Results

RT: 14.54
Area: 10183
Amount: 0.370181
Amount Units: ug/L



Reviewer: brennanr, 22-Mar-2018 14:15:00
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Seattle

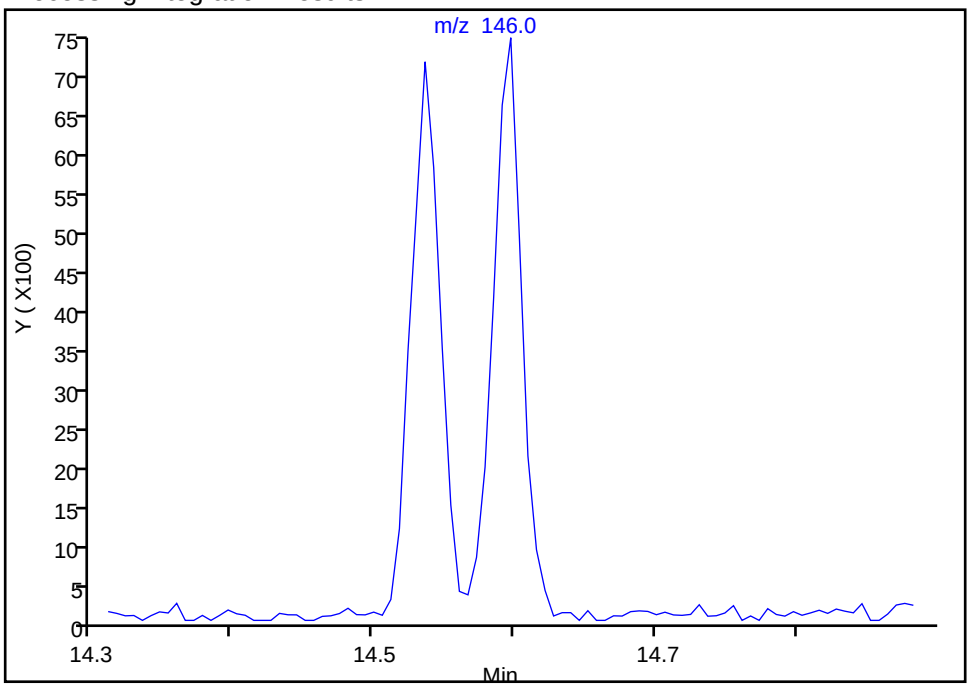
Data File:	\\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211803.D				
Injection Date:	21-Mar-2018 12:09:30	Instrument ID:	SEA102		
Lims ID:	IC STD 0.5				
Client ID:					
Operator ID:	RSB	ALS Bottle#:	3	Worklist Smp#:	3
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		
Column:		Detector	MS SCAN		

111 1,4-Dichlorobenzene, CAS: 106-46-7

Signal: 1

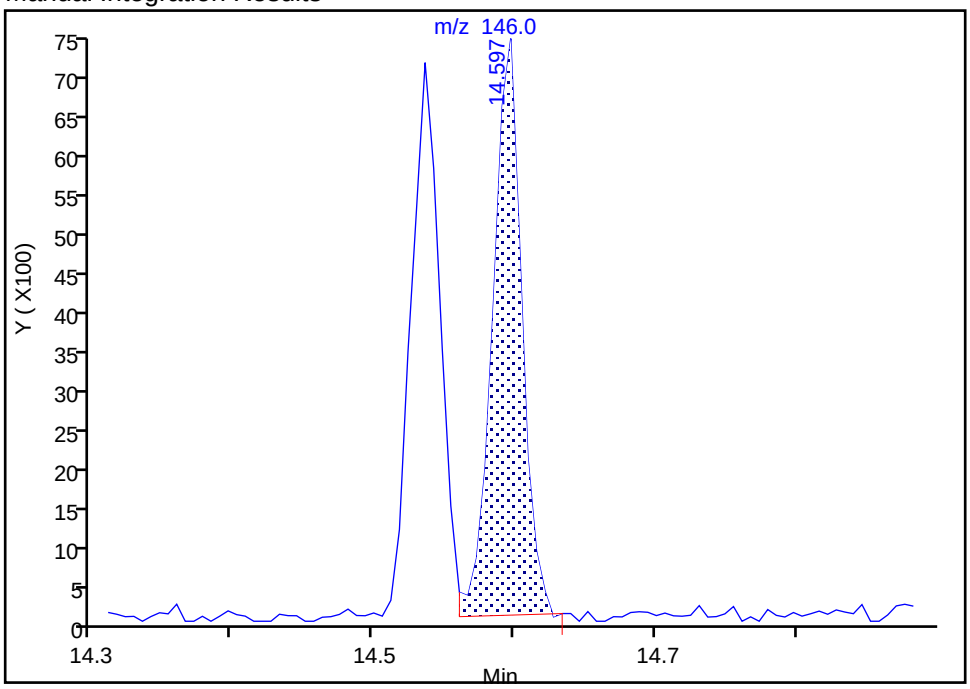
Not Detected
Expected RT: 14.60

Processing Integration Results



Manual Integration Results

RT: 14.60
Area: 10548
Amount: 0.415138
Amount Units: ug/L



Reviewer: brennanr, 22-Mar-2018 14:15:07
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211804.D
Lims ID: IC STD 1
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 21-Mar-2018 12:37:30 ALS Bottle#: 4 Worklist Smp#: 4
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ic std 1
Operator ID: RSB Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:18 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 14:16:52

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.058	4.058	0.000	99	6151	1.00	1.29	
2 Chloromethane	50	4.350	4.350	0.000	100	14404	1.00	1.09	
3 Vinyl chloride	62	4.624	4.624	0.000	97	11176	1.00	1.19	
4 Butadiene	39	4.727	4.727	0.000	98	14839	1.00	1.36	
5 Bromomethane	94	5.129	5.129	0.000	92	7384	1.00	1.21	
6 Chloroethane	64	5.281	5.281	0.000	99	6873	1.00	1.17	
7 Dichlorofluoromethane	67	5.354	5.354	0.000	99	17619	1.00	1.19	
10 Acrolein	56	5.907	5.907	0.000	95	16104	6.00	7.11	
12 Acetonitrile	41	5.931	5.931	0.000	97	28432	12.5	10.6	
11 Trichlorofluoromethane	101	5.956	5.956	0.000	95	12429	1.00	1.16	
14 Isopropyl alcohol	45	5.968	5.968	0.000	26	12383	10.0	9.47	
13 Acetone	43	6.041	6.041	0.000	97	24882	5.00	4.42	
15 Ethyl ether	59	6.163	6.163	0.000	95	10195	1.00	1.24	
* 16 TBA-d9 (IS)	65	6.412	6.412	0.000	0	1129368	975.0	975.0	
17 1,1-Dichloroethene	96	6.485	6.485	0.000	92	8686	1.00	1.28	
19 2-Methyl-2-propanol	59	6.497	6.497	0.000	67	15771	10.0	10.1	
18 Acrylonitrile	52	6.534	6.534	0.000	97	46202	10.0	11.9	
20 Iodomethane	142	6.546	6.546	0.000	59	14894	1.00	1.05	
21 Methylene Chloride	84	6.631	6.631	0.000	97	13931	1.00	1.00	
22 Methyl acetate	43	6.661	6.661	0.000	100	54062	5.00	5.51	
23 1,1,2-Trichloro-1,2,2-trif	151	6.686	6.686	0.000	90	7311	1.00	1.16	
9 3-Chloro-1-propene	76	6.722	6.722	0.000	91	5131	1.00	1.20	
24 Carbon disulfide	76	6.886	6.886	0.000	100	26513	1.00	1.04	
25 trans-1,2-Dichloroethene	96	7.275	7.275	0.000	96	10267	1.00	1.01	
26 Methyl tert-butyl ether	73	7.361	7.361	0.000	98	27000	1.00	1.08	
29 Propionitrile	54	7.500	7.500	0.000	96	26134	12.5	12.9	
28 1,1-Dichloroethane	63	7.500	7.500	0.000	97	16807	1.00	1.14	
30 Vinyl acetate	86	7.592	7.592	0.000	100	4365	2.50	2.61	
31 2-Chloro-1,3-butadiene	53	7.829	7.829	0.000	95	15619	1.00	1.07	
32 Hexane	57	7.847	7.847	0.000	91	11210	1.00	1.10	
34 2-Butanone (MEK)	72	7.865	7.865	0.000	94	5486	5.00	5.58	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
33 Isopropyl ether	45	7.865	7.865	0.000	82	49249	1.25	1.41	
35 Methacrylonitrile	66	7.957	7.957	0.000	98	15672	10.0	11.2	
36 cis-1,2-Dichloroethene	96	8.011	8.011	0.000	85	16078	1.00	1.29	
40 Ethyl acetate	43	8.133	8.133	0.000	99	26778	2.00	1.59	
37 Chlorobromomethane	128	8.157	8.157	0.000	92	5038	1.00	1.17	
38 Chloroform	83	8.194	8.194	0.000	94	15829	1.00	1.21	
39 Tert-butyl ethyl ether	59	8.212	8.212	0.000	98	41308	1.25	1.37	
41 Isobutyl alcohol	43	8.242	8.242	0.000	93	22404	25.0	26.1	
42 2,2-Dichloropropane	77	8.261	8.261	0.000	88	12775	1.00	1.24	
$ 43 Dibromofluoromethane (Surr	113	8.297	8.297	0.000	94	361880	48.8	49.9	
44 Tetrahydrofuran	42	8.473	8.473	0.000	93	8373	2.00	2.14	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.680	8.680	0.000	0	442680	48.8	49.9	
46 1,2-Dichloroethane	62	8.747	8.747	0.000	95	14789	1.00	1.28	
47 1,1,1-Trichloroethane	97	8.838	8.838	0.000	97	12717	1.00	1.11	
49 n-Butanol	56	8.851	8.851	0.000	95	10164	25.0	36.3	
48 1,1-Dichloropropene	75	8.984	8.984	0.000	89	11319	1.00	1.11	
50 Cyclohexane	84	9.082	9.082	0.000	98	10946	1.00	1.17	
51 Carbon tetrachloride	119	9.142	9.142	0.000	98	9652	1.00	1.12	
52 Benzene	78	9.173	9.173	0.000	98	33272	1.00	1.14	
53 Tert-amyl methyl ether	73	9.270	9.270	0.000	94	35543	1.25	1.42	
* 54 Fluorobenzene (IS)	96	9.337	9.337	0.000	98	1359845	48.8	48.8	
56 Ethyl acrylate	55	9.550	9.550	0.000	97	12492	1.00	1.00	
57 n-Heptane	43	9.562	9.562	0.000	96	8462	1.00	1.08	
58 Dibromomethane	93	9.647	9.647	0.000	91	6049	1.00	1.17	
59 1,2-Dichloropropane	63	9.665	9.665	0.000	96	9243	1.00	1.09	
60 2-Nitropropane	43	9.684	9.684	0.000	87	6318	2.00	1.99	
61 Trichloroethene	130	9.696	9.696	0.000	95	8393	1.00	1.10	
62 Dichlorobromomethane	83	9.744	9.744	0.000	98	9312	1.00	1.05	
63 Methyl methacrylate	41	9.805	9.805	0.000	94	18967	2.00	2.05	a
$ 64 Trifluorotoluene (Surr)	146	9.836	9.836	0.000	90	697355	50.0	49.9	
65 2-Chloroethyl vinyl ether	43	10.042	10.042	0.000	91	4475	1.00	1.04	
66 Methylcyclohexane	83	10.146	10.146	0.000	96	10309	1.00	1.19	
67 cis-1,3-Dichloropropene	75	10.274	10.274	0.000	90	13261	1.00	1.03	
68 4-Methyl-2-pentanone (MIBK	43	10.340	10.340	0.000	98	59912	5.00	4.53	
69 trans-1,3-Dichloropropene	75	10.651	10.651	0.000	98	11536	1.00	1.06	
71 1,1,2-Trichloroethane	97	10.815	10.815	0.000	92	6953	1.00	0.9752	
S 70 Xylenes, Total	106				0		2.00	1.13	
$ 73 Toluene-d8 (Surr)	98	10.912	10.912	0.000	95	1219953	48.8	49.4	
75 Ethyl methacrylate	69	10.973	10.973	0.000	93	9198	1.00	1.01	
76 Toluene	92	10.979	10.979	0.000	97	18978	1.00	1.10	
77 1,3-Dichloropropane	76	11.028	11.028	0.000	97	12286	1.00	1.10	
78 2-Hexanone	58	11.113	11.113	0.000	99	16091	5.00	2.70	
79 Chlorodibromomethane	129	11.307	11.307	0.000	93	4777	1.00	1.03	
80 n-Butyl acetate	43	11.380	11.380	0.000	98	16118	1.00	1.02	
81 Ethylene Dibromide	107	11.538	11.538	0.000	96	7636	1.00	1.11	
82 Tetrachloroethene	164	11.672	11.672	0.000	97	5985	1.00	1.01	
84 1,1,1,2-Tetrachloroethane	131	12.232	12.232	0.000	75	8847	1.00	1.13	
* 85 Chlorobenzene-d5	82	12.274	12.274	0.000	87	545171	48.8	48.8	
86 Chlorobenzene	112	12.311	12.311	0.000	96	22127	1.00	1.14	
87 Ethylbenzene	106	12.463	12.463	0.000	98	11545	1.00	1.14	
88 m-Xylene & p-Xylene	91	12.633	12.633	0.000	68	30404	1.00	1.19	
89 Bromoform	173	12.816	12.816	0.000	91	1604	1.00	1.30	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.955	12.955	0.000	95	19586	1.00	1.00	
91 o-Xylene	106	13.022	13.022	0.000	97	14862	1.00	1.13	
92 1,1,2,2-Tetrachloroethane	83	13.028	13.028	0.000	96	11922	1.00	1.02	
93 trans-1,4-Dichloro-2-buten	53	13.150	13.150	0.000	73	3362	1.00	0.99	
94 1,2,3-Trichloropropane	110	13.156	13.156	0.000	88	3720	1.00	0.99	
96 Isopropylbenzene	105	13.345	13.345	0.000	96	34635	1.00	1.11	
$ 97 4-Bromofluorobenzene (Surr	95	13.405	13.405	0.000	93	529147	48.8	50.0	
98 Bromobenzene	156	13.612	13.612	0.000	95	10742	1.00	1.01	
99 N-Propylbenzene	120	13.746	13.746	0.000	99	9137	1.00	1.05	
100 2-Chlorotoluene	126	13.855	13.855	0.000	96	9273	1.00	1.01	
101 4-Chlorotoluene	91	13.916	13.916	0.000	98	26272	1.00	1.04	
102 1,3,5-Trimethylbenzene	105	13.977	13.977	0.000	96	29477	1.00	1.02	
104 tert-Butylbenzene	119	14.245	14.245	0.000	95	21825	1.00	0.9600	
105 1,2,4-Trimethylbenzene	105	14.336	14.336	0.000	97	32171	1.00	1.04	
106 sec-Butylbenzene	105	14.439	14.439	0.000	95	33221	1.00	1.03	
107 Benzyl chloride	91	14.530	14.530	0.000	98	26177	1.00	1.00	
108 1,3-Dichlorobenzene	146	14.537	14.537	0.000	87	21560	1.00	1.01	
* 109 1,4-Dichlorobenzene-d4	152	14.567	14.567	0.000	96	697537	48.8	48.8	
110 4-Isopropyltoluene	119	14.591	14.591	0.000	97	30584	1.00	1.11	
111 1,4-Dichlorobenzene	146	14.597	14.597	0.000	91	21830	1.00	1.01	
112 1,2,3-Trimethylbenzene	105	14.731	14.731	0.000	99	37380	1.00	1.01	
113 1,2-Dichlorobenzene	146	14.926	14.926	0.000	98	22590	1.00	1.01	
114 n-Butylbenzene	91	14.962	14.962	0.000	97	25611	1.00	1.02	
116 1,2-Dibromo-3-Chloropropan	157	15.370	15.370	0.000	79	2808	1.00	0.9606	
117 1,3,5-Trichlorobenzene	180	16.154	16.154	0.000	96	15259	1.00	1.01	
118 1,2,4-Trichlorobenzene	180	16.726	16.726	0.000	93	14699	1.00	1.16	
119 Naphthalene	128	17.012	17.012	0.000	97	42837	1.00	1.03	
120 Hexachlorobutadiene	190	17.036	17.036	0.000	95	2411	1.00	1.12	
121 1,2,3-Trichlorobenzene	180	17.237	17.237	0.000	96	14864	1.00	1.11	
S 123 1,3-Dichloropropene, Total	1				0			2.09	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

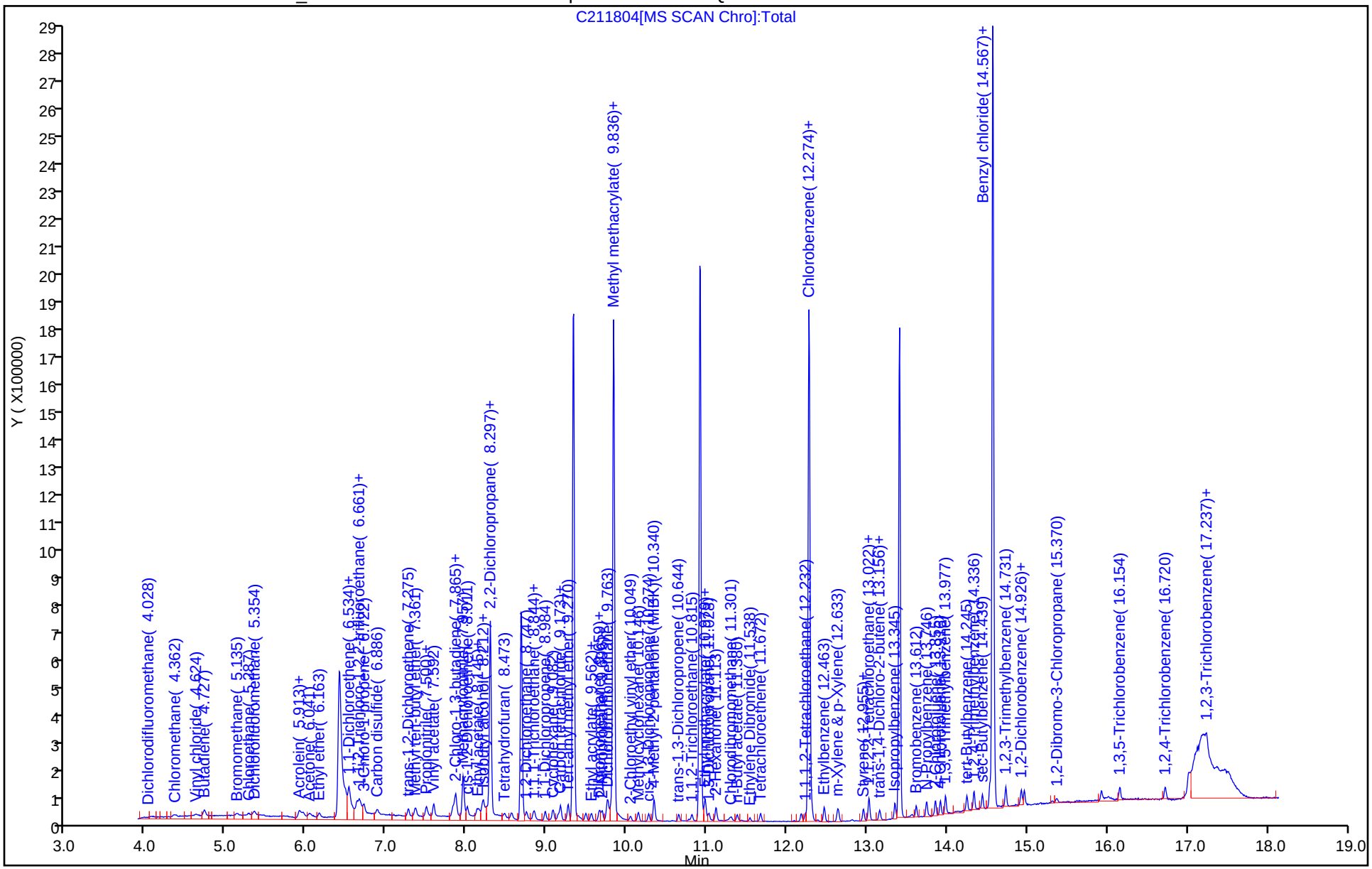
VOAMasterMix_00018	Amount Added:	1.00	Units: uL	
SURR/IS/TFT_00100	Amount Added:	1.00	Units: uL	Run Reagent

Report Date: 22-Mar-2018 15:22:20 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211804.D

Injection Date:	21-Mar-2018 12:37:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	IC STD 1			Worklist Smp#:	4
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



Manual Integration/User Assign Peak Report

TestAmerica Seattle

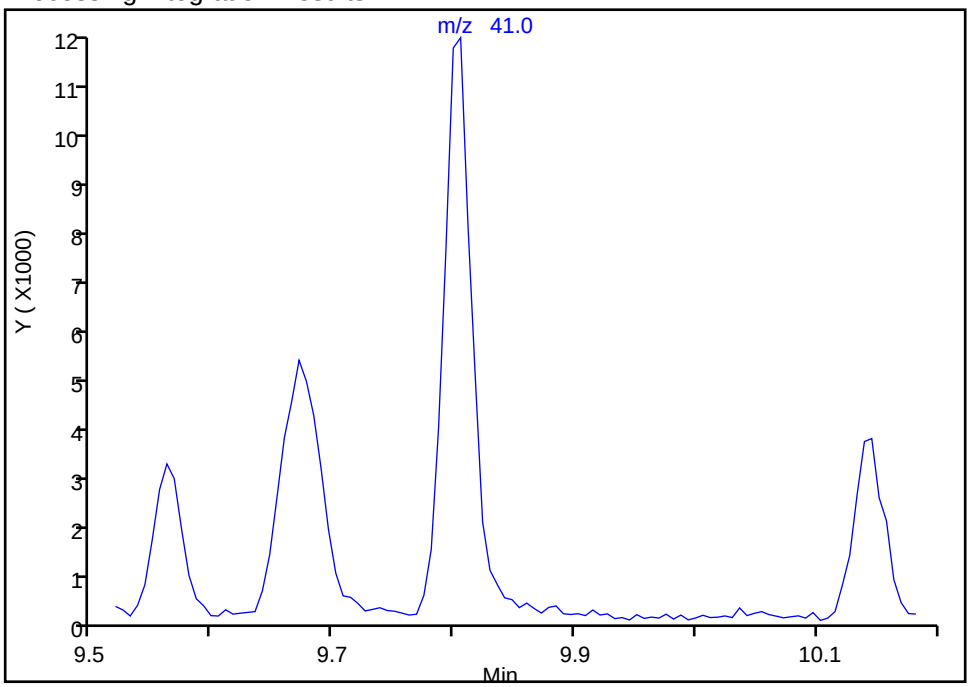
Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211804.D
Injection Date: 21-Mar-2018 12:37:30 Instrument ID: SEA102
Lims ID: IC STD 1
Client ID:
Operator ID: RSB ALS Bottle#: 4 Worklist Smp#: 4
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Column: Detector MS SCAN

63 Methyl methacrylate, CAS: 80-62-6

Signal: 1

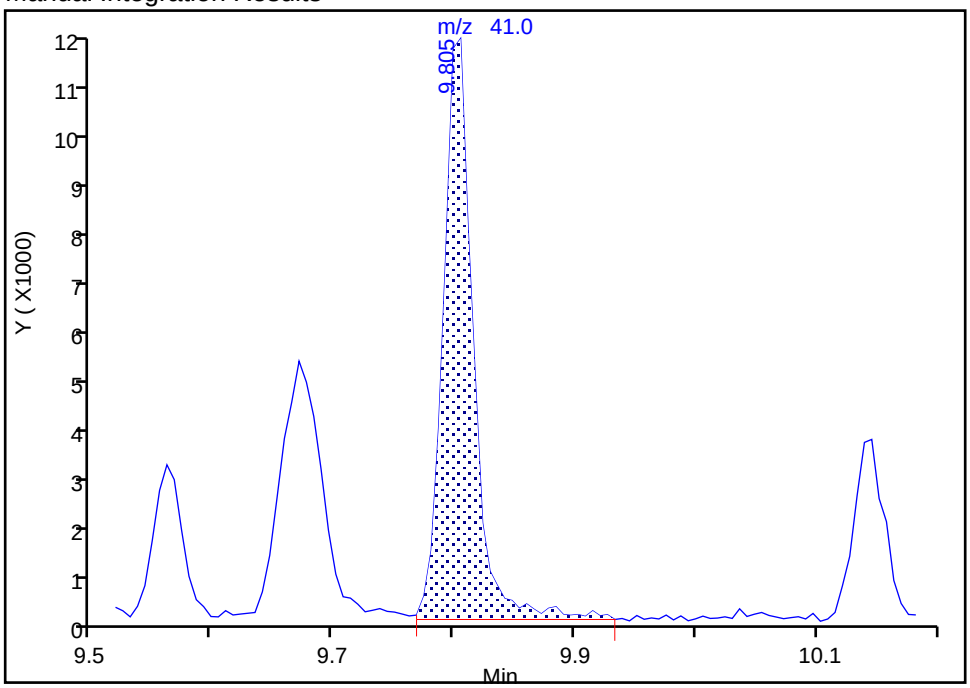
Not Detected
Expected RT: 9.81

Processing Integration Results



Manual Integration Results

RT: 9.81
Area: 18967
Amount: 2.048200
Amount Units: ug/L



Reviewer: brennanr, 22-Mar-2018 14:16:15
Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211805.D
Lims ID: IC STD 5
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 21-Mar-2018 13:07:30 ALS Bottle#: 5 Worklist Smp#: 5
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ic std 5
Operator ID: RSB Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:22 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 14:18:13

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.058	4.058	0.000	100	24443	5.00	4.61	
2 Chloromethane	50	4.356	4.356	0.000	100	61650	5.00	4.87	
3 Vinyl chloride	62	4.618	4.618	0.000	99	50101	5.00	4.80	
4 Butadiene	39	4.733	4.733	0.000	98	61048	5.00	5.36	
5 Bromomethane	94	5.147	5.147	0.000	90	31569	5.00	4.63	
6 Chloroethane	64	5.280	5.280	0.000	98	30960	5.00	5.02	
7 Dichlorofluoromethane	67	5.359	5.359	0.000	99	73710	5.00	4.77	
10 Acrolein	56	5.907	5.907	0.000	99	73379	30.0	31.0	
12 Acetonitrile	41	5.919	5.919	0.000	100	131281	62.5	74.4	
11 Trichlorofluoromethane	101	5.961	5.961	0.000	72	57879	5.00	4.84	
14 Isopropyl alcohol	45	5.961	5.961	0.000	26	55310	50.0	60.5	
13 Acetone	43	6.034	6.034	0.000	99	98469	25.0	29.8	
15 Ethyl ether	59	6.162	6.162	0.000	96	42529	5.00	4.94	
* 16 TBA-d9 (IS)	65	6.412	6.412	0.000	0	1173006	975.0	975.0	
19 2-Methyl-2-propanol	59	6.497	6.497	0.000	86	72970	50.0	55.8	
17 1,1-Dichloroethene	96	6.497	6.497	0.000	93	35306	5.00	4.67	
18 Acrylonitrile	52	6.533	6.533	0.000	97	214430	50.0	52.8	
20 Iodomethane	142	6.551	6.551	0.000	97	73549	5.00	4.97	
21 Methylene Chloride	84	6.637	6.637	0.000	96	48998	5.00	5.02	
22 Methyl acetate	43	6.661	6.661	0.000	100	266755	25.0	26.0	
23 1,1,2-Trichloro-1,2,2-trif	151	6.685	6.685	0.000	91	30851	5.00	4.80	
9 3-Chloro-1-propene	76	6.722	6.722	0.000	91	23441	5.00	4.90	
24 Carbon disulfide	76	6.898	6.898	0.000	100	125022	5.00	4.67	
25 trans-1,2-Dichloroethene	96	7.269	7.269	0.000	96	38604	5.00	4.88	
26 Methyl tert-butyl ether	73	7.360	7.360	0.000	99	131278	5.00	5.01	
29 Propionitrile	54	7.494	7.494	0.000	99	123879	62.5	70.4	
28 1,1-Dichloroethane	63	7.500	7.500	0.000	97	77671	5.00	4.73	
30 Vinyl acetate	86	7.591	7.591	0.000	100	23311	12.5	13.3	
31 2-Chloro-1,3-butadiene	53	7.822	7.822	0.000	93	71355	5.00	4.80	
32 Hexane	57	7.847	7.847	0.000	88	54346	5.00	5.11	
33 Isopropyl ether	45	7.865	7.865	0.000	86	227604	6.25	6.24	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
34 2-Butanone (MEK)	72	7.865	7.865	0.000	95	31296	25.0	28.5	
35 Methacrylonitrile	66	7.956	7.956	0.000	97	76469	50.0	52.2	
36 cis-1,2-Dichloroethene	96	8.011	8.011	0.000	84	45775	5.00	4.49	
40 Ethyl acetate	43	8.133	8.133	0.000	99	130634	10.0	10.9	
37 Chlorobromomethane	128	8.157	8.157	0.000	92	21849	5.00	4.85	
38 Chloroform	83	8.193	8.193	0.000	95	69398	5.00	4.76	
39 Tert-butyl ethyl ether	59	8.212	8.212	0.000	99	190561	6.25	6.03	
41 Isobutyl alcohol	43	8.242	8.242	0.000	95	119158	125.0	128.8	
42 2,2-Dichloropropane	77	8.260	8.260	0.000	90	52284	5.00	4.83	
$ 43 Dibromofluoromethane (Surr	113	8.297	8.297	0.000	94	362621	48.8	47.8	
44 Tetrahydrofuran	42	8.473	8.473	0.000	94	44712	10.0	10.9	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.680	8.680	0.000	0	459258	48.8	49.5	
46 1,2-Dichloroethane	62	8.747	8.747	0.000	96	61035	5.00	5.05	
47 1,1,1-Trichloroethane	97	8.838	8.838	0.000	98	57575	5.00	4.82	
49 n-Butanol	56	8.850	8.850	0.000	96	52371	125.0	128.6	
48 1,1-Dichloropropene	75	8.978	8.978	0.000	93	51587	5.00	4.84	
50 Cyclohexane	84	9.075	9.075	0.000	97	49213	5.00	4.73	
51 Carbon tetrachloride	119	9.148	9.148	0.000	99	40806	5.00	4.54	
52 Benzene	78	9.172	9.172	0.000	98	157443	5.00	4.85	
53 Tert-amyl methyl ether	73	9.270	9.270	0.000	94	160384	6.25	6.12	
* 54 Fluorobenzene (IS)	96	9.337	9.337	0.000	98	1422948	48.8	48.8	
56 Ethyl acrylate	55	9.549	9.549	0.000	98	70728	5.00	5.42	
57 n-Heptane	43	9.562	9.562	0.000	97	42514	5.00	5.17	
58 Dibromomethane	93	9.647	9.647	0.000	92	27456	5.00	5.06	
59 1,2-Dichloropropane	63	9.665	9.665	0.000	92	45885	5.00	4.85	
60 2-Nitropropane	43	9.683	9.683	0.000	96	34775	10.0	10.5	
61 Trichloroethene	130	9.695	9.695	0.000	96	41237	5.00	4.83	
62 Dichlorobromomethane	83	9.744	9.744	0.000	98	45926	5.00	4.65	
63 Methyl methacrylate	41	9.805	9.805	0.000	91	106058	10.0	10.9	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.835	0.000	90	740530	50.0	50.7	
65 2-Chloroethyl vinyl ether	43	10.048	10.048	0.000	91	26088	5.00	5.43	
66 Methylcyclohexane	83	10.145	10.145	0.000	99	45179	5.00	4.67	
67 cis-1,3-Dichloropropene	75	10.273	10.273	0.000	91	67383	5.00	5.14	
68 4-Methyl-2-pentanone (MIBK	43	10.340	10.340	0.000	99	314354	25.0	26.2	
69 trans-1,3-Dichloropropene	75	10.650	10.650	0.000	98	61157	5.00	5.27	
71 1,1,2-Trichloroethane	97	10.814	10.814	0.000	93	36622	5.00	5.23	
S 70 Xylenes, Total	106				0		10.0	4.81	
$ 73 Toluene-d8 (Surr)	98	10.918	10.918	0.000	95	1342022	48.8	48.7	
75 Ethyl methacrylate	69	10.973	10.973	0.000	96	47617	5.00	4.94	
76 Toluene	92	10.985	10.985	0.000	99	94981	5.00	4.93	
77 1,3-Dichloropropane	76	11.027	11.027	0.000	97	64824	5.00	5.20	
78 2-Hexanone	58	11.112	11.112	0.000	99	96623	25.0	24.7	
79 Chlorodibromomethane	129	11.307	11.307	0.000	90	30814	5.00	4.44	
80 n-Butyl acetate	43	11.380	11.380	0.000	97	86542	5.00	5.29	
81 Ethylene Dibromide	107	11.538	11.538	0.000	98	39507	5.00	5.17	
82 Tetrachloroethene	164	11.672	11.672	0.000	99	31791	5.00	5.12	
84 1,1,1,2-Tetrachloroethane	131	12.231	12.231	0.000	93	40834	5.00	4.69	
* 85 Chlorobenzene-d5	82	12.274	12.274	0.000	87	608190	48.8	48.8	
86 Chlorobenzene	112	12.310	12.310	0.000	94	107211	5.00	4.93	
87 Ethylbenzene	106	12.469	12.469	0.000	99	54411	5.00	4.82	
88 m-Xylene & p-Xylene	91	12.639	12.639	0.000	68	136990	5.00	4.82	
89 Bromoform	173	12.809	12.809	0.000	96	14618	5.00	4.19	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.955	12.955	0.000	95	102722	5.00	4.69	
92 1,1,2,2-Tetrachloroethane	83	13.028	13.028	0.000	95	57986	5.00	5.26	
91 o-Xylene	106	13.022	13.022	0.000	98	70407	5.00	4.81	
93 trans-1,4-Dichloro-2-buten	53	13.150	13.150	0.000	95	15802	5.00	5.30	
94 1,2,3-Trichloropropane	110	13.162	13.162	0.000	89	17743	5.00	5.41	
96 Isopropylbenzene	105	13.350	13.350	0.000	96	164539	5.00	4.72	
$ 97 4-Bromofluorobenzene (Surr	95	13.405	13.405	0.000	93	576076	48.8	48.8	
98 Bromobenzene	156	13.618	13.618	0.000	94	52415	5.00	5.03	
99 N-Propylbenzene	120	13.746	13.746	0.000	99	43111	5.00	4.86	
100 2-Chlorotoluene	126	13.855	13.855	0.000	97	43770	5.00	4.88	
101 4-Chlorotoluene	91	13.916	13.916	0.000	98	126749	5.00	4.91	
102 1,3,5-Trimethylbenzene	105	13.983	13.983	0.000	95	142019	5.00	4.82	
104 tert-Butylbenzene	119	14.244	14.244	0.000	95	112940	5.00	4.87	
105 1,2,4-Trimethylbenzene	105	14.335	14.335	0.000	98	152768	5.00	4.83	
106 sec-Butylbenzene	105	14.439	14.439	0.000	94	156803	5.00	4.78	
107 Benzyl chloride	91	14.530	14.530	0.000	99	117624	5.00	5.13	
108 1,3-Dichlorobenzene	146	14.536	14.536	0.000	94	95430	5.00	4.87	
* 109 1,4-Dichlorobenzene-d4	152	14.573	14.573	0.000	95	712171	48.8	48.8	
110 4-Isopropyltoluene	119	14.591	14.591	0.000	97	143557	5.00	4.87	
111 1,4-Dichlorobenzene	146	14.597	14.597	0.000	96	99624	5.00	4.92	
112 1,2,3-Trimethylbenzene	105	14.731	14.731	0.000	99	170379	5.00	4.82	
113 1,2-Dichlorobenzene	146	14.925	14.925	0.000	98	99113	5.00	4.85	
114 n-Butylbenzene	91	14.962	14.962	0.000	98	115685	5.00	4.74	
116 1,2-Dibromo-3-Chloropropan	157	15.363	15.363	0.000	85	14025	5.00	4.70	
117 1,3,5-Trichlorobenzene	180	16.154	16.154	0.000	98	66778	5.00	4.76	
118 1,2,4-Trichlorobenzene	180	16.725	16.725	0.000	95	65306	5.00	4.63	
119 Naphthalene	128	17.011	17.011	0.000	97	194331	5.00	4.93	
120 Hexachlorobutadiene	190	17.036	17.036	0.000	95	10106	5.00	4.58	
121 1,2,3-Trichlorobenzene	180	17.236	17.236	0.000	96	61625	5.00	4.78	
S 123 1,3-Dichloropropene, Total	1				0			10.4	

Reagents:

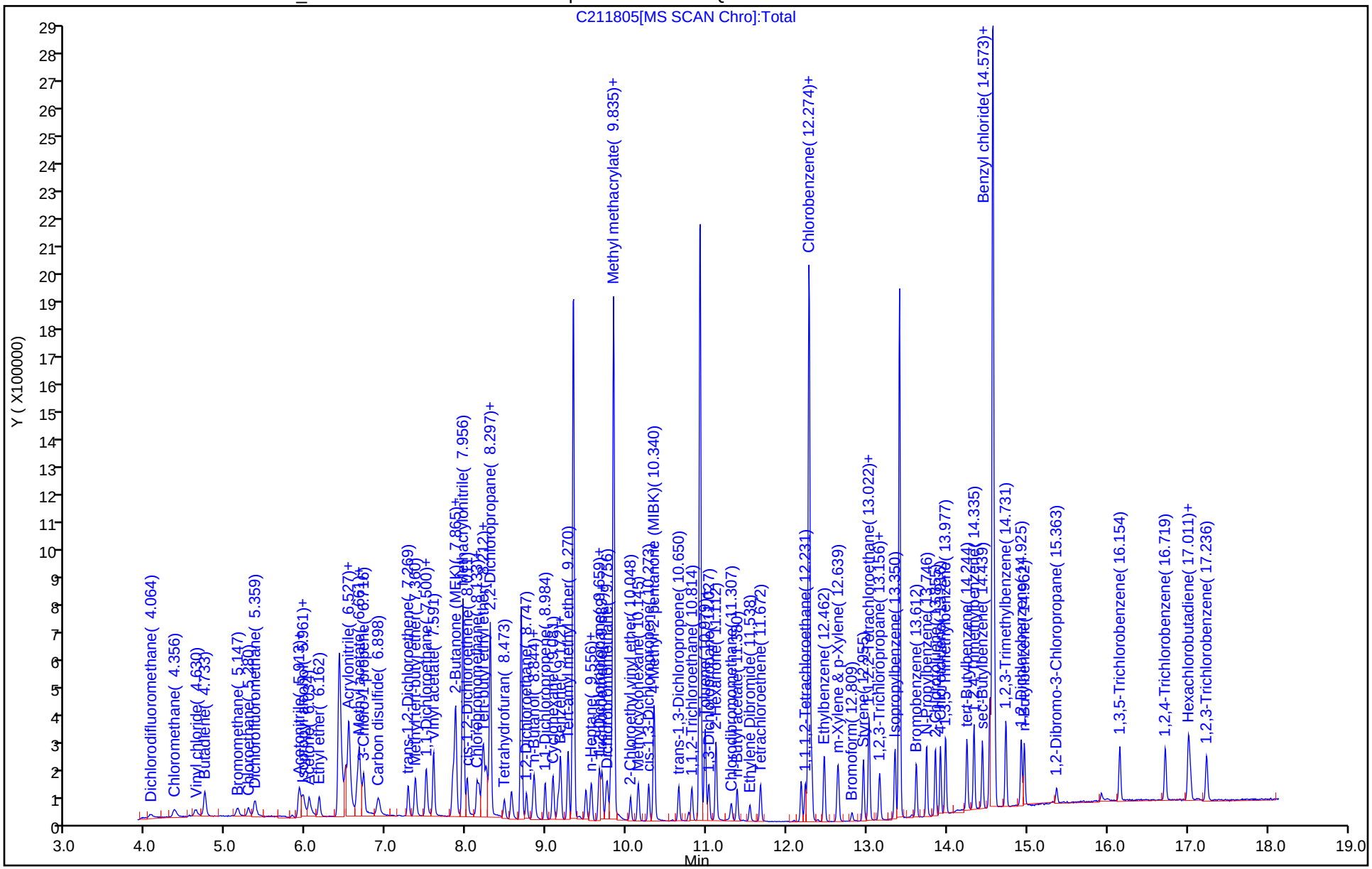
VOAMasterMix_00018	Amount Added:	5.00	Units: uL	
SURR/IS/TFT_00100	Amount Added:	1.00	Units: uL	Run Reagent

Report Date: 22-Mar-2018 15:22:24 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211805.D

Injection Date:	21-Mar-2018 13:07:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	IC STD 5			Worklist Smp#:	5
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211806.D
Lims ID: IC STD 10
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 21-Mar-2018 13:35:30 ALS Bottle#: 6 Worklist Smp#: 6
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ic std 10
Operator ID: RSB Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:25 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 14:20:10

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1	Dichlorodifluoromethane	85	4.061	4.061	0.000	99	44716	10.0	9.34	
2	Chloromethane	50	4.359	4.359	0.000	100	112632	10.0	9.47	
3	Vinyl chloride	62	4.620	4.620	0.000	99	86926	10.0	9.23	
4	Butadiene	39	4.736	4.736	0.000	98	107975	10.0	9.93	
5	Bromomethane	94	5.137	5.137	0.000	90	57519	10.0	9.36	
6	Chloroethane	64	5.283	5.283	0.000	99	53264	10.0	9.05	
7	Dichlorofluoromethane	67	5.356	5.356	0.000	99	135952	10.0	9.22	
10	Acrolein	56	5.903	5.903	0.000	98	135082	60.0	59.7	
12	Acetonitrile	41	5.928	5.928	0.000	98	225058	125.0	138.7	
11	Trichlorofluoromethane	101	5.952	5.952	0.000	96	102665	10.0	9.51	
14	Isopropyl alcohol	45	5.964	5.964	0.000	27	91861	100.0	109.2	
13	Acetone	43	6.037	6.037	0.000	98	156594	50.0	52.2	
15	Ethyl ether	59	6.165	6.165	0.000	96	74930	10.0	9.12	
* 16	TBA-d9 (IS)	65	6.414	6.414	0.000	0	1297561	975.0	975.0	
17	1,1-Dichloroethene	96	6.493	6.493	0.000	93	64231	10.0	9.42	
19	2-Methyl-2-propanol	59	6.499	6.499	0.000	99	130139	100.0	106.7	
18	Acrylonitrile	52	6.530	6.530	0.000	97	365972	100.0	94.4	
20	Iodomethane	142	6.548	6.548	0.000	97	131237	10.0	9.28	
21	Methylene Chloride	84	6.639	6.639	0.000	95	83726	10.0	9.52	
22	Methyl acetate	43	6.664	6.664	0.000	100	502136	50.0	51.2	
23	1,1,2-Trichloro-1,2,2-trif	151	6.688	6.688	0.000	91	55016	10.0	9.06	
9	3-Chloro-1-propene	76	6.718	6.718	0.000	91	40659	10.0	9.42	
24	Carbon disulfide	76	6.895	6.895	0.000	100	238960	10.0	9.36	
25	trans-1,2-Dichloroethene	96	7.272	7.272	0.000	95	68515	10.0	9.47	
26	Methyl tert-butyl ether	73	7.363	7.363	0.000	99	236940	10.0	9.47	
28	1,1-Dichloroethane	63	7.503	7.503	0.000	97	140150	10.0	9.46	
29	Propionitrile	54	7.497	7.497	0.000	99	229117	125.0	138.3	
30	Vinyl acetate	86	7.588	7.588	0.000	100	39917	25.0	23.9	
31	2-Chloro-1,3-butadiene	53	7.825	7.825	0.000	93	132457	10.0	9.43	
32	Hexane	57	7.843	7.843	0.000	94	92365	10.0	9.10	
34	2-Butanone (MEK)	72	7.868	7.868	0.000	94	52440	50.0	53.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
33 Isopropyl ether	45	7.868	7.868	0.000	87	401750	12.5	11.5	
35 Methacrylonitrile	66	7.959	7.959	0.000	97	136490	100.0	97.7	
36 cis-1,2-Dichloroethene	96	8.014	8.014	0.000	84	77208	10.0	9.09	
40 Ethyl acetate	43	8.135	8.135	0.000	99	209362	20.0	19.0	
37 Chlorobromomethane	128	8.160	8.160	0.000	93	38705	10.0	9.00	
38 Chloroform	83	8.190	8.190	0.000	94	125063	10.0	9.50	
39 Tert-butyl ethyl ether	59	8.214	8.214	0.000	98	338751	12.5	11.2	
41 Isobutyl alcohol	43	8.245	8.245	0.000	92	227115	250.0	256.5	
42 2,2-Dichloropropane	77	8.263	8.263	0.000	94	94363	10.0	9.13	
$ 43 Dibromofluoromethane (Surr	113	8.299	8.299	0.000	94	359155	48.8	49.6	
44 Tetrahydrofuran	42	8.476	8.476	0.000	94	79989	20.0	20.5	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.683	8.683	0.000	0	444132	48.8	50.1	
46 1,2-Dichloroethane	62	8.749	8.749	0.000	96	106328	10.0	9.21	
47 1,1,1-Trichloroethane	97	8.835	8.835	0.000	99	104659	10.0	9.17	
49 n-Butanol	56	8.853	8.853	0.000	97	94588	250.0	232.9	
48 1,1-Dichloropropene	75	8.981	8.981	0.000	93	90284	10.0	8.86	
50 Cyclohexane	84	9.078	9.078	0.000	97	86738	10.0	9.24	
51 Carbon tetrachloride	119	9.145	9.145	0.000	99	76929	10.0	8.96	
52 Benzene	78	9.175	9.175	0.000	98	276791	10.0	9.45	
53 Tert-amyl methyl ether	73	9.266	9.266	0.000	94	285576	12.5	11.4	
* 54 Fluorobenzene (IS)	96	9.333	9.333	0.000	98	1358597	48.8	48.8	
56 Ethyl acrylate	55	9.552	9.552	0.000	98	111854	10.0	8.98	
57 n-Heptane	43	9.564	9.564	0.000	98	65423	10.0	8.33	
58 Dibromomethane	93	9.649	9.649	0.000	93	48247	10.0	9.31	
59 1,2-Dichloropropane	63	9.662	9.662	0.000	92	77229	10.0	9.04	
60 2-Nitropropane	43	9.680	9.680	0.000	99	60411	20.0	19.0	
61 Trichloroethene	130	9.698	9.698	0.000	95	71516	10.0	9.29	
62 Dichlorobromomethane	83	9.741	9.741	0.000	98	82618	10.0	9.26	
63 Methyl methacrylate	41	9.801	9.801	0.000	93	165268	20.0	17.9	
$ 64 Trifluorotoluene (Surr)	146	9.838	9.838	0.000	89	695481	50.0	49.8	
65 2-Chloroethyl vinyl ether	43	10.045	10.045	0.000	90	40006	10.0	9.23	
66 Methylcyclohexane	83	10.148	10.148	0.000	97	80330	10.0	9.21	
67 cis-1,3-Dichloropropene	75	10.276	10.276	0.000	91	109995	10.0	8.87	
68 4-Methyl-2-pentanone (MIBK	43	10.343	10.343	0.000	98	561015	50.0	53.1	
69 trans-1,3-Dichloropropene	75	10.647	10.647	0.000	98	99016	10.0	9.49	
71 1,1,2-Trichloroethane	97	10.811	10.811	0.000	93	59911	10.0	9.61	
S 70 Xylenes, Total	106				0		20.0	9.30	
$ 73 Toluene-d8 (Surr)	98	10.914	10.914	0.000	94	1229200	48.8	49.4	
75 Ethyl methacrylate	69	10.975	10.975	0.000	95	78979	10.0	9.13	
76 Toluene	92	10.981	10.981	0.000	98	159359	10.0	9.16	
77 1,3-Dichloropropane	76	11.024	11.024	0.000	99	106290	10.0	9.44	
78 2-Hexanone	58	11.115	11.115	0.000	98	161849	50.0	47.8	
79 Chlorodibromomethane	129	11.304	11.304	0.000	92	56125	10.0	8.65	
80 n-Butyl acetate	43	11.377	11.377	0.000	97	139344	10.0	9.52	
81 Ethylene Dibromide	107	11.535	11.535	0.000	99	65454	10.0	9.49	
82 Tetrachloroethene	164	11.668	11.668	0.000	99	53653	10.0	9.05	
84 1,1,1,2-Tetrachloroethane	131	12.234	12.234	0.000	91	72754	10.0	9.27	
* 85 Chlorobenzene-d5	82	12.277	12.277	0.000	87	548784	48.8	48.8	
86 Chlorobenzene	112	12.307	12.307	0.000	95	180424	10.0	9.20	
87 Ethylbenzene	106	12.465	12.465	0.000	99	92841	10.0	9.11	
88 m-Xylene & p-Xylene	91	12.635	12.635	0.000	68	230140	10.0	8.97	
89 Bromoform	173	12.812	12.812	0.000	97	32152	10.0	8.79	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.958	12.958	0.000	95	176195	10.0	8.91	
91 o-Xylene	106	13.025	13.025	0.000	98	122840	10.0	9.30	
92 1,1,2,2-Tetrachloroethane	83	13.025	13.025	0.000	96	100186	10.0	9.71	
93 trans-1,4-Dichloro-2-buten	53	13.152	13.152	0.000	94	27197	10.0	9.75	
94 1,2,3-Trichloropropane	110	13.158	13.158	0.000	90	29658	10.0	9.73	
96 Isopropylbenzene	105	13.347	13.347	0.000	96	291229	10.0	9.25	
$ 97 4-Bromofluorobenzene (Surr	95	13.402	13.402	0.000	93	522549	48.8	49.1	
98 Bromobenzene	156	13.614	13.614	0.000	92	89008	10.0	9.07	
99 N-Propylbenzene	120	13.742	13.742	0.000	99	75100	10.0	8.95	
100 2-Chlorotoluene	126	13.852	13.852	0.000	96	78343	10.0	9.28	
101 4-Chlorotoluene	91	13.912	13.912	0.000	98	219770	10.0	9.01	
102 1,3,5-Trimethylbenzene	105	13.979	13.979	0.000	95	253427	10.0	9.10	
104 tert-Butylbenzene	119	14.247	14.247	0.000	95	194745	10.0	8.87	
105 1,2,4-Trimethylbenzene	105	14.338	14.338	0.000	98	272766	10.0	9.12	
106 sec-Butylbenzene	105	14.442	14.442	0.000	94	278472	10.0	8.98	
107 Benzyl chloride	91	14.527	14.527	0.000	99	210679	10.0	9.92	
108 1,3-Dichlorobenzene	146	14.539	14.539	0.000	97	167125	10.0	9.09	
* 109 1,4-Dichlorobenzene-d4	152	14.569	14.569	0.000	96	673677	48.8	48.8	
110 4-Isopropyltoluene	119	14.588	14.588	0.000	97	253010	10.0	9.02	
111 1,4-Dichlorobenzene	146	14.594	14.594	0.000	95	172624	10.0	9.11	
112 1,2,3-Trimethylbenzene	105	14.733	14.733	0.000	99	303622	10.0	9.15	
113 1,2-Dichlorobenzene	146	14.928	14.928	0.000	98	177323	10.0	9.30	
114 n-Butylbenzene	91	14.965	14.965	0.000	98	208907	10.0	9.10	
116 1,2-Dibromo-3-Chloropropan	157	15.366	15.366	0.000	85	27729	10.0	9.82	
117 1,3,5-Trichlorobenzene	180	16.156	16.156	0.000	98	122149	10.0	9.32	
118 1,2,4-Trichlorobenzene	180	16.722	16.722	0.000	94	122453	10.0	9.62	
119 Naphthalene	128	17.014	17.014	0.000	98	376193	10.0	10.2	
120 Hexachlorobutadiene	190	17.032	17.032	0.000	95	20521	10.0	9.83	
121 1,2,3-Trichlorobenzene	180	17.239	17.239	0.000	96	114554	10.0	9.47	
S 123 1,3-Dichloropropene, Total	1				0			18.4	

Reagents:

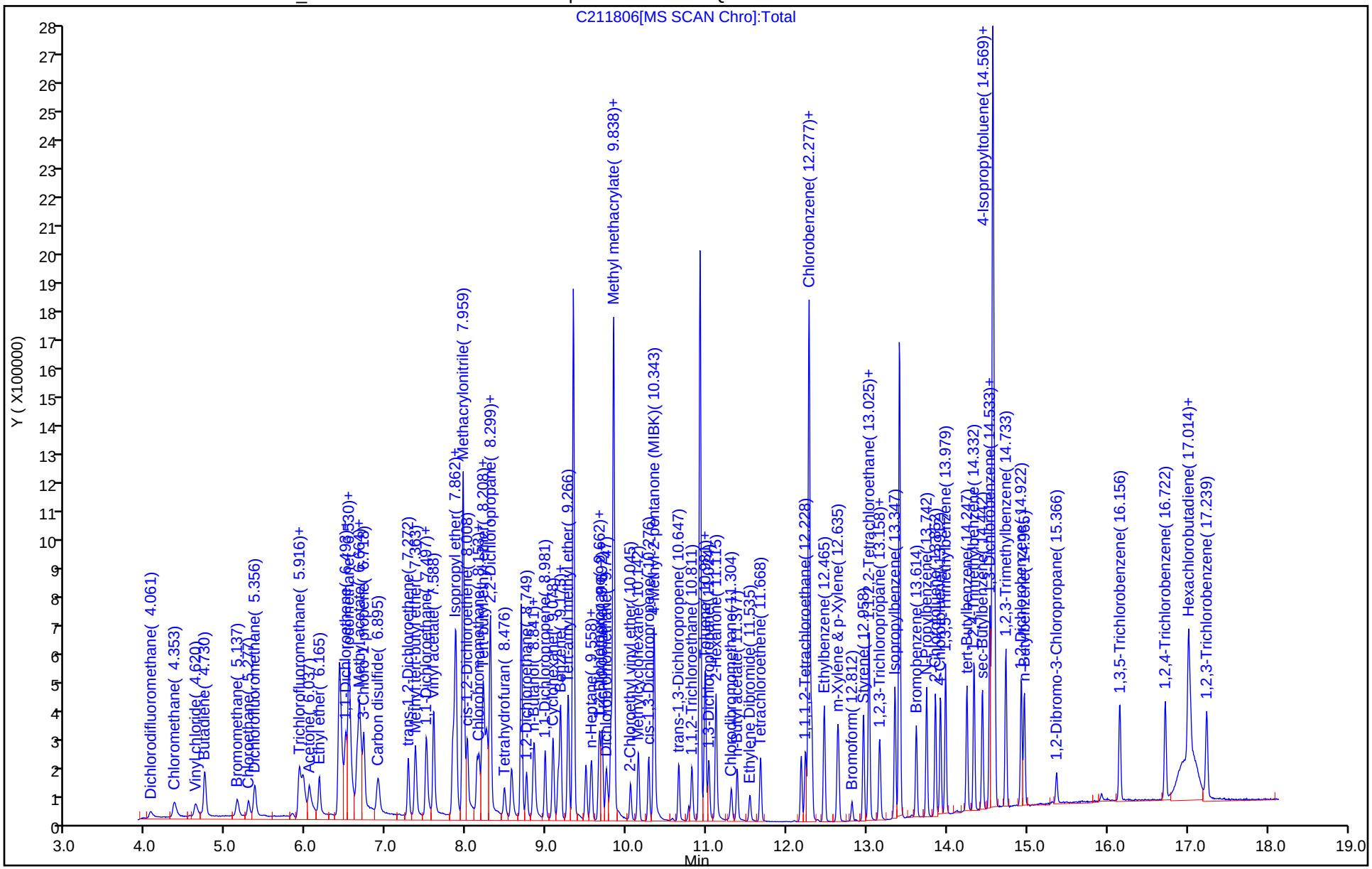
VOAMasterMix_00018	Amount Added: 10.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 22-Mar-2018 15:22:28 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211806.D

Injection Date:	21-Mar-2018 13:35:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	IC STD 10			Worklist Smp#:	6
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211807.D
Lims ID: ICIS
Client ID:
Sample Type: ICIS Calib Level: 5
Inject. Date: 21-Mar-2018 14:04:30 ALS Bottle#: 7 Worklist Smp#: 7
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: icis
Operator ID: RSB Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 23-Mar-2018 10:22:12 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: brennanr Date: 23-Mar-2018 10:22:12

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.060	4.060	0.000	99	103229	20.0	21.6	
2 Chloromethane	50	4.352	4.352	0.000	100	244839	20.0	20.8	
3 Vinyl chloride	62	4.620	4.620	0.000	99	200967	20.0	21.3	
4 Butadiene	39	4.735	4.735	0.000	98	239533	20.0	21.9	
5 Bromomethane	94	5.143	5.143	0.000	91	130530	20.0	21.2	
6 Chloroethane	64	5.276	5.276	0.000	99	125293	20.0	21.2	
7 Dichlorofluoromethane	67	5.355	5.355	0.000	99	306367	20.0	20.7	
10 Acrolein	56	5.903	5.903	0.000	99	206905	120.0	91.0	
12 Acetonitrile	41	5.921	5.921	0.000	99	322756	250.0	199.4	
14 Isopropyl alcohol	45	5.964	5.964	0.000	27	135809	200.0	162.5	
11 Trichlorofluoromethane	101	5.958	5.958	0.000	100	236695	20.0	21.9	
13 Acetone	43	6.037	6.037	0.000	98	244168	100.0	82.3	
15 Ethyl ether	59	6.164	6.164	0.000	96	160908	20.0	19.5	
* 16 TBA-d9 (IS)	65	6.414	6.414	0.000	0	811907	975.0	975.0	
17 1,1-Dichloroethene	96	6.493	6.493	0.000	93	147393	20.0	21.6	
19 2-Methyl-2-propanol	59	6.499	6.499	0.000	99	196823	200.0	161.7	
18 Acrylonitrile	52	6.529	6.529	0.000	98	620711	200.0	159.3	
20 Iodomethane	142	6.547	6.547	0.000	97	301317	20.0	21.2	
21 Methylene Chloride	84	6.639	6.639	0.000	96	183712	20.0	21.5	
22 Methyl acetate	43	6.663	6.663	0.000	100	800498	100.0	81.3	
23 1,1,2-Trichloro-1,2,2-trif	151	6.687	6.687	0.000	91	126163	20.0	21.0	
9 3-Chloro-1-propene	76	6.718	6.718	0.000	90	91467	20.0	21.2	
24 Carbon disulfide	76	6.900	6.900	0.000	100	548269	20.0	21.4	
25 trans-1,2-Dichloroethene	96	7.271	7.271	0.000	95	153777	20.0	21.7	
26 Methyl tert-butyl ether	73	7.362	7.362	0.000	99	487337	20.0	19.4	
29 Propionitrile	54	7.496	7.496	0.000	99	331538	250.0	198.9	
28 1,1-Dichloroethane	63	7.502	7.502	0.000	97	315932	20.0	21.3	
30 Vinyl acetate	86	7.587	7.587	0.000	100	76411	50.0	45.8	
31 2-Chloro-1,3-butadiene	53	7.825	7.825	0.000	94	294195	20.0	21.2	
32 Hexane	57	7.843	7.843	0.000	95	196528	20.0	19.3	
33 Isopropyl ether	45	7.867	7.867	0.000	92	905497	25.0	25.9	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
34 2-Butanone (MEK)	72	7.867	7.867	0.000	94	80497	100.0	81.3	
35 Methacrylonitrile	66	7.958	7.958	0.000	97	236217	200.0	168.2	
36 cis-1,2-Dichloroethene	96	8.013	8.013	0.000	84	178721	20.0	22.2	
40 Ethyl acetate	43	8.129	8.129	0.000	99	352917	40.0	32.6	
37 Chlorobromomethane	128	8.159	8.159	0.000	93	85806	20.0	19.9	
38 Chloroform	83	8.189	8.189	0.000	94	280320	20.0	21.3	
39 Tert-butyl ethyl ether	59	8.214	8.214	0.000	98	777292	25.0	25.7	
41 Isobutyl alcohol	43	8.238	8.238	0.000	90	362479	500.0	407.7	
42 2,2-Dichloropropane	77	8.262	8.262	0.000	92	209527	20.0	20.2	
$ 43 Dibromofluoromethane (Surr	113	8.299	8.299	0.000	94	358180	48.8	49.3	
44 Tetrahydrofuran	42	8.475	8.475	0.000	94	127509	40.0	32.5	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.682	8.682	0.000	0	413535	48.8	46.5	
46 1,2-Dichloroethane	62	8.749	8.749	0.000	96	224064	20.0	19.3	
47 1,1,1-Trichloroethane	97	8.834	8.834	0.000	98	233268	20.0	20.4	
49 n-Butanol	56	8.852	8.852	0.000	96	137470	500.0	367.1	
48 1,1-Dichloropropene	75	8.980	8.980	0.000	93	205120	20.0	20.0	
50 Cyclohexane	84	9.077	9.077	0.000	96	198518	20.0	21.2	
51 Carbon tetrachloride	119	9.144	9.144	0.000	98	172962	20.0	20.1	
52 Benzene	78	9.175	9.175	0.000	98	624911	20.0	21.3	
53 Tert-amyl methyl ether	73	9.266	9.266	0.000	95	623196	25.0	24.8	
* 54 Fluorobenzene (IS)	96	9.333	9.333	0.000	98	1364764	48.8	48.8	
56 Ethyl acrylate	55	9.552	9.552	0.000	98	216489	20.0	17.3	
57 n-Heptane	43	9.564	9.564	0.000	97	151660	20.0	19.2	
58 Dibromomethane	93	9.649	9.649	0.000	93	99076	20.0	19.0	
59 1,2-Dichloropropane	63	9.661	9.661	0.000	93	178619	20.0	20.9	
60 2-Nitropropane	43	9.679	9.679	0.000	97	99524	40.0	31.2	
61 Trichloroethene	130	9.691	9.691	0.000	95	165910	20.0	21.6	
62 Dichlorobromomethane	83	9.740	9.740	0.000	98	190456	20.0	21.4	
63 Methyl methacrylate	41	9.801	9.801	0.000	94	327572	40.0	35.2	
$ 64 Trifluorotoluene (Surr)	146	9.837	9.837	0.000	89	699078	50.0	49.9	
65 2-Chloroethyl vinyl ether	43	10.044	10.044	0.000	91	79415	20.0	18.3	
66 Methylcyclohexane	83	10.141	10.141	0.000	97	183902	20.0	21.1	
67 cis-1,3-Dichloropropene	75	10.275	10.275	0.000	92	255709	20.0	20.9	
68 4-Methyl-2-pentanone (MIBK	43	10.342	10.342	0.000	99	947575	100.0	90.7	
69 trans-1,3-Dichloropropene	75	10.646	10.646	0.000	98	217936	20.0	20.8	
71 1,1,2-Trichloroethane	97	10.810	10.810	0.000	93	126196	20.0	20.4	
S 70 Xylenes, Total	106				0		40.0	21.3	
$ 73 Toluene-d8 (Surr)	98	10.914	10.914	0.000	94	1262735	48.8	50.8	
75 Ethyl methacrylate	69	10.975	10.975	0.000	96	162532	20.0	18.9	
76 Toluene	92	10.981	10.981	0.000	98	365964	20.0	21.0	
77 1,3-Dichloropropane	76	11.023	11.023	0.000	99	227721	20.0	20.2	
78 2-Hexanone	58	11.115	11.115	0.000	99	270736	100.0	84.2	
79 Chlorodibromomethane	129	11.303	11.303	0.000	91	133883	20.0	20.2	
80 n-Butyl acetate	43	11.376	11.376	0.000	97	263310	20.0	18.1	
81 Ethylene Dibromide	107	11.534	11.534	0.000	99	130190	20.0	18.9	
82 Tetrachloroethene	164	11.668	11.668	0.000	99	122562	20.0	20.6	
84 1,1,1,2-Tetrachloroethane	131	12.233	12.233	0.000	92	167513	20.0	21.4	
* 85 Chlorobenzene-d5	82	12.276	12.276	0.000	87	548520	48.8	48.8	
86 Chlorobenzene	112	12.306	12.306	0.000	94	412749	20.0	21.0	
87 Ethylbenzene	106	12.465	12.465	0.000	98	213817	20.0	21.0	
88 m-Xylene & p-Xylene	91	12.635	12.635	0.000	68	528796	20.0	20.6	
89 Bromoform	173	12.811	12.811	0.000	97	72541	20.0	18.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.957	12.957	0.000	96	416464	20.0	21.1	
91 o-Xylene	106	13.024	13.024	0.000	99	281750	20.0	21.3	
92 1,1,2,2-Tetrachloroethane	83	13.030	13.030	0.000	95	186015	20.0	18.4	
93 trans-1,4-Dichloro-2-buten	53	13.152	13.152	0.000	94	49182	20.0	17.8	
94 1,2,3-Trichloropropane	110	13.164	13.164	0.000	88	52607	20.0	17.7	
96 Isopropylbenzene	105	13.346	13.346	0.000	96	680324	20.0	21.6	
$ 97 4-Bromofluorobenzene (Surr	95	13.401	13.401	0.000	93	523968	48.8	49.2	
98 Bromobenzene	156	13.614	13.614	0.000	93	197918	20.0	20.5	
99 N-Propylbenzene	120	13.742	13.742	0.000	99	171434	20.0	20.7	
100 2-Chlorotoluene	126	13.851	13.851	0.000	96	175791	20.0	21.2	
101 4-Chlorotoluene	91	13.918	13.918	0.000	98	500444	20.0	20.8	
102 1,3,5-Trimethylbenzene	105	13.979	13.979	0.000	96	580924	20.0	21.1	
104 tert-Butylbenzene	119	14.246	14.246	0.000	95	463606	20.0	21.4	
105 1,2,4-Trimethylbenzene	105	14.332	14.332	0.000	98	622374	20.0	21.1	
106 sec-Butylbenzene	105	14.441	14.441	0.000	94	647397	20.0	21.2	
107 Benzyl chloride	91	14.532	14.532	0.000	99	389487	20.0	18.8	
108 1,3-Dichlorobenzene	146	14.538	14.538	0.000	98	375235	20.0	20.6	
* 109 1,4-Dichlorobenzene-d4	152	14.569	14.569	0.000	96	664680	48.8	48.8	
110 4-Isopropyltoluene	119	14.587	14.587	0.000	97	572921	20.0	20.6	
111 1,4-Dichlorobenzene	146	14.593	14.593	0.000	97	393408	20.0	21.2	
112 1,2,3-Trimethylbenzene	105	14.733	14.733	0.000	99	693047	20.0	21.3	
113 1,2-Dichlorobenzene	146	14.927	14.927	0.000	98	391194	20.0	21.0	
114 n-Butylbenzene	91	14.964	14.964	0.000	98	471259	20.0	20.9	
116 1,2-Dibromo-3-Chloropropan	157	15.365	15.365	0.000	85	46934	20.0	16.8	
117 1,3,5-Trichlorobenzene	180	16.156	16.156	0.000	98	271833	20.0	21.2	
118 1,2,4-Trichlorobenzene	180	16.721	16.721	0.000	94	264073	20.0	20.8	
119 Naphthalene	128	17.013	17.013	0.000	97	672821	20.0	18.6	
120 Hexachlorobutadiene	190	17.038	17.038	0.000	96	41679	20.0	20.2	
121 1,2,3-Trichlorobenzene	180	17.238	17.238	0.000	96	234194	20.0	19.7	

Reagents:

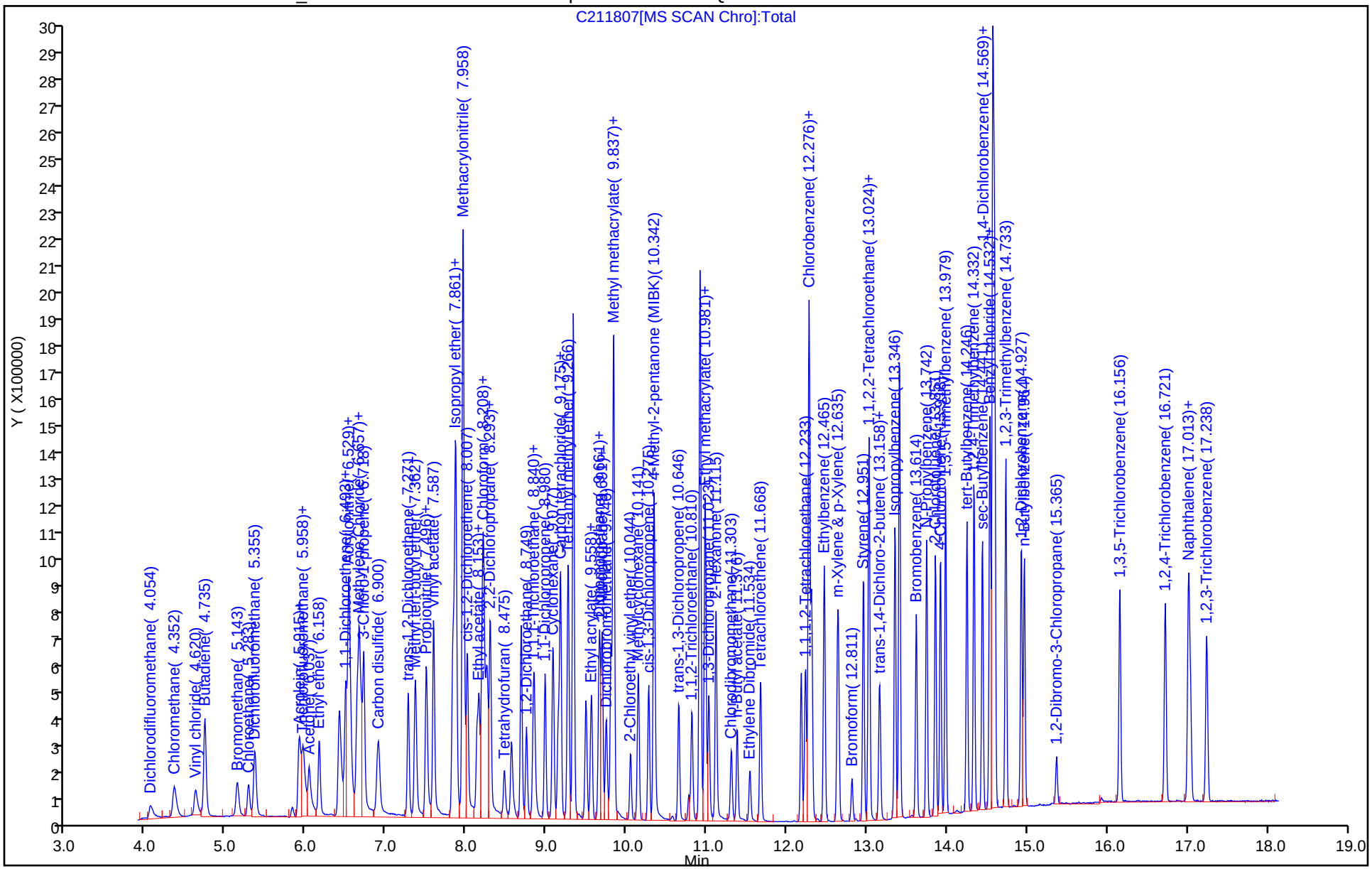
VOAMasterMix_00018	Amount Added: 20.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 23-Mar-2018 10:22:15 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211807.D

Injection Date:	21-Mar-2018 14:04:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	ICIS			Worklist Smp#:	7
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	7
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211808.D
Lims ID: IC STD 50
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 21-Mar-2018 14:32:30 ALS Bottle#: 8 Worklist Smp#: 8
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ic std 50
Operator ID: RSB Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:32 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 14:23:08

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.059	4.059	0.000	100	244192	50.0	46.2	
2 Chloromethane	50	4.357	4.357	0.000	100	589742	50.0	49.7	
3 Vinyl chloride	62	4.618	4.618	0.000	99	449009	50.0	43.2	
4 Butadiene	39	4.728	4.728	0.000	98	538242	50.0	47.9	
5 Bromomethane	94	5.135	5.135	0.000	91	308594	50.0	45.5	
6 Chloroethane	64	5.275	5.275	0.000	99	290000	50.0	47.6	
7 Dichlorofluoromethane	67	5.354	5.354	0.000	99	709631	50.0	46.5	
10 Acrolein	56	5.901	5.901	0.000	98	698953	300.0	298.5	
12 Acetonitrile	41	5.926	5.926	0.000	99	1170046	625.0	669.4	
11 Trichlorofluoromethane	101	5.956	5.956	0.000	98	559438	50.0	47.0	
14 Isopropyl alcohol	45	5.962	5.962	0.000	27	465488	500.0	531.0	
13 Acetone	43	6.035	6.035	0.000	98	867796	250.0	269.1	
15 Ethyl ether	59	6.163	6.163	0.000	95	398939	50.0	46.9	
* 16 TBA-d9 (IS)	65	6.412	6.412	0.000	0	1305529	975.0	975.0	
17 1,1-Dichloroethene	96	6.491	6.491	0.000	95	339128	50.0	45.1	
19 2-Methyl-2-propanol	59	6.497	6.497	0.000	98	696313	500.0	549.5	
18 Acrylonitrile	52	6.528	6.528	0.000	98	2165225	500.0	539.6	
20 Iodomethane	142	6.546	6.546	0.000	97	700786	50.0	47.9	
21 Methylene Chloride	84	6.637	6.637	0.000	96	425780	50.0	48.6	
22 Methyl acetate	43	6.661	6.661	0.000	100	2632696	250.0	259.6	
23 1,1,2-Trichloro-1,2,2-trif	151	6.686	6.686	0.000	91	300844	50.0	46.3	
9 3-Chloro-1-propene	76	6.716	6.716	0.000	90	210636	50.0	44.3	
24 Carbon disulfide	76	6.892	6.892	0.000	100	1291868	50.0	48.9	
25 trans-1,2-Dichloroethene	96	7.270	7.270	0.000	95	364002	50.0	49.8	
26 Methyl tert-butyl ether	73	7.361	7.361	0.000	99	1293289	50.0	50.0	
29 Propionitrile	54	7.495	7.495	0.000	99	1230846	625.0	677.2	
28 1,1-Dichloroethane	63	7.501	7.501	0.000	97	751940	50.0	46.0	
30 Vinyl acetate	86	7.592	7.592	0.000	100	192369	125.0	111.4	
31 2-Chloro-1,3-butadiene	53	7.823	7.823	0.000	94	714058	50.0	47.5	
32 Hexane	57	7.847	7.847	0.000	87	518856	50.0	49.4	
34 2-Butanone (MEK)	72	7.865	7.865	0.000	95	281543	250.0	257.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
33 Isopropyl ether	45	7.865	7.865	0.000	88	2164727	62.5	60.1	
35 Methacrylonitrile	66	7.957	7.957	0.000	97	748916	500.0	517.9	
36 cis-1,2-Dichloroethene	96	8.011	8.011	0.000	84	420207	50.0	49.0	
40 Ethyl acetate	43	8.133	8.133	0.000	99	1147984	100.0	106.8	
37 Chlorobromomethane	128	8.157	8.157	0.000	93	212478	50.0	47.8	
38 Chloroform	83	8.188	8.188	0.000	94	663786	50.0	45.7	
39 Tert-butyl ethyl ether	59	8.212	8.212	0.000	98	1934175	62.5	62.0	
41 Isobutyl alcohol	43	8.243	8.243	0.000	89	1243783	1250.0	1374.3	
42 2,2-Dichloropropane	77	8.261	8.261	0.000	91	504457	50.0	47.2	
$ 43 Dibromofluoromethane (Surr	113	8.297	8.297	0.000	94	365027	48.8	48.7	
44 Tetrahydrofuran	42	8.474	8.474	0.000	94	441372	100.0	109.1	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.680	8.680	0.000	0	450388	48.8	49.1	
46 1,2-Dichloroethane	62	8.747	8.747	0.000	96	562464	50.0	47.1	
47 1,1,1-Trichloroethane	97	8.838	8.838	0.000	98	562008	50.0	47.6	
49 n-Butanol	56	8.851	8.851	0.000	95	557296	1250.0	1344.8	
48 1,1-Dichloropropene	75	8.978	8.978	0.000	93	492957	50.0	46.8	
50 Cyclohexane	84	9.082	9.082	0.000	96	482824	50.0	46.6	
51 Carbon tetrachloride	119	9.149	9.149	0.000	98	434946	50.0	49.0	
52 Benzene	78	9.173	9.173	0.000	98	1486143	50.0	46.0	
53 Tert-amyl methyl ether	73	9.270	9.270	0.000	95	1620345	62.5	62.6	
* 54 Fluorobenzene (IS)	96	9.331	9.331	0.000	98	1405755	48.8	48.8	
56 Ethyl acrylate	55	9.550	9.550	0.000	98	665522	50.0	51.7	
57 n-Heptane	43	9.562	9.562	0.000	98	388916	50.0	47.8	
58 Dibromomethane	93	9.647	9.647	0.000	91	263942	50.0	49.2	
59 1,2-Dichloropropane	63	9.666	9.666	0.000	92	443814	50.0	47.1	
60 2-Nitropropane	43	9.684	9.684	0.000	98	363621	100.0	110.7	
61 Trichloroethene	130	9.696	9.696	0.000	96	409034	50.0	48.1	
62 Dichlorobromomethane	83	9.745	9.745	0.000	99	487394	50.0	49.5	
63 Methyl methacrylate	41	9.799	9.799	0.000	94	991144	100.0	103.5	
$ 64 Trifluorotoluene (Surr)	146	9.836	9.836	0.000	89	721195	50.0	50.0	
65 2-Chloroethyl vinyl ether	43	10.049	10.049	0.000	91	240992	50.0	50.4	
66 Methylcyclohexane	83	10.146	10.146	0.000	97	462665	50.0	48.1	
67 cis-1,3-Dichloropropene	75	10.274	10.274	0.000	92	634848	50.0	47.9	
68 4-Methyl-2-pentanone (MIBK	43	10.341	10.341	0.000	99	3184628	250.0	278.9	
69 trans-1,3-Dichloropropene	75	10.651	10.651	0.000	98	573842	50.0	48.8	
71 1,1,2-Trichloroethane	97	10.815	10.815	0.000	93	334790	50.0	49.4	
S 70 Xylenes, Total	106				0		100.0	48.0	
$ 73 Toluene-d8 (Surr)	98	10.912	10.912	0.000	94	1317806	48.8	48.1	
75 Ethyl methacrylate	69	10.973	10.973	0.000	95	496088	50.0	52.3	
76 Toluene	92	10.979	10.979	0.000	98	883426	50.0	46.0	
77 1,3-Dichloropropane	76	11.028	11.028	0.000	97	602211	50.0	48.5	
78 2-Hexanone	58	11.113	11.113	0.000	99	970166	250.0	270.1	
79 Chlorodibromomethane	129	11.308	11.308	0.000	91	381068	50.0	51.6	
80 n-Butyl acetate	43	11.380	11.380	0.000	97	853503	50.0	53.3	
81 Ethylene Dibromide	107	11.539	11.539	0.000	99	375043	50.0	49.3	
82 Tetrachloroethene	164	11.672	11.672	0.000	99	296597	50.0	48.3	
84 1,1,1,2-Tetrachloroethane	131	12.232	12.232	0.000	95	420869	50.0	48.6	
* 85 Chlorobenzene-d5	82	12.274	12.274	0.000	87	605359	48.8	48.8	
86 Chlorobenzene	112	12.305	12.305	0.000	93	1024435	50.0	47.3	
87 Ethylbenzene	106	12.463	12.463	0.000	99	534820	50.0	47.6	
88 m-Xylene & p-Xylene	91	12.639	12.639	0.000	68	1347245	50.0	47.6	
89 Bromoform	173	12.810	12.810	0.000	98	266942	50.0	52.6	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.956	12.956	0.000	96	1099590	50.0	50.4	
92 1,1,2,2-Tetrachloroethane	83	13.029	13.029	0.000	95	545328	50.0	50.3	
91 o-Xylene	106	13.022	13.022	0.000	98	698726	50.0	48.0	
93 trans-1,4-Dichloro-2-buten	53	13.150	13.150	0.000	78	165868	50.0	53.3	
94 1,2,3-Trichloropropane	110	13.162	13.162	0.000	88	168466	50.0	52.6	
96 Isopropylbenzene	105	13.351	13.351	0.000	96	1694322	50.0	48.8	
$ 97 4-Bromofluorobenzene (Surr	95	13.406	13.406	0.000	93	568487	48.8	48.4	
98 Bromobenzene	156	13.612	13.612	0.000	94	508850	50.0	48.7	
99 N-Propylbenzene	120	13.746	13.746	0.000	99	436049	50.0	48.6	
100 2-Chlorotoluene	126	13.856	13.856	0.000	97	439123	50.0	48.9	
101 4-Chlorotoluene	91	13.916	13.916	0.000	98	1267158	50.0	48.5	
102 1,3,5-Trimethylbenzene	105	13.977	13.977	0.000	95	1459945	50.0	49.0	
104 tert-Butylbenzene	119	14.245	14.245	0.000	95	1160957	50.0	49.4	
105 1,2,4-Trimethylbenzene	105	14.336	14.336	0.000	98	1562331	50.0	48.8	
106 sec-Butylbenzene	105	14.439	14.439	0.000	94	1625850	50.0	49.0	
107 Benzyl chloride	91	14.531	14.531	0.000	99	1170774	50.0	52.4	
108 1,3-Dichlorobenzene	146	14.537	14.537	0.000	98	942282	50.0	50.4	
* 109 1,4-Dichlorobenzene-d4	152	14.567	14.567	0.000	96	720868	48.8	48.8	
110 4-Isopropyltoluene	119	14.585	14.585	0.000	97	1445757	50.0	47.9	
111 1,4-Dichlorobenzene	146	14.598	14.598	0.000	96	991981	50.0	49.4	
112 1,2,3-Trimethylbenzene	105	14.731	14.731	0.000	99	1730995	50.0	49.1	
113 1,2-Dichlorobenzene	146	14.926	14.926	0.000	98	990284	50.0	49.2	
114 n-Butylbenzene	91	14.962	14.962	0.000	98	1207912	50.0	49.5	
116 1,2-Dibromo-3-Chloropropan	157	15.364	15.364	0.000	87	172542	50.0	57.1	
117 1,3,5-Trichlorobenzene	180	16.154	16.154	0.000	98	682259	50.0	49.2	
118 1,2,4-Trichlorobenzene	180	16.720	16.720	0.000	94	684100	50.0	48.7	
119 Naphthalene	128	17.012	17.012	0.000	97	2032286	50.0	52.0	
120 Hexachlorobutadiene	190	17.036	17.036	0.000	96	105410	50.0	47.2	
121 1,2,3-Trichlorobenzene	180	17.237	17.237	0.000	96	628098	50.0	48.9	
S 123 1,3-Dichloropropene, Total	1				0			96.7	

Reagents:

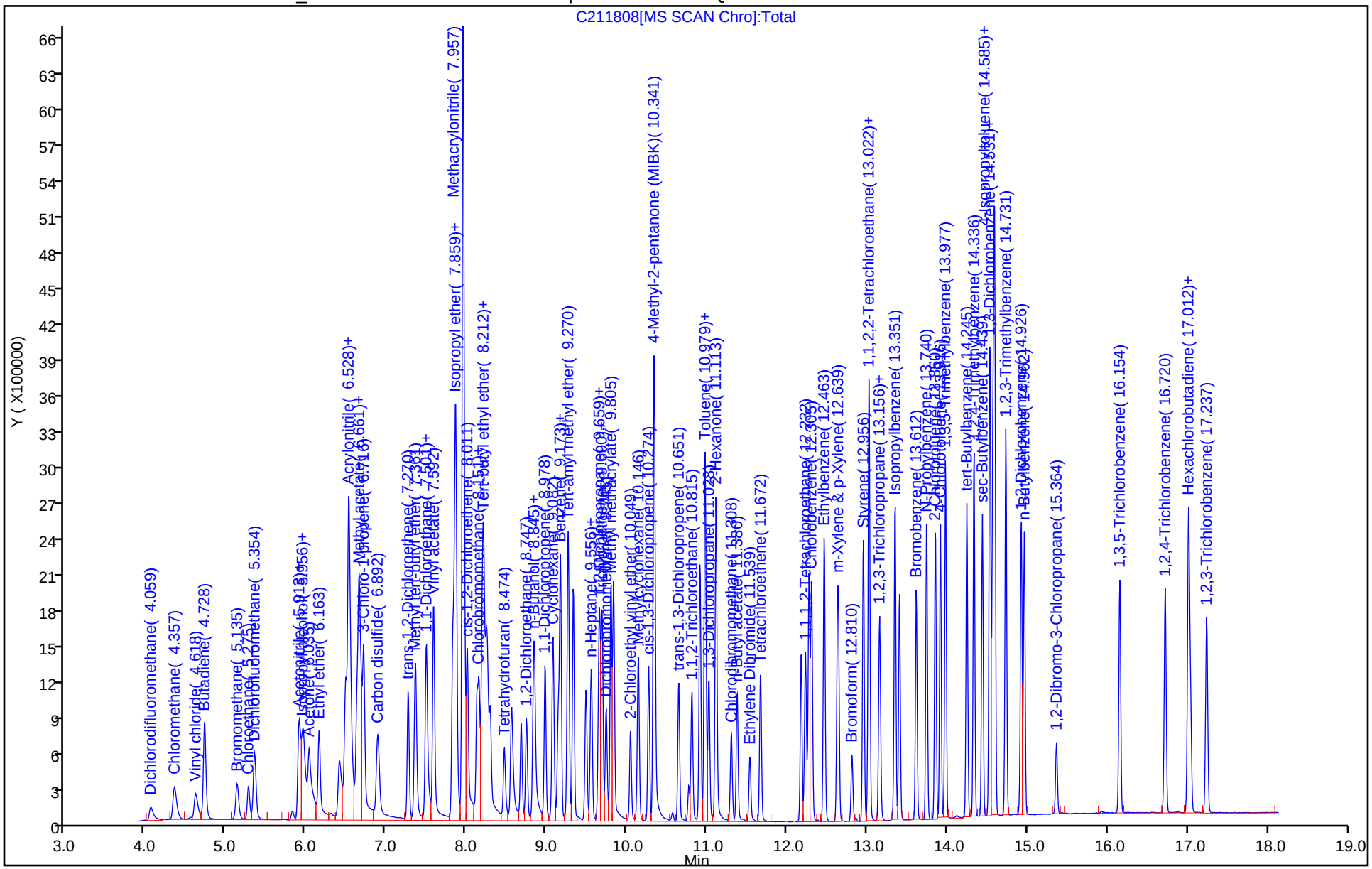
VOAMasterMix_00018	Amount Added: 50.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 22-Mar-2018 15:22:36 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211808.D

Injection Date:	21-Mar-2018 14:32:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	IC STD 50			Worklist Smp#:	8
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



Report Date: 22-Mar-2018 15:22:40 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211809.D
Lims ID: IC STD 75
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 21-Mar-2018 15:01:30 ALS Bottle#: 9 Worklist Smp#: 9
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ic std 75
Operator ID: RSB Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:37 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 14:24:36

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.058	4.058	0.000	100	388543	75.0	69.1	
2 Chloromethane	50	4.356	4.356	0.000	100	907792	75.0	74.2	
3 Vinyl chloride	62	4.617	4.617	0.000	99	704571	75.0	63.7	
4 Butadiene	39	4.733	4.733	0.000	97	827509	75.0	70.2	
5 Bromomethane	94	5.134	5.134	0.000	91	487482	75.0	67.6	
6 Chloroethane	64	5.280	5.280	0.000	99	452890	75.0	71.0	
7 Dichlorofluoromethane	67	5.353	5.353	0.000	99	1119776	75.0	70.0	
10 Acrolein	56	5.906	5.906	0.000	98	1074307	450.0	437.8	
12 Acetonitrile	41	5.919	5.919	0.000	100	1742932	937.5	919.0	
11 Trichlorofluoromethane	101	5.961	5.961	0.000	99	885643	75.0	69.9	
14 Isopropyl alcohol	45	5.961	5.961	0.000	29	691824	750.0	737.5	
13 Acetone	43	6.034	6.034	0.000	99	1290905	375.0	366.6	
15 Ethyl ether	59	6.162	6.162	0.000	96	619333	75.0	69.5	
* 16 TBA-d9 (IS)	65	6.417	6.417	0.000	0	1146956	975.0	975.0	
17 1,1-Dichloroethene	96	6.490	6.490	0.000	94	544035	75.0	68.0	
19 2-Methyl-2-propanol	59	6.496	6.496	0.000	98	973788	750.0	726.2	
18 Acrylonitrile	52	6.527	6.527	0.000	97	3106774	750.0	738.8	
20 Iodomethane	142	6.545	6.545	0.000	97	1124564	75.0	73.4	
21 Methylene Chloride	84	6.636	6.636	0.000	96	672919	75.0	72.8	
22 Methyl acetate	43	6.660	6.660	0.000	100	3798194	375.0	357.3	
23 1,1,2-Trichloro-1,2,2-trif	151	6.685	6.685	0.000	91	473398	75.0	71.4	
9 3-Chloro-1-propene	76	6.715	6.715	0.000	91	329376	75.0	65.1	
24 Carbon disulfide	76	6.892	6.892	0.000	100	2066497	75.0	74.6	
25 trans-1,2-Dichloroethene	96	7.269	7.269	0.000	95	575434	75.0	74.6	
26 Methyl tert-butyl ether	73	7.360	7.360	0.000	99	1986831	75.0	73.2	
29 Propionitrile	54	7.494	7.494	0.000	99	1797507	937.5	914.5	
28 1,1-Dichloroethane	63	7.500	7.500	0.000	97	1181376	75.0	68.0	
30 Vinyl acetate	86	7.591	7.591	0.000	100	350075	187.5	193.4	
31 2-Chloro-1,3-butadiene	53	7.828	7.828	0.000	93	1141552	75.0	74.4	
32 Hexane	57	7.846	7.846	0.000	83	792175	75.0	72.0	
33 Isopropyl ether	45	7.865	7.865	0.000	91	3383878	93.8	89.6	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
34 2-Butanone (MEK)	72	7.865	7.865	0.000	95	426986	375.0	367.5	
35 Methacrylonitrile	66	7.956	7.956	0.000	97	1136313	750.0	749.8	
36 cis-1,2-Dichloroethene	96	8.011	8.011	0.000	84	665757	75.0	74.4	
40 Ethyl acetate	43	8.132	8.132	0.000	99	1791862	150.0	161.5	
37 Chlorobromomethane	128	8.156	8.156	0.000	93	334117	75.0	71.7	
38 Chloroform	83	8.193	8.193	0.000	94	1049709	75.0	68.0	
39 Tert-butyl ethyl ether	59	8.211	8.211	0.000	98	3015710	93.8	92.2	
41 Isobutyl alcohol	43	8.242	8.242	0.000	91	1775963	1875.0	1885.8	
42 2,2-Dichloropropane	77	8.260	8.260	0.000	91	792458	75.0	70.7	
$ 43 Dibromofluoromethane (Surr	113	8.296	8.296	0.000	94	376228	48.8	47.9	
44 Tetrahydrofuran	42	8.473	8.473	0.000	94	647219	150.0	152.7	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.679	8.679	0.000	0	465067	48.8	48.4	
46 1,2-Dichloroethane	62	8.746	8.746	0.000	96	892448	75.0	71.3	
47 1,1,1-Trichloroethane	97	8.838	8.838	0.000	98	897287	75.0	72.5	
49 n-Butanol	56	8.850	8.850	0.000	95	793890	1875.0	1880.2	
48 1,1-Dichloropropene	75	8.977	8.977	0.000	93	800434	75.0	72.5	
50 Cyclohexane	84	9.081	9.081	0.000	96	785876	75.0	71.4	
51 Carbon tetrachloride	119	9.148	9.148	0.000	99	697381	75.0	74.9	
52 Benzene	78	9.172	9.172	0.000	98	2399740	75.0	69.8	
53 Tert-amyl methyl ether	73	9.269	9.269	0.000	95	2518323	93.8	92.8	
* 54 Fluorobenzene (IS)	96	9.330	9.330	0.000	98	1473218	48.8	48.8	
56 Ethyl acrylate	55	9.549	9.549	0.000	98	1113061	75.0	82.5	
57 n-Heptane	43	9.561	9.561	0.000	98	652989	75.0	76.7	
58 Dibromomethane	93	9.646	9.646	0.000	92	420383	75.0	74.8	
59 1,2-Dichloropropane	63	9.665	9.665	0.000	93	717987	75.0	71.6	
60 2-Nitropropane	43	9.683	9.683	0.000	98	577515	150.0	167.8	
61 Trichloroethene	130	9.695	9.695	0.000	96	639293	75.0	70.7	
62 Dichlorobromomethane	83	9.744	9.744	0.000	99	801818	75.0	76.6	
63 Methyl methacrylate	41	9.805	9.805	0.000	95	1612785	150.0	160.8	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.835	0.000	88	754278	50.0	49.9	
65 2-Chloroethyl vinyl ether	43	10.048	10.048	0.000	91	405482	75.0	79.7	
66 Methylcyclohexane	83	10.145	10.145	0.000	97	740114	75.0	72.3	
67 cis-1,3-Dichloropropene	75	10.273	10.273	0.000	92	1062179	75.0	78.5	
68 4-Methyl-2-pentanone (MIBK	43	10.340	10.340	0.000	99	4685472	375.0	386.3	
69 trans-1,3-Dichloropropene	75	10.650	10.650	0.000	97	963095	75.0	75.6	
71 1,1,2-Trichloroethane	97	10.814	10.814	0.000	93	552094	75.0	76.6	
S 70 Xylenes, Total	106				0		150.0	72.8	
$ 73 Toluene-d8 (Surr)	98	10.917	10.917	0.000	94	1401022	48.8	48.0	
75 Ethyl methacrylate	69	10.972	10.972	0.000	95	825302	75.0	81.8	
76 Toluene	92	10.978	10.978	0.000	98	1463511	75.0	71.7	
77 1,3-Dichloropropane	76	11.027	11.027	0.000	97	956951	75.0	72.4	
78 2-Hexanone	58	11.112	11.112	0.000	99	1492112	375.0	391.5	
79 Chlorodibromomethane	129	11.307	11.307	0.000	91	647420	75.0	82.2	
80 n-Butyl acetate	43	11.380	11.380	0.000	97	1348917	75.0	79.3	
81 Ethylene Dibromide	107	11.538	11.538	0.000	99	616419	75.0	76.2	
82 Tetrachloroethene	164	11.671	11.671	0.000	99	493207	75.0	76.7	
84 1,1,1,2-Tetrachloroethane	131	12.231	12.231	0.000	94	673720	75.0	73.2	
* 85 Chlorobenzene-d5	82	12.274	12.274	0.000	87	643994	48.8	48.8	
86 Chlorobenzene	112	12.310	12.310	0.000	93	1691166	75.0	73.4	
87 Ethylbenzene	106	12.468	12.468	0.000	98	890707	75.0	74.5	
88 m-Xylene & p-Xylene	91	12.638	12.638	0.000	68	2234704	75.0	74.2	
89 Bromoform	173	12.809	12.809	0.000	98	463938	75.0	79.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.955	12.955	0.000	96	1838329	75.0	79.2	
91 o-Xylene	106	13.022	13.022	0.000	99	1128797	75.0	72.8	
92 1,1,2,2-Tetrachloroethane	83	13.028	13.028	0.000	95	871950	75.0	79.5	
93 trans-1,4-Dichloro-2-buten	53	13.149	13.149	0.000	97	266849	75.0	81.1	
94 1,2,3-Trichloropropane	110	13.161	13.161	0.000	87	258086	75.0	79.0	
96 Isopropylbenzene	105	13.350	13.350	0.000	96	2716930	75.0	73.5	
$ 97 4-Bromofluorobenzene (Surr	95	13.405	13.405	0.000	93	592419	48.8	47.4	
98 Bromobenzene	156	13.618	13.618	0.000	93	827775	75.0	77.7	
99 N-Propylbenzene	120	13.745	13.745	0.000	99	708608	75.0	77.3	
100 2-Chlorotoluene	126	13.855	13.855	0.000	97	700715	75.0	76.4	
101 4-Chlorotoluene	91	13.916	13.916	0.000	98	2035052	75.0	76.4	
102 1,3,5-Trimethylbenzene	105	13.982	13.982	0.000	96	2325565	75.0	76.5	
104 tert-Butylbenzene	119	14.244	14.244	0.000	95	1887133	75.0	78.7	
105 1,2,4-Trimethylbenzene	105	14.335	14.335	0.000	98	2491023	75.0	76.3	
106 sec-Butylbenzene	105	14.438	14.438	0.000	94	2596131	75.0	76.6	
107 Benzyl chloride	91	14.530	14.530	0.000	99	1785129	75.0	78.4	
108 1,3-Dichlorobenzene	146	14.536	14.536	0.000	98	1517874	75.0	77.5	
* 109 1,4-Dichlorobenzene-d4	152	14.572	14.572	0.000	96	735675	48.8	48.8	
110 4-Isopropyltoluene	119	14.591	14.591	0.000	97	2314251	75.0	75.1	
111 1,4-Dichlorobenzene	146	14.597	14.597	0.000	97	1552564	75.0	75.9	
112 1,2,3-Trimethylbenzene	105	14.730	14.730	0.000	99	2743324	75.0	76.3	
113 1,2-Dichlorobenzene	146	14.925	14.925	0.000	98	1571295	75.0	76.6	
114 n-Butylbenzene	91	14.961	14.961	0.000	98	1930219	75.0	77.5	
116 1,2-Dibromo-3-Chloropropan	157	15.369	15.369	0.000	88	256469	75.0	83.2	
117 1,3,5-Trichlorobenzene	180	16.153	16.153	0.000	98	1074189	75.0	75.9	
118 1,2,4-Trichlorobenzene	180	16.725	16.725	0.000	94	1070891	75.0	71.7	
119 Naphthalene	128	17.011	17.011	0.000	97	3048768	75.0	76.4	
120 Hexachlorobutadiene	190	17.035	17.035	0.000	96	171476	75.0	75.2	
121 1,2,3-Trichlorobenzene	180	17.236	17.236	0.000	96	980798	75.0	74.8	
S 123 1,3-Dichloropropene, Total	1				0			154.1	

Reagents:

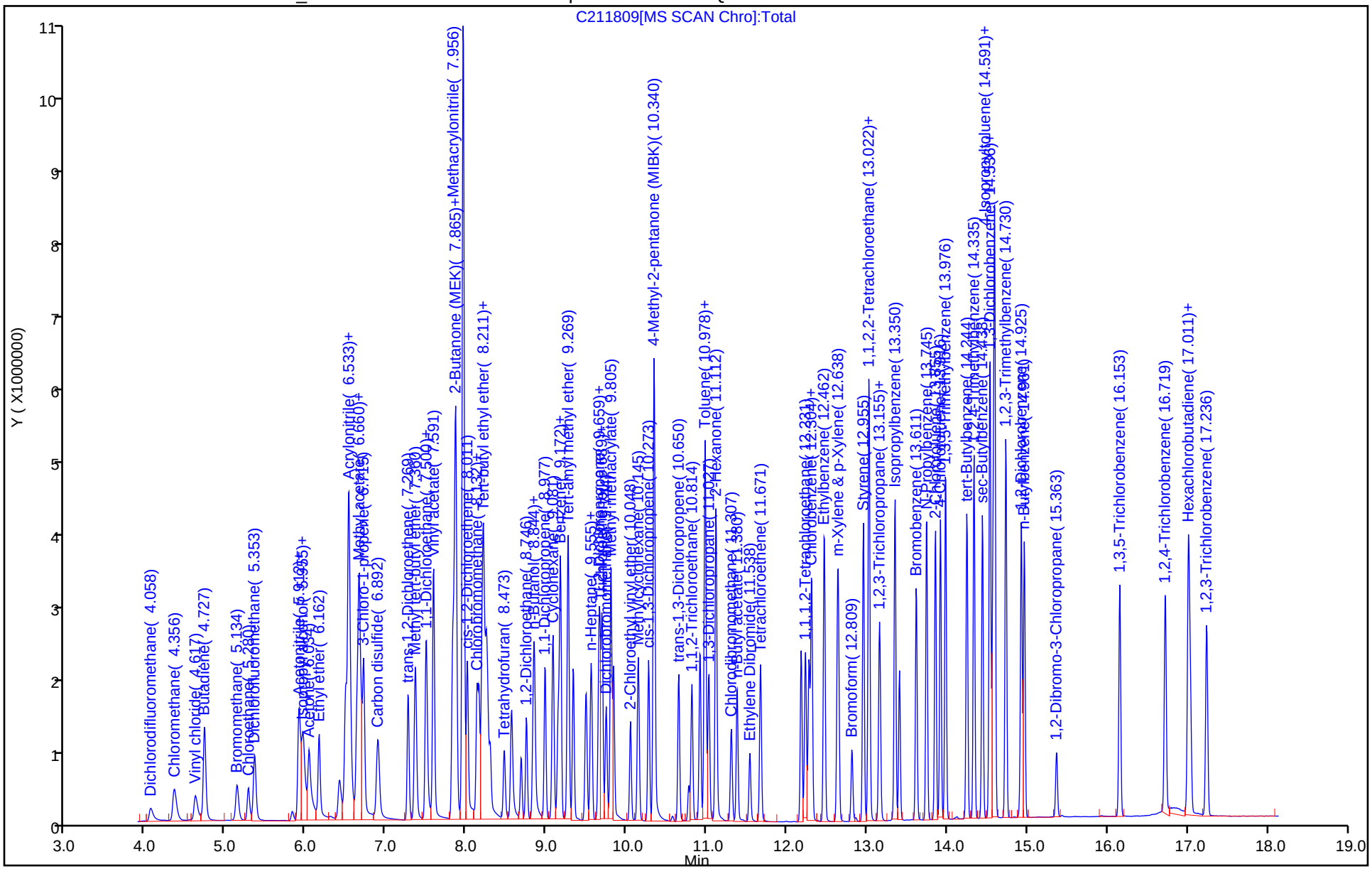
VOAMasterMix_00018	Amount Added: 75.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 22-Mar-2018 15:22:40 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211809.D

Injection Date:	21-Mar-2018 15:01:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	IC STD 75			Worklist Smp#:	9
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	9
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D
Lims ID: IC STD 100
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 21-Mar-2018 15:30:30 ALS Bottle#: 10 Worklist Smp#: 10
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ic std 100
Operator ID: RSB Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:41 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 14:25:45

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.057	4.057	0.000	100	510730	100.0	92.7	
2 Chloromethane	50	4.355	4.355	0.000	100	1190234	100.0	101.0	
3 Vinyl chloride	62	4.617	4.617	0.000	99	924274	100.0	85.2	
4 Butadiene	39	4.738	4.738	0.000	97	1090174	100.0	94.3	
5 Bromomethane	94	5.146	5.146	0.000	91	647767	100.0	91.6	
6 Chloroethane	64	5.280	5.280	0.000	99	602894	100.0	96.4	
7 Dichlorofluoromethane	67	5.365	5.365	0.000	99	1508480	100.0	96.2	
10 Acrolein	56	5.906	5.906	0.000	99	1185155	600.0	492.5	
12 Acetonitrile	41	5.930	5.930	0.000	99	1864491	1250.0	992.4	
11 Trichlorofluoromethane	101	5.961	5.961	0.000	100	1179430	100.0	94.9	
14 Isopropyl alcohol	45	5.967	5.967	0.000	29	765481	1000.0	824.6	
13 Acetone	43	6.040	6.040	0.000	99	1375820	500.0	393.9	
15 Ethyl ether	59	6.161	6.161	0.000	96	792976	100.0	90.7	
* 16 TBA-d9 (IS)	65	6.423	6.423	0.000	0	1058425	975.0	975.0	
17 1,1-Dichloroethene	96	6.496	6.496	0.000	94	749236	100.0	95.4	
19 2-Methyl-2-propanol	59	6.502	6.502	0.000	99	1169463	1000.0	881.4	
18 Acrylonitrile	52	6.532	6.532	0.000	97	3570570	1000.0	866.0	
20 Iodomethane	142	6.551	6.551	0.000	97	1534603	100.0	102.1	
21 Methylene Chloride	84	6.642	6.642	0.000	96	938734	100.0	102.5	
22 Methyl acetate	43	6.660	6.660	0.000	100	4385982	500.0	420.8	
23 1,1,2-Trichloro-1,2,2-trif	151	6.691	6.691	0.000	91	633485	100.0	97.8	
9 3-Chloro-1-propene	76	6.721	6.721	0.000	91	433106	100.0	87.2	
24 Carbon disulfide	76	6.903	6.903	0.000	100	2859942	100.0	105.3	
25 trans-1,2-Dichloroethene	96	7.274	7.274	0.000	95	759239	100.0	99.6	
26 Methyl tert-butyl ether	73	7.366	7.366	0.000	99	2546516	100.0	95.7	
29 Propionitrile	54	7.493	7.493	0.000	99	2021114	1250.0	1032.5	
28 1,1-Dichloroethane	63	7.499	7.499	0.000	97	1548519	100.0	90.8	
30 Vinyl acetate	86	7.591	7.591	0.000	100	360675	250.0	203.2	
31 2-Chloro-1,3-butadiene	53	7.828	7.828	0.000	94	1478672	100.0	98.6	
32 Hexane	57	7.846	7.846	0.000	91	1029185	100.0	95.3	
34 2-Butanone (MEK)	72	7.864	7.864	0.000	94	489886	500.0	429.9	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
33 Isopropyl ether	45	7.870	7.870	0.000	90	4391579	125.0	118.6	
35 Methacrylonitrile	66	7.962	7.962	0.000	97	1345692	1000.0	905.5	
36 cis-1,2-Dichloroethene	96	8.010	8.010	0.000	84	868217	100.0	100.7	
40 Ethyl acetate	43	8.132	8.132	0.000	99	2045836	200.0	189.3	
37 Chlorobromomethane	128	8.156	8.156	0.000	93	432808	100.0	94.7	
38 Chloroform	83	8.193	8.193	0.000	94	1372897	100.0	90.7	
39 Tert-butyl ethyl ether	59	8.211	8.211	0.000	98	3940145	125.0	122.8	
41 Isobutyl alcohol	43	8.241	8.241	0.000	93	2240946	2500.0	2446.1	
42 2,2-Dichloropropane	77	8.259	8.259	0.000	91	1008620	100.0	91.8	
$ 43 Dibromofluoromethane (Surr	113	8.296	8.296	0.000	94	365628	48.8	47.5	
44 Tetrahydrofuran	42	8.472	8.472	0.000	94	743088	200.0	178.8	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.685	8.685	0.000	0	435039	48.8	46.2	
46 1,2-Dichloroethane	62	8.752	8.752	0.000	96	1143334	100.0	93.1	
47 1,1,1-Trichloroethane	97	8.837	8.837	0.000	98	1185884	100.0	97.7	
49 n-Butanol	56	8.855	8.855	0.000	95	965370	2500.0	2401.7	
48 1,1-Dichloropropene	75	8.983	8.983	0.000	93	1044684	100.0	96.5	
50 Cyclohexane	84	9.080	9.080	0.000	96	1031269	100.0	95.5	
51 Carbon tetrachloride	119	9.147	9.147	0.000	98	921339	100.0	100.9	
52 Benzene	78	9.172	9.172	0.000	98	3136191	100.0	93.0	
53 Tert-amyl methyl ether	73	9.269	9.269	0.000	95	3299894	125.0	124.0	
* 54 Fluorobenzene (IS)	96	9.336	9.336	0.000	98	1444559	48.8	48.8	
56 Ethyl acrylate	55	9.549	9.549	0.000	98	1344676	100.0	101.6	
57 n-Heptane	43	9.561	9.561	0.000	98	830263	100.0	99.4	
58 Dibromomethane	93	9.652	9.652	0.000	92	525696	100.0	95.5	
59 1,2-Dichloropropane	63	9.664	9.664	0.000	93	947838	100.0	96.4	
60 2-Nitropropane	43	9.683	9.683	0.000	94	636475	200.0	188.6	
61 Trichloroethene	130	9.695	9.695	0.000	96	860224	100.0	97.0	
62 Dichlorobromomethane	83	9.743	9.743	0.000	99	1041083	100.0	101.4	
63 Methyl methacrylate	41	9.804	9.804	0.000	94	1874714	200.0	190.6	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.835	0.000	89	735513	50.0	49.6	
65 2-Chloroethyl vinyl ether	43	10.047	10.047	0.000	91	481672	100.0	96.5	
66 Methylcyclohexane	83	10.145	10.145	0.000	97	965116	100.0	96.1	
67 cis-1,3-Dichloropropene	75	10.272	10.272	0.000	92	1376527	100.0	104.1	
68 4-Methyl-2-pentanone (MIBK	43	10.345	10.345	0.000	99	5530440	500.0	465.2	
69 trans-1,3-Dichloropropene	75	10.649	10.649	0.000	97	1215136	100.0	96.0	
71 1,1,2-Trichloroethane	97	10.814	10.814	0.000	93	697658	100.0	98.8	
S 70 Xylenes, Total	106				0		200.0	97.7	
$ 73 Toluene-d8 (Surr)	98	10.917	10.917	0.000	94	1353324	48.8	47.3	
75 Ethyl methacrylate	69	10.972	10.972	0.000	95	997246	100.0	100.8	
76 Toluene	92	10.984	10.984	0.000	98	1911378	100.0	95.4	
77 1,3-Dichloropropane	76	11.027	11.027	0.000	96	1257791	100.0	97.1	
78 2-Hexanone	58	11.118	11.118	0.000	99	1739641	500.0	465.9	
79 Chlorodibromomethane	129	11.306	11.306	0.000	91	832657	100.0	107.7	
80 n-Butyl acetate	43	11.379	11.379	0.000	97	1574793	100.0	94.4	
81 Ethylene Dibromide	107	11.537	11.537	0.000	98	759917	100.0	95.7	
82 Tetrachloroethene	164	11.671	11.671	0.000	99	649037	100.0	103.0	
84 1,1,1,2-Tetrachloroethane	131	12.231	12.231	0.000	95	888570	100.0	98.4	
* 85 Chlorobenzene-d5	82	12.273	12.273	0.000	87	631607	48.8	48.8	
86 Chlorobenzene	112	12.310	12.310	0.000	93	2215906	100.0	98.1	
87 Ethylbenzene	106	12.468	12.468	0.000	98	1159829	100.0	98.9	
88 m-Xylene & p-Xylene	91	12.638	12.638	0.000	68	2882366	100.0	97.6	
89 Bromoform	173	12.814	12.814	0.000	98	582570	100.0	96.5	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.954	12.954	0.000	95	2409515	100.0	105.8	
91 o-Xylene	106	13.021	13.021	0.000	98	1484227	100.0	97.7	
92 1,1,2,2-Tetrachloroethane	83	13.027	13.027	0.000	96	1030620	100.0	96.7	
93 trans-1,4-Dichloro-2-buten	53	13.149	13.149	0.000	96	303656	100.0	93.0	
94 1,2,3-Trichloropropane	110	13.161	13.161	0.000	89	308507	100.0	96.7	
96 Isopropylbenzene	105	13.350	13.350	0.000	96	3577058	100.0	98.7	
$ 97 4-Bromofluorobenzene (Surr	95	13.404	13.404	0.000	93	582488	48.8	47.5	
98 Bromobenzene	156	13.617	13.617	0.000	93	1085971	100.0	104.4	
99 N-Propylbenzene	120	13.745	13.745	0.000	99	933657	100.0	104.3	
100 2-Chlorotoluene	126	13.854	13.854	0.000	96	923733	100.0	103.2	
101 4-Chlorotoluene	91	13.915	13.915	0.000	98	2725081	100.0	104.7	
102 1,3,5-Trimethylbenzene	105	13.982	13.982	0.000	96	3109843	100.0	104.7	
104 tert-Butylbenzene	119	14.250	14.250	0.000	95	2511867	100.0	107.2	
105 1,2,4-Trimethylbenzene	105	14.335	14.335	0.000	98	3307370	100.0	103.6	
106 sec-Butylbenzene	105	14.438	14.438	0.000	94	3485769	100.0	105.3	
107 Benzyl chloride	91	14.529	14.529	0.000	100	2116102	100.0	95.2	
108 1,3-Dichlorobenzene	146	14.535	14.535	0.000	99	1987167	100.0	103.6	
* 109 1,4-Dichlorobenzene-d4	152	14.572	14.572	0.000	95	718634	48.8	48.8	
110 4-Isopropyltoluene	119	14.590	14.590	0.000	97	3078496	100.0	102.3	
111 1,4-Dichlorobenzene	146	14.596	14.596	0.000	95	2069815	100.0	103.6	
112 1,2,3-Trimethylbenzene	105	14.730	14.730	0.000	99	3665075	100.0	104.4	
113 1,2-Dichlorobenzene	146	14.925	14.925	0.000	98	2077448	100.0	103.7	
114 n-Butylbenzene	91	14.961	14.961	0.000	98	2570393	100.0	105.7	
116 1,2-Dibromo-3-Chloropropan	157	15.369	15.369	0.000	88	308186	100.0	102.3	
117 1,3,5-Trichlorobenzene	180	16.153	16.153	0.000	98	1449706	100.0	104.9	
118 1,2,4-Trichlorobenzene	180	16.725	16.725	0.000	94	1438329	100.0	98.2	
119 Naphthalene	128	17.011	17.011	0.000	97	3809782	100.0	97.8	
120 Hexachlorobutadiene	190	17.035	17.035	0.000	96	229327	100.0	102.9	
121 1,2,3-Trichlorobenzene	180	17.242	17.242	0.000	96	1307636	100.0	102.2	
S 123 1,3-Dichloropropene, Total	1				0			200.1	

Reagents:

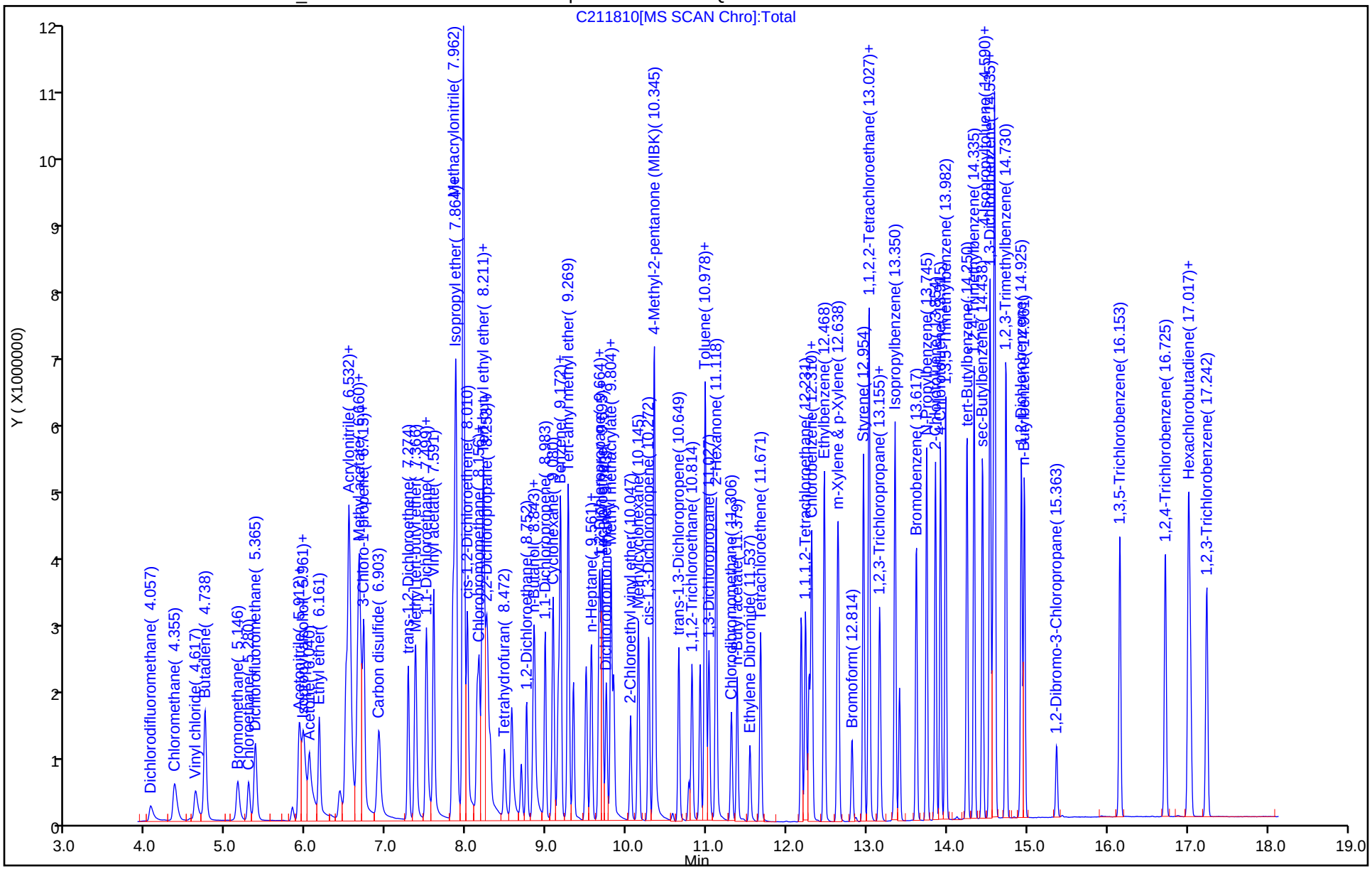
VOAMasterMix_00018	Amount Added: 100.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 22-Mar-2018 15:22:44 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Injection Date:	21-Mar-2018 15:30:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	IC STD 100			Worklist Smp#:	10
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	10
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



Calibration / Dichlorodifluoromethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

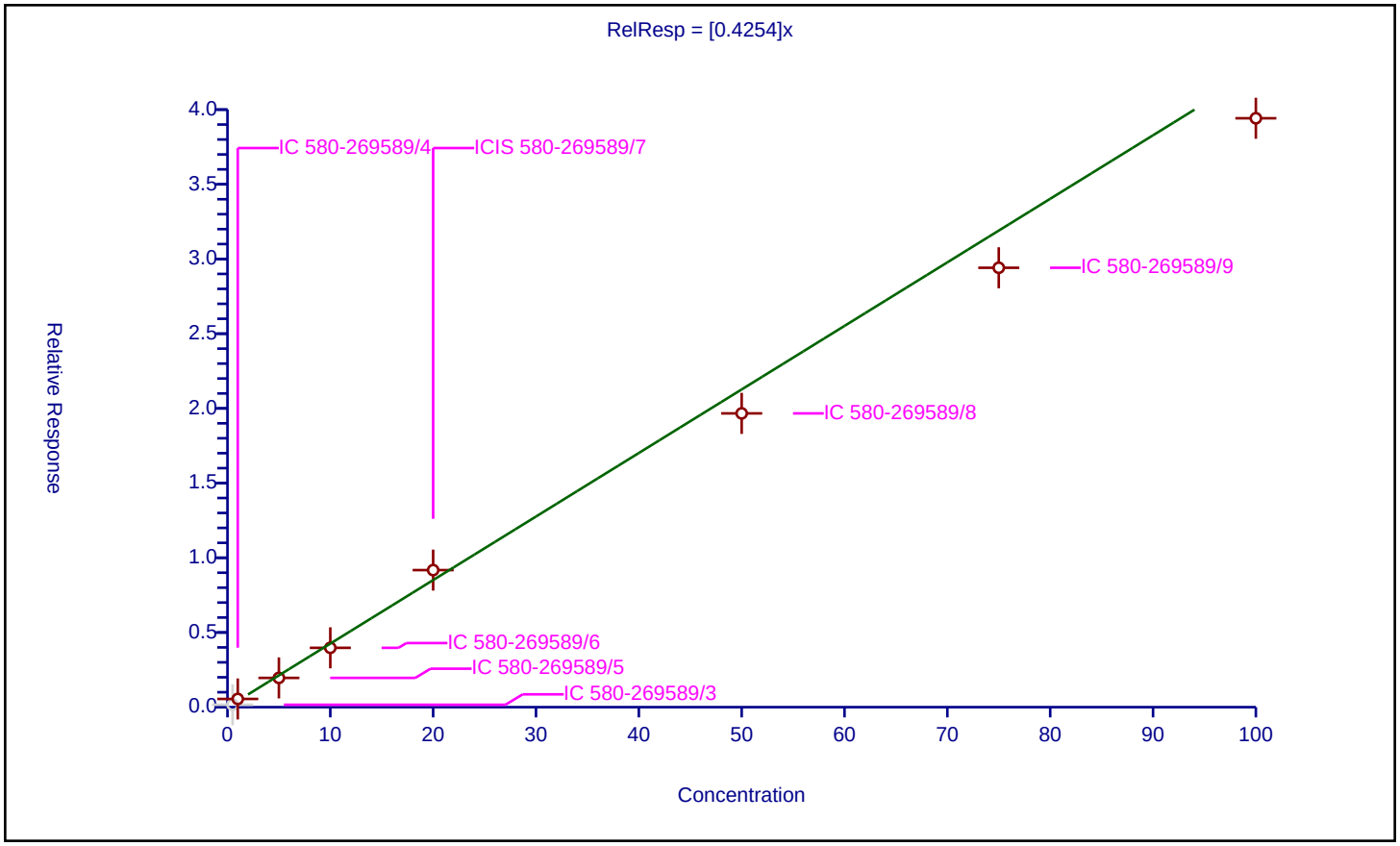
Curve Coefficients

Intercept:	0
Slope:	0.4254

Error Coefficients

Standard Error:	284000
Relative Standard Error:	14.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.973

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.162306	48.75	577890.0	0.324612	N
2	IC 580-269589/4	1.0	0.550032	48.75	545171.0	0.550032	Y
3	IC 580-269589/5	5.0	1.95925	48.75	608190.0	0.39185	Y
4	IC 580-269589/6	10.0	3.972246	48.75	548784.0	0.397225	Y
5	ICIS 580-269589/7	20.0	9.174531	48.75	548520.0	0.458727	Y
6	IC 580-269589/8	50.0	19.664959	48.75	605359.0	0.393299	Y
7	IC 580-269589/9	75.0	29.412496	48.75	643994.0	0.392167	Y
8	IC 580-269589/10	100.0	39.420221	48.75	631607.0	0.394202	Y



Calibration / Chloromethane

Curve Type:	Quadratic
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

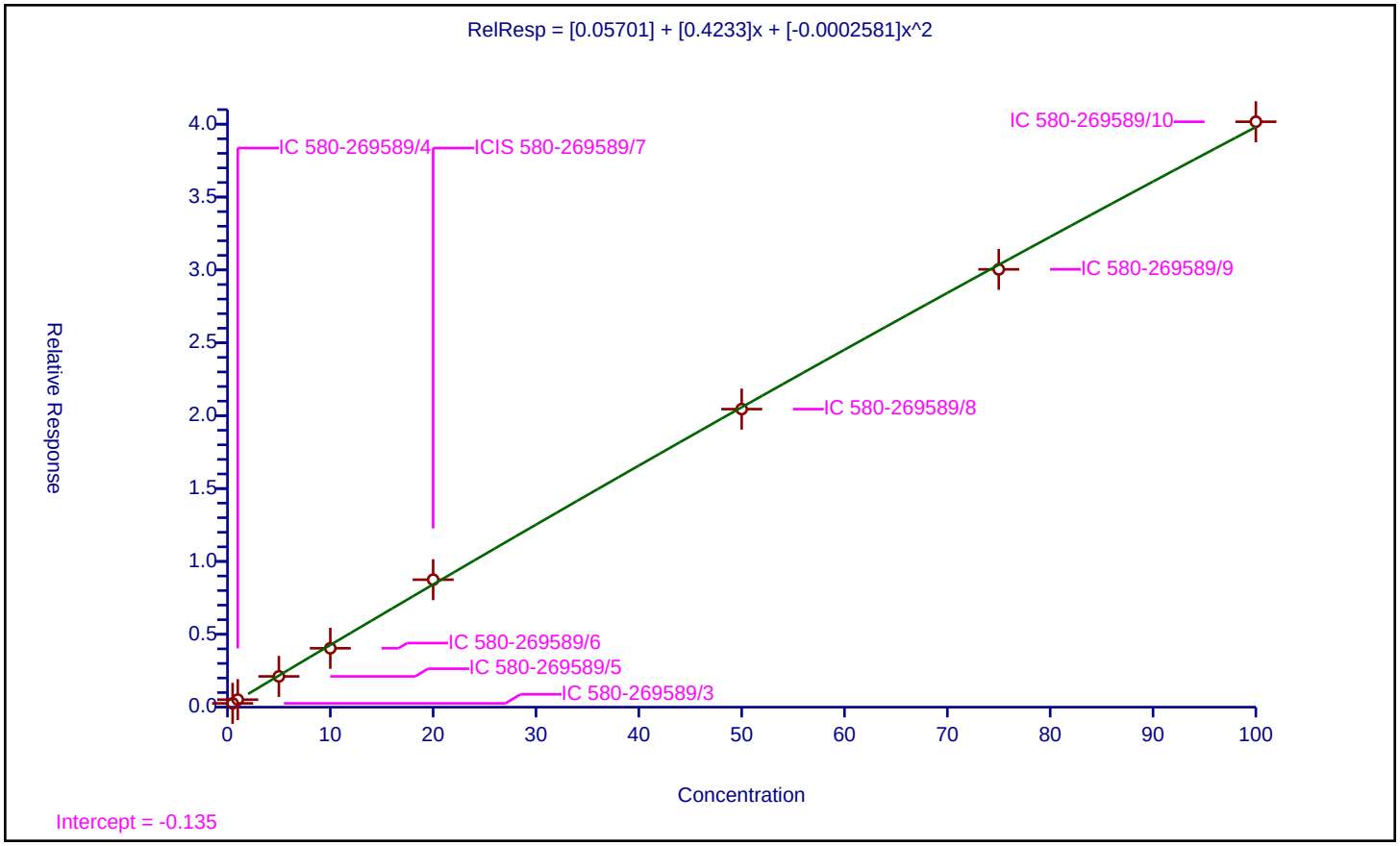
Curve Coefficients

Intercept:	0.05701
Slope:	0.4233
Second Order:	-0.0002581

Error Coefficients

Standard Error:	730000
Relative Standard Error:	5.3
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.260431	48.75	1385953.0	0.520862	Y
2	IC 580-269589/4	1.0	0.516379	48.75	1359845.0	0.516379	Y
3	IC 580-269589/5	5.0	2.11212	48.75	1422948.0	0.422424	Y
4	IC 580-269589/6	10.0	4.04153	48.75	1358597.0	0.404153	Y
5	ICIS 580-269589/7	20.0	8.745762	48.75	1364764.0	0.437288	Y
6	IC 580-269589/8	50.0	20.451588	48.75	1405755.0	0.409032	Y
7	IC 580-269589/9	75.0	30.039587	48.75	1473218.0	0.400528	Y
8	IC 580-269589/10	100.0	40.167212	48.75	1444559.0	0.401672	Y



Calibration / Vinyl chloride

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

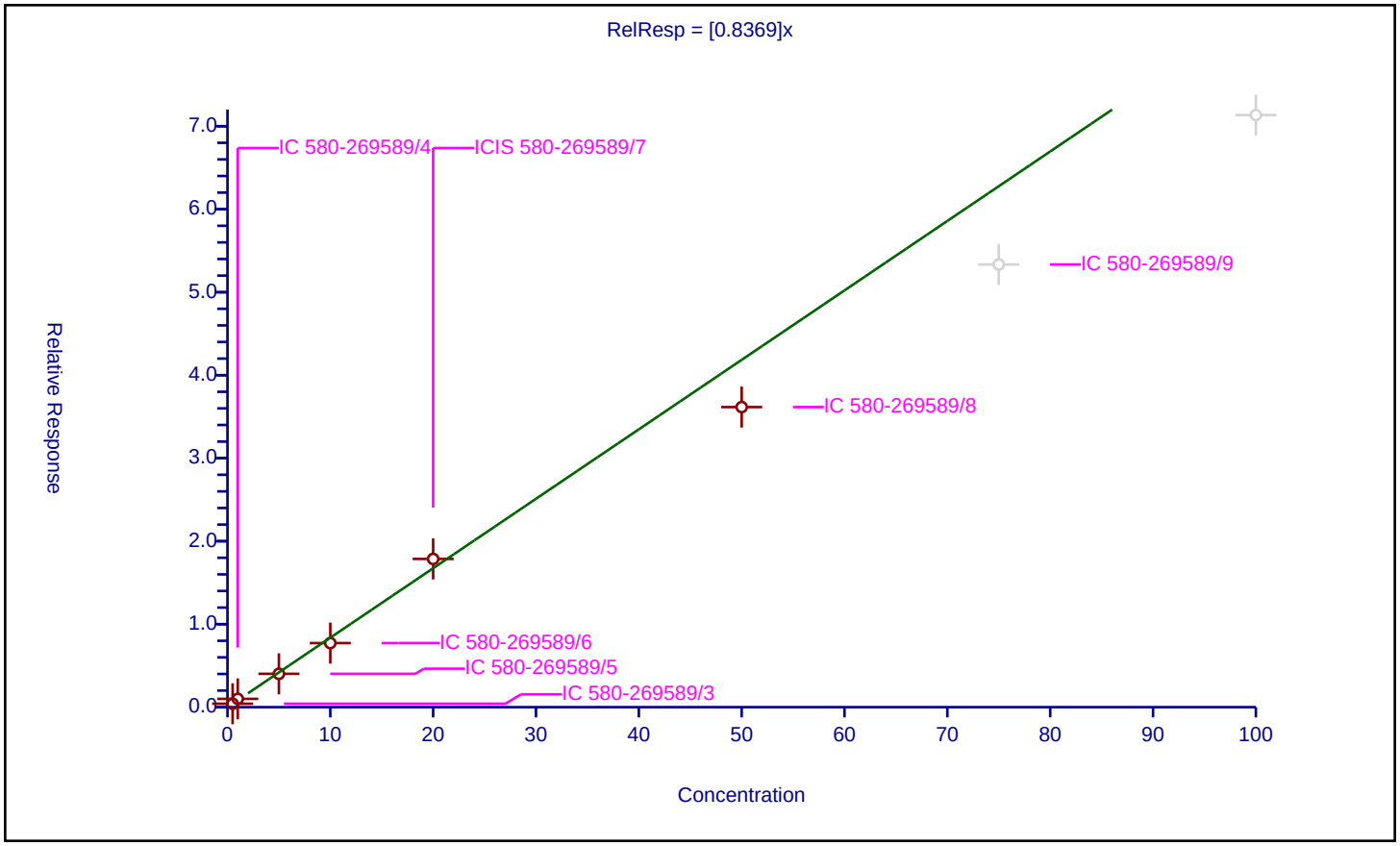
Curve Coefficients

Intercept:	0
Slope:	0.8369

Error Coefficients

Standard Error:	225000
Relative Standard Error:	11.7
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.981

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.415297	48.75	577890.0	0.830595	Y
2	IC 580-269589/4	1.0	0.999375	48.75	545171.0	0.999375	Y
3	IC 580-269589/5	5.0	4.015889	48.75	608190.0	0.803178	Y
4	IC 580-269589/6	10.0	7.721877	48.75	548784.0	0.772188	Y
5	ICIS 580-269589/7	20.0	17.861047	48.75	548520.0	0.893052	Y
6	IC 580-269589/8	50.0	36.159021	48.75	605359.0	0.72318	Y
7	IC 580-269589/9	75.0	53.335646	48.75	643994.0	0.711142	N
8	IC 580-269589/10	100.0	71.339231	48.75	631607.0	0.713392	N



Calibration / Butadiene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

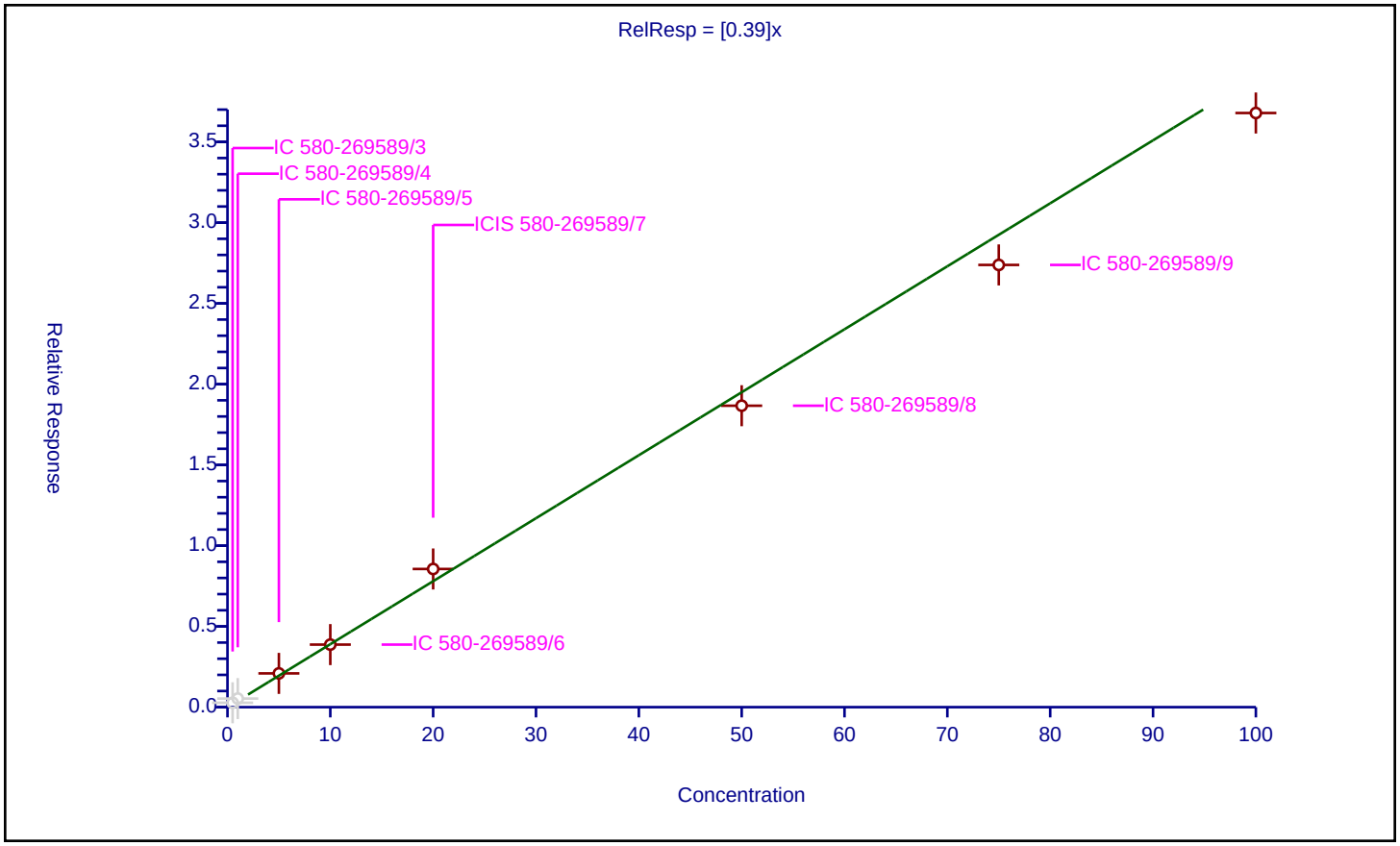
Curve Coefficients

Intercept:	0
Slope:	0.39

Error Coefficients

Standard Error:	669000
Relative Standard Error:	6.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.272355	48.75	1385953.0	0.54471	N
2	IC 580-269589/4	1.0	0.531973	48.75	1359845.0	0.531973	N
3	IC 580-269589/5	5.0	2.091496	48.75	1422948.0	0.418299	Y
4	IC 580-269589/6	10.0	3.874424	48.75	1358597.0	0.387442	Y
5	ICIS 580-269589/7	20.0	8.556229	48.75	1364764.0	0.427811	Y
6	IC 580-269589/8	50.0	18.665626	48.75	1405755.0	0.373313	Y
7	IC 580-269589/9	75.0	27.382956	48.75	1473218.0	0.365106	Y
8	IC 580-269589/10	100.0	36.790455	48.75	1444559.0	0.367905	Y



Calibration / Bromomethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

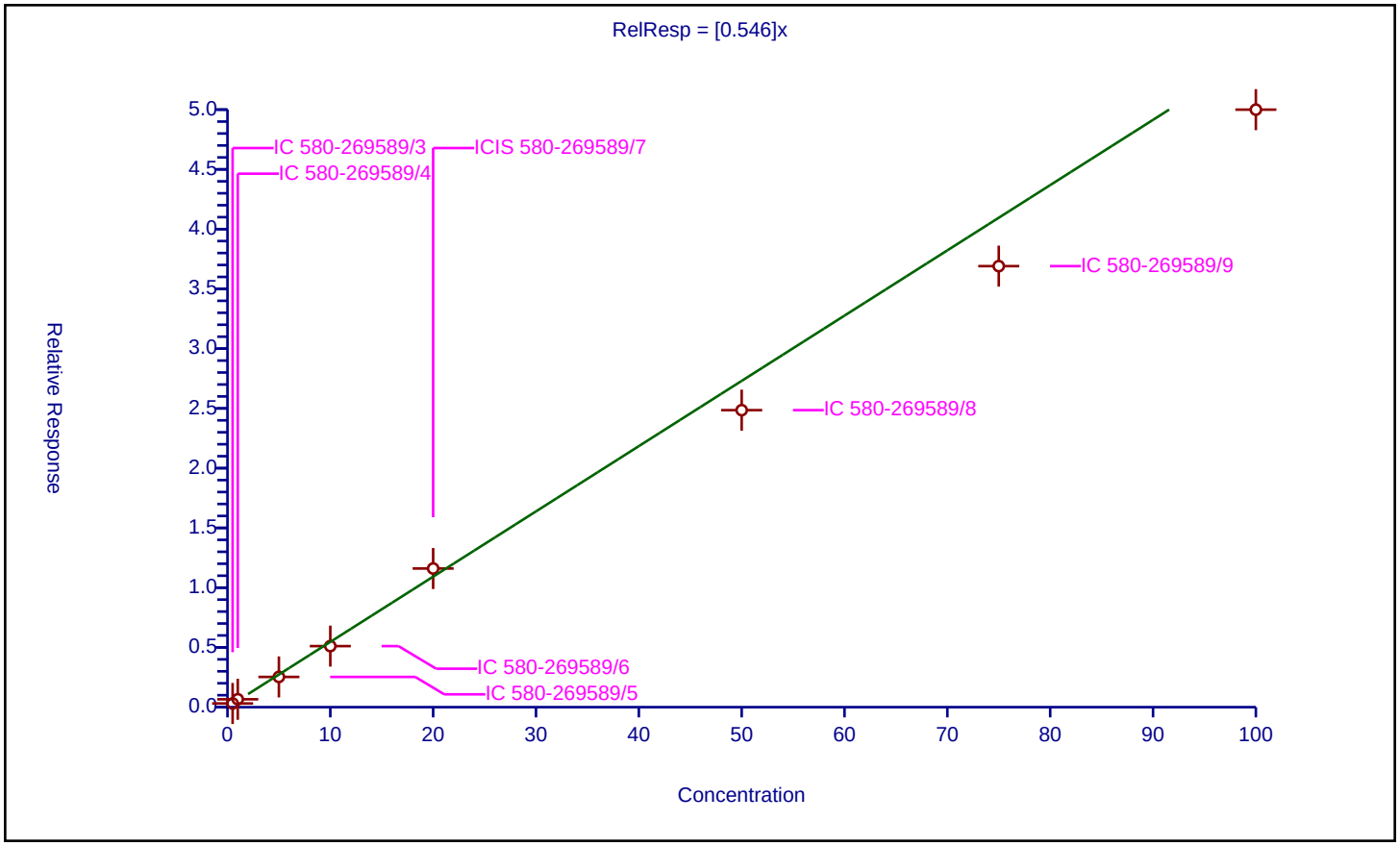
Curve Coefficients

Intercept:	0
Slope:	0.546

Error Coefficients

Standard Error:	332000
Relative Standard Error:	12.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.980

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.310946	48.75	577890.0	0.621892	Y
2	IC 580-269589/4	1.0	0.660288	48.75	545171.0	0.660288	Y
3	IC 580-269589/5	5.0	2.530441	48.75	608190.0	0.506088	Y
4	IC 580-269589/6	10.0	5.109572	48.75	548784.0	0.510957	Y
5	ICIS 580-269589/7	20.0	11.600922	48.75	548520.0	0.580046	Y
6	IC 580-269589/8	50.0	24.851299	48.75	605359.0	0.497026	Y
7	IC 580-269589/9	75.0	36.902126	48.75	643994.0	0.492028	Y
8	IC 580-269589/10	100.0	49.997295	48.75	631607.0	0.499973	Y



Calibration / Chloroethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

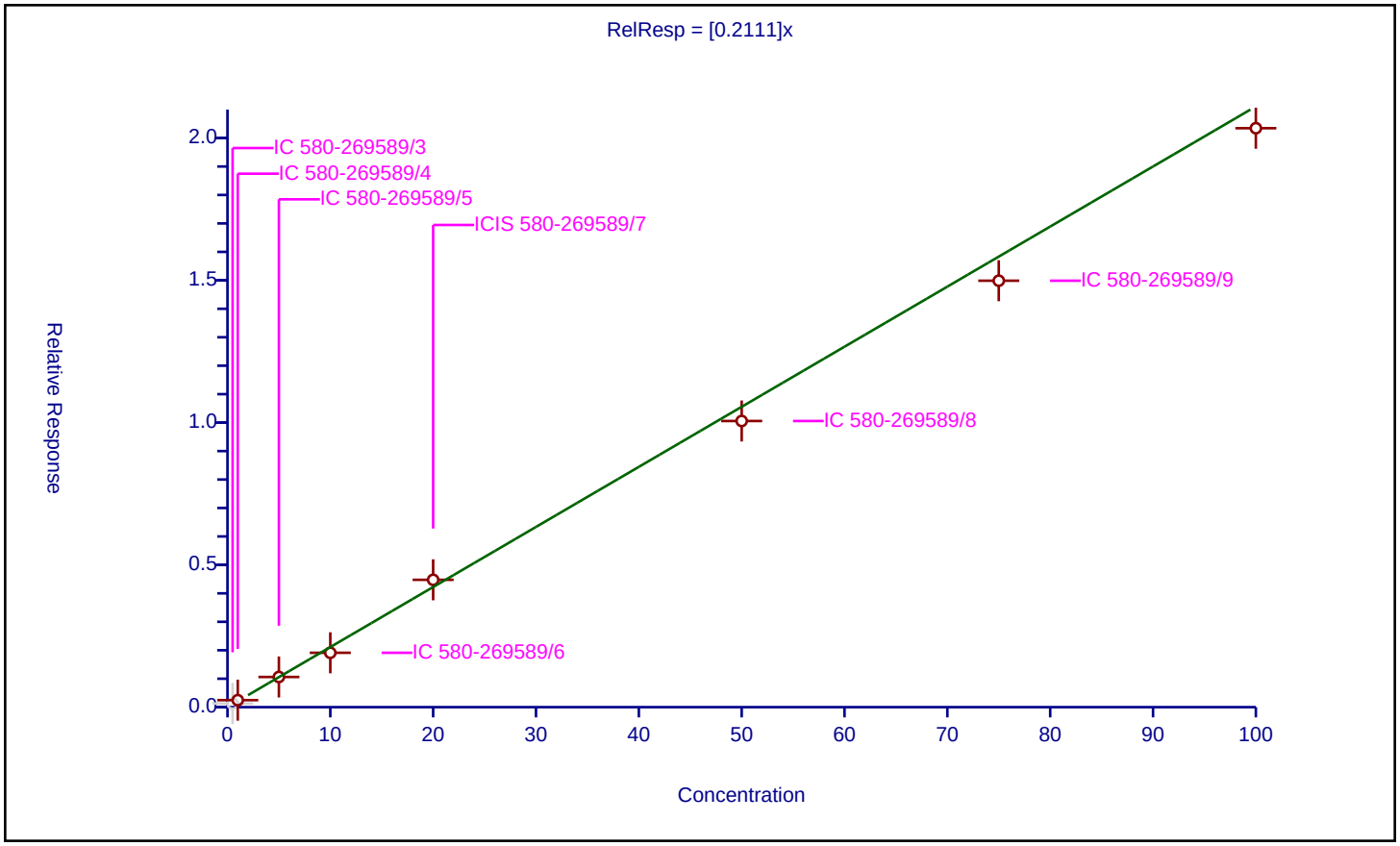
Curve Coefficients

Intercept:	0
Slope:	0.2111

Error Coefficients

Standard Error:	335000
Relative Standard Error:	8.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.127331	48.75	1385953.0	0.254662	N
2	IC 580-269589/4	1.0	0.246395	48.75	1359845.0	0.246395	Y
3	IC 580-269589/5	5.0	1.060685	48.75	1422948.0	0.212137	Y
4	IC 580-269589/6	10.0	1.911251	48.75	1358597.0	0.191125	Y
5	ICIS 580-269589/7	20.0	4.475524	48.75	1364764.0	0.223776	Y
6	IC 580-269589/8	50.0	10.056873	48.75	1405755.0	0.201137	Y
7	IC 580-269589/9	75.0	14.986504	48.75	1473218.0	0.19982	Y
8	IC 580-269589/10	100.0	20.346059	48.75	1444559.0	0.203461	Y



Calibration / Dichlorofluoromethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

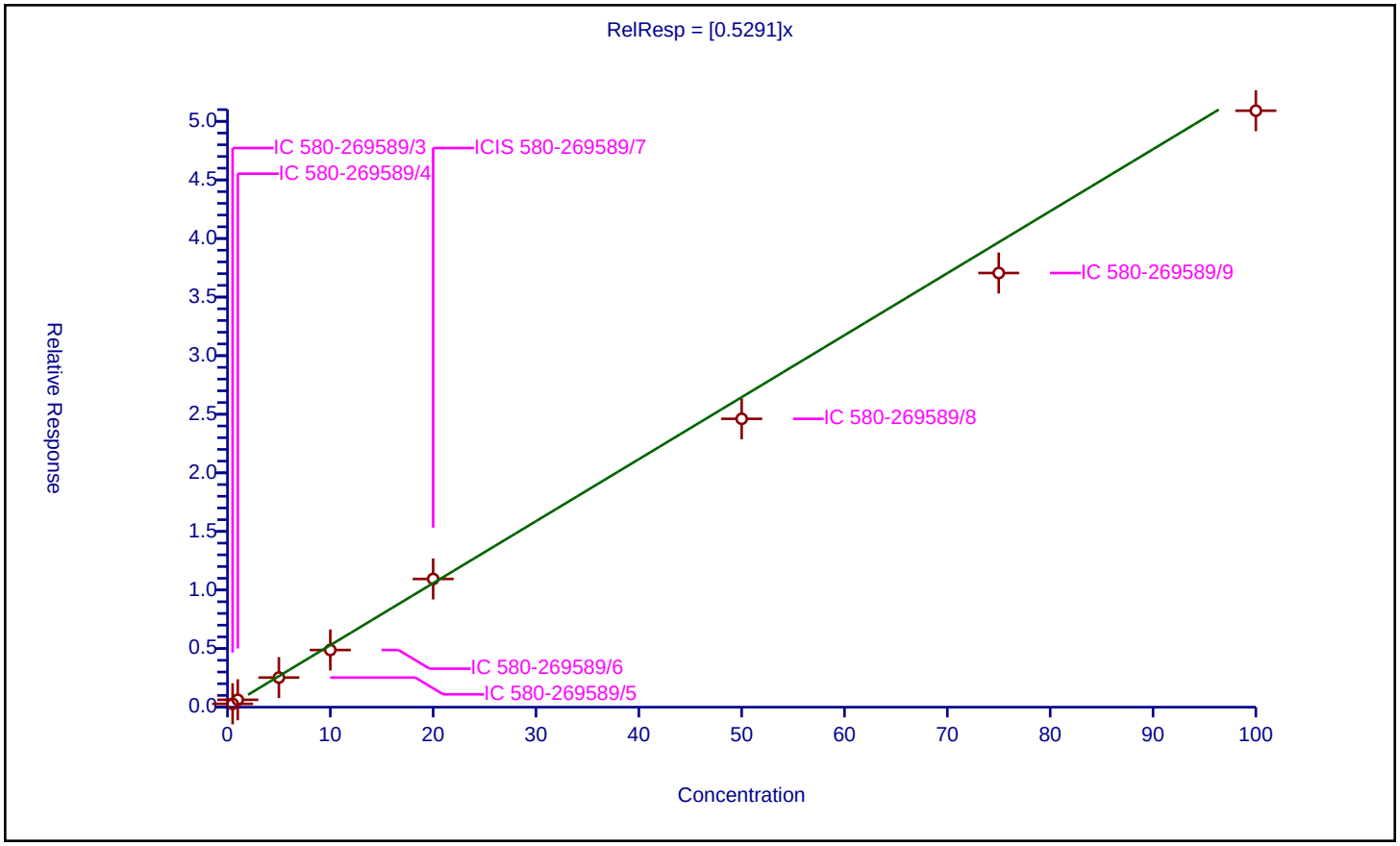
Curve Coefficients

Intercept:	0
Slope:	0.5291

Error Coefficients

Standard Error:	770000
Relative Standard Error:	9.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.988

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.282907	48.75	1385953.0	0.565815	Y
2	IC 580-269589/4	1.0	0.631635	48.75	1359845.0	0.631635	Y
3	IC 580-269589/5	5.0	2.525294	48.75	1422948.0	0.505059	Y
4	IC 580-269589/6	10.0	4.878312	48.75	1358597.0	0.487831	Y
5	ICIS 580-269589/7	20.0	10.943571	48.75	1364764.0	0.547179	Y
6	IC 580-269589/8	50.0	24.609204	48.75	1405755.0	0.492184	Y
7	IC 580-269589/9	75.0	37.054312	48.75	1473218.0	0.494057	Y
8	IC 580-269589/10	100.0	50.907163	48.75	1444559.0	0.509072	Y



Calibration / Acrolein

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

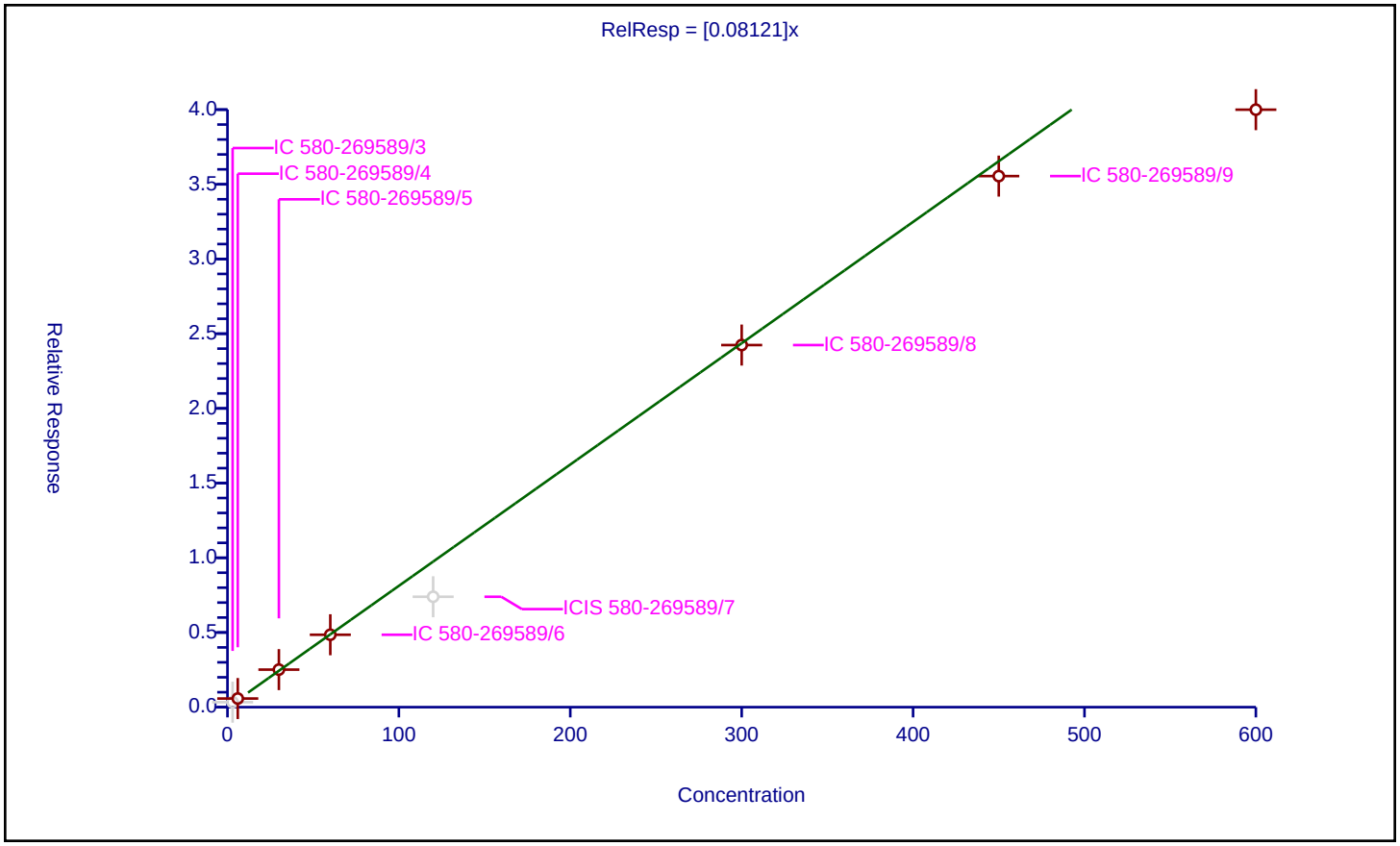
Curve Coefficients

Intercept:	0
Slope:	0.08121

Error Coefficients

Standard Error:	784000
Relative Standard Error:	11.7
Correlation Coefficient:	0.983
Coefficient of Determination (Adjusted):	0.982

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	3.0	0.333207	48.75	1385953.0	0.111069	N
2	IC 580-269589/4	6.0	0.577323	48.75	1359845.0	0.096221	Y
3	IC 580-269589/5	30.0	2.513954	48.75	1422948.0	0.083798	Y
4	IC 580-269589/6	60.0	4.847094	48.75	1358597.0	0.080785	Y
5	ICIS 580-269589/7	120.0	7.390742	48.75	1364764.0	0.06159	N
6	IC 580-269589/8	300.0	24.238903	48.75	1405755.0	0.080796	Y
7	IC 580-269589/9	450.0	35.549706	48.75	1473218.0	0.078999	Y
8	IC 580-269589/10	600.0	39.995809	48.75	1444559.0	0.06666	Y



Calibration / Acetonitrile

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

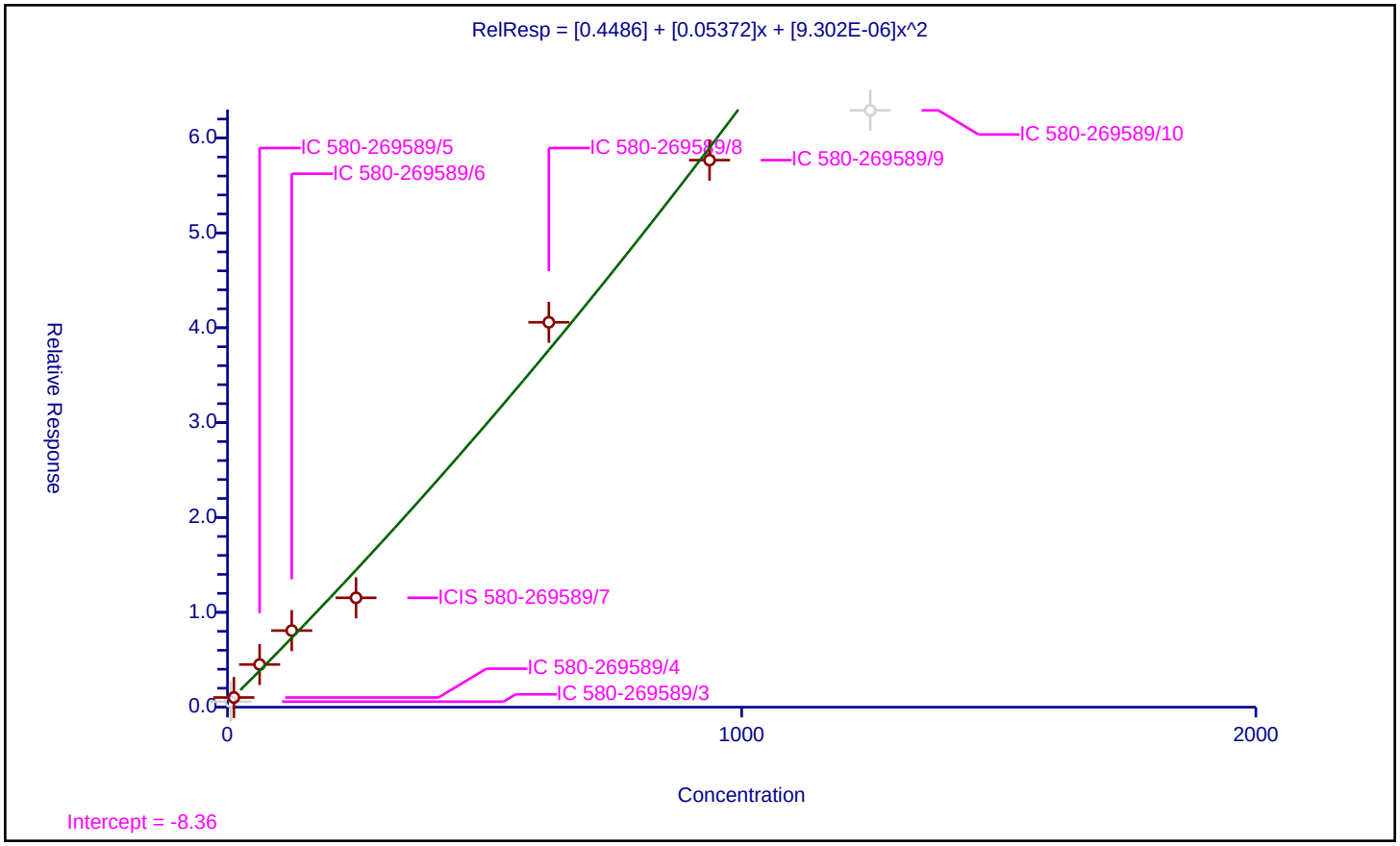
Curve Coefficients

Intercept:	0.4486
Slope:	0.05372
Second Order:	9.302E-06

Error Coefficients

Standard Error:	1240000
Relative Standard Error:	19.8
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	6.25	0.581432	48.75	1385953.0	0.093029	N
2	IC 580-269589/4	12.5	1.019278	48.75	1359845.0	0.081542	Y
3	IC 580-269589/5	62.5	4.497669	48.75	1422948.0	0.071963	Y
4	IC 580-269589/6	125.0	8.075667	48.75	1358597.0	0.064605	Y
5	ICIS 580-269589/7	250.0	11.528993	48.75	1364764.0	0.046116	Y
6	IC 580-269589/8	625.0	40.575877	48.75	1405755.0	0.064921	Y
7	IC 580-269589/9	937.5	57.675059	48.75	1473218.0	0.06152	Y
8	IC 580-269589/10	1250.0	62.921581	48.75	1444559.0	0.050337	N



Calibration / Trichlorofluoromethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

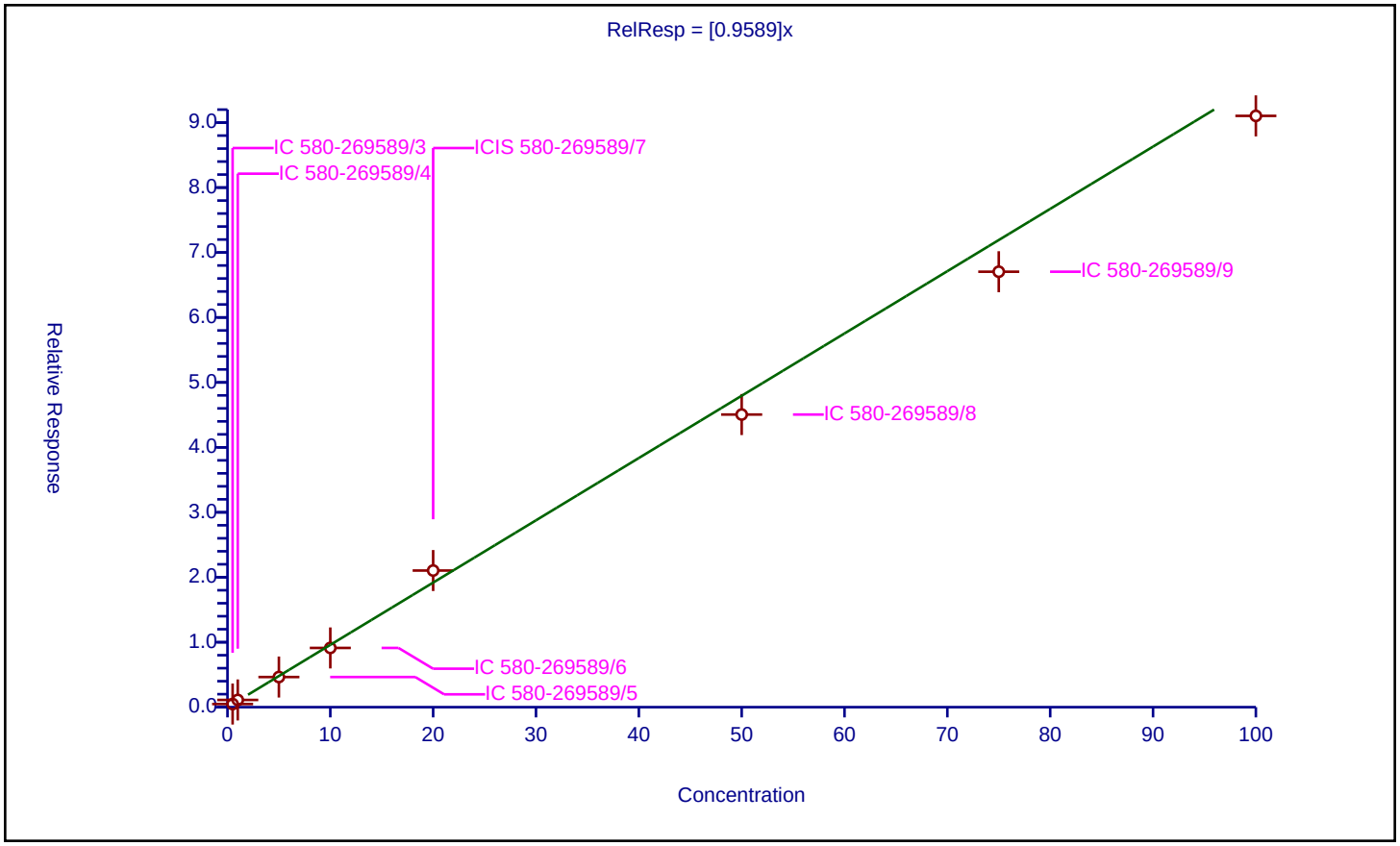
Curve Coefficients

Intercept:	0
Slope:	0.9589

Error Coefficients

Standard Error:	605000
Relative Standard Error:	8.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.481519	48.75	577890.0	0.963038	Y
2	IC 580-269589/4	1.0	1.11142	48.75	545171.0	1.11142	Y
3	IC 580-269589/5	5.0	4.639342	48.75	608190.0	0.927868	Y
4	IC 580-269589/6	10.0	9.120016	48.75	548784.0	0.912002	Y
5	ICIS 580-269589/7	20.0	21.036391	48.75	548520.0	1.05182	Y
6	IC 580-269589/8	50.0	45.051949	48.75	605359.0	0.901039	Y
7	IC 580-269589/9	75.0	67.0427	48.75	643994.0	0.893903	Y
8	IC 580-269589/10	100.0	91.03321	48.75	631607.0	0.910332	Y



Calibration / Isopropyl alcohol

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

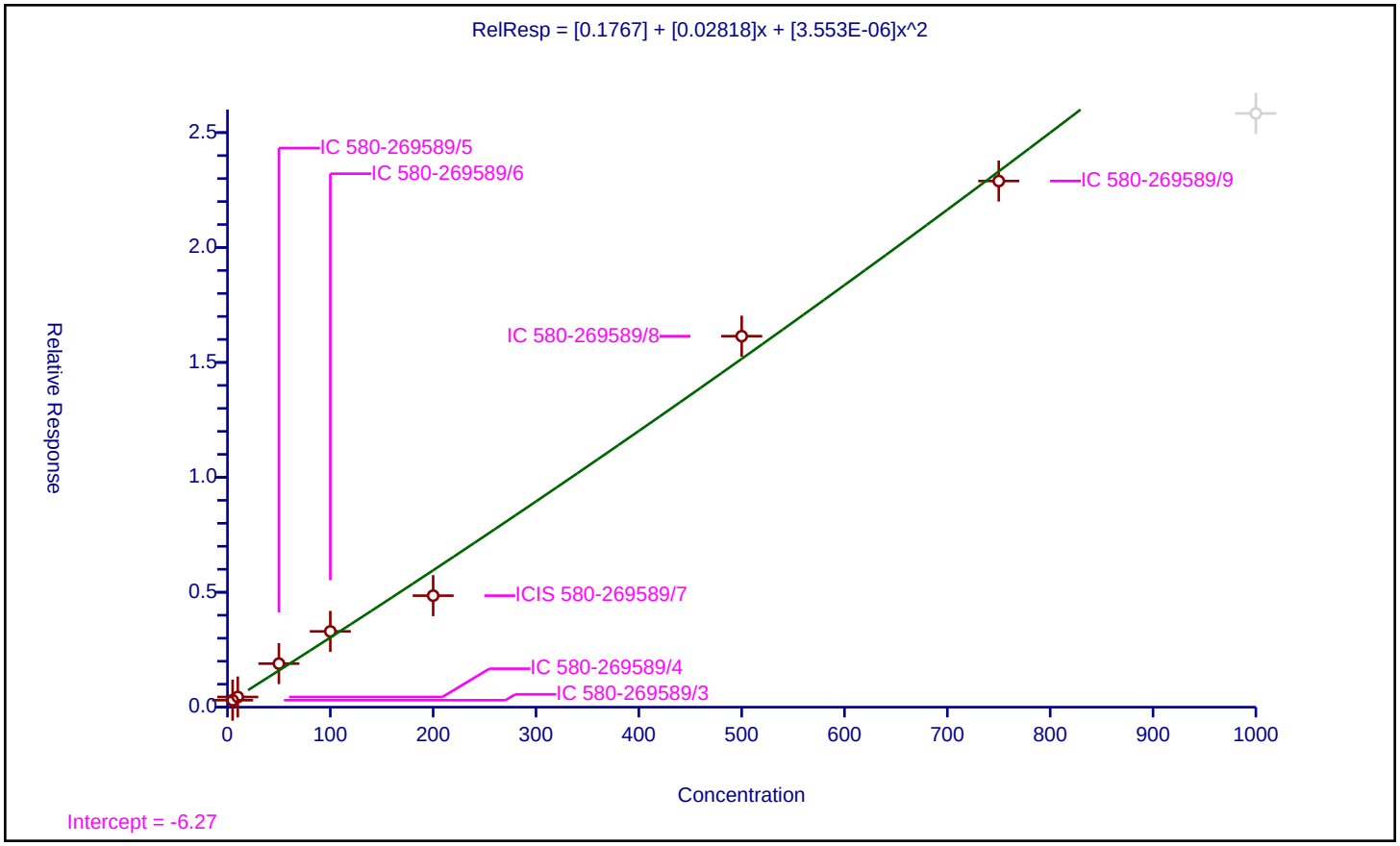
Curve Coefficients

Intercept:	0.1767
Slope:	0.02818
Second Order:	3.553E-06

Error Coefficients

Standard Error:	426000
Relative Standard Error:	16.3
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	5.0	0.302359	48.75	1385953.0	0.060472	Y
2	IC 580-269589/4	10.0	0.443927	48.75	1359845.0	0.044393	Y
3	IC 580-269589/5	50.0	1.894913	48.75	1422948.0	0.037898	Y
4	IC 580-269589/6	100.0	3.296212	48.75	1358597.0	0.032962	Y
5	ICIS 580-269589/7	200.0	4.85116	48.75	1364764.0	0.024256	Y
6	IC 580-269589/8	500.0	16.1426	48.75	1405755.0	0.032285	Y
7	IC 580-269589/9	750.0	22.893027	48.75	1473218.0	0.030524	Y
8	IC 580-269589/10	1000.0	25.832935	48.75	1444559.0	0.025833	N



Calibration / Acetone

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

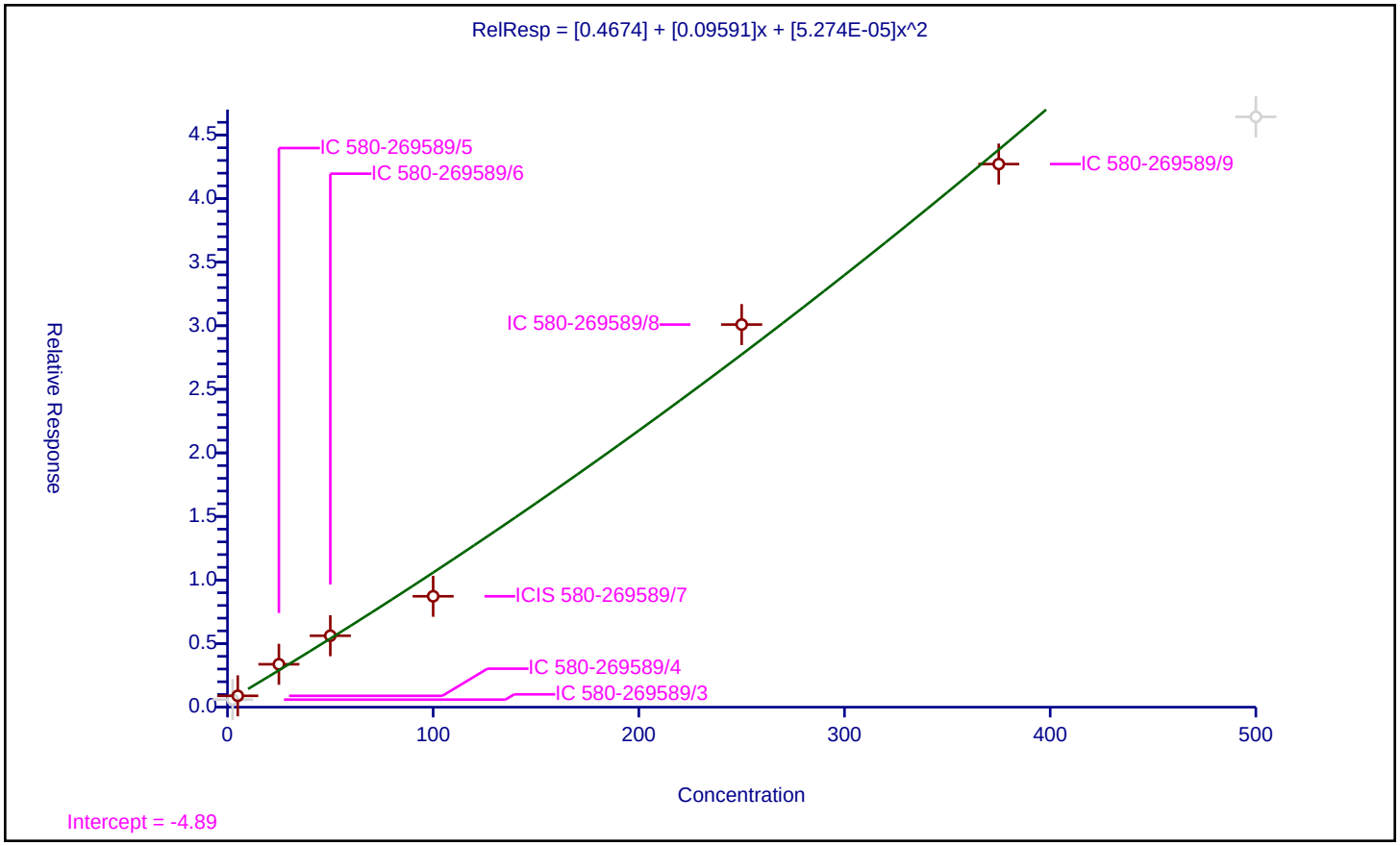
Curve Coefficients

Intercept:	0.4674
Slope:	0.09591
Second Order:	5.274E-05

Error Coefficients

Standard Error:	915000
Relative Standard Error:	17.3
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	2.5	0.5942	48.75	1385953.0	0.23768	N
2	IC 580-269589/4	5.0	0.892012	48.75	1359845.0	0.178402	Y
3	IC 580-269589/5	25.0	3.373534	48.75	1422948.0	0.134941	Y
4	IC 580-269589/6	50.0	5.619001	48.75	1358597.0	0.11238	Y
5	ICIS 580-269589/7	100.0	8.721794	48.75	1364764.0	0.087218	Y
6	IC 580-269589/8	250.0	30.094188	48.75	1405755.0	0.120377	Y
7	IC 580-269589/9	375.0	42.717112	48.75	1473218.0	0.113912	Y
8	IC 580-269589/10	500.0	46.430243	48.75	1444559.0	0.09286	N



Calibration / Ethyl ether

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

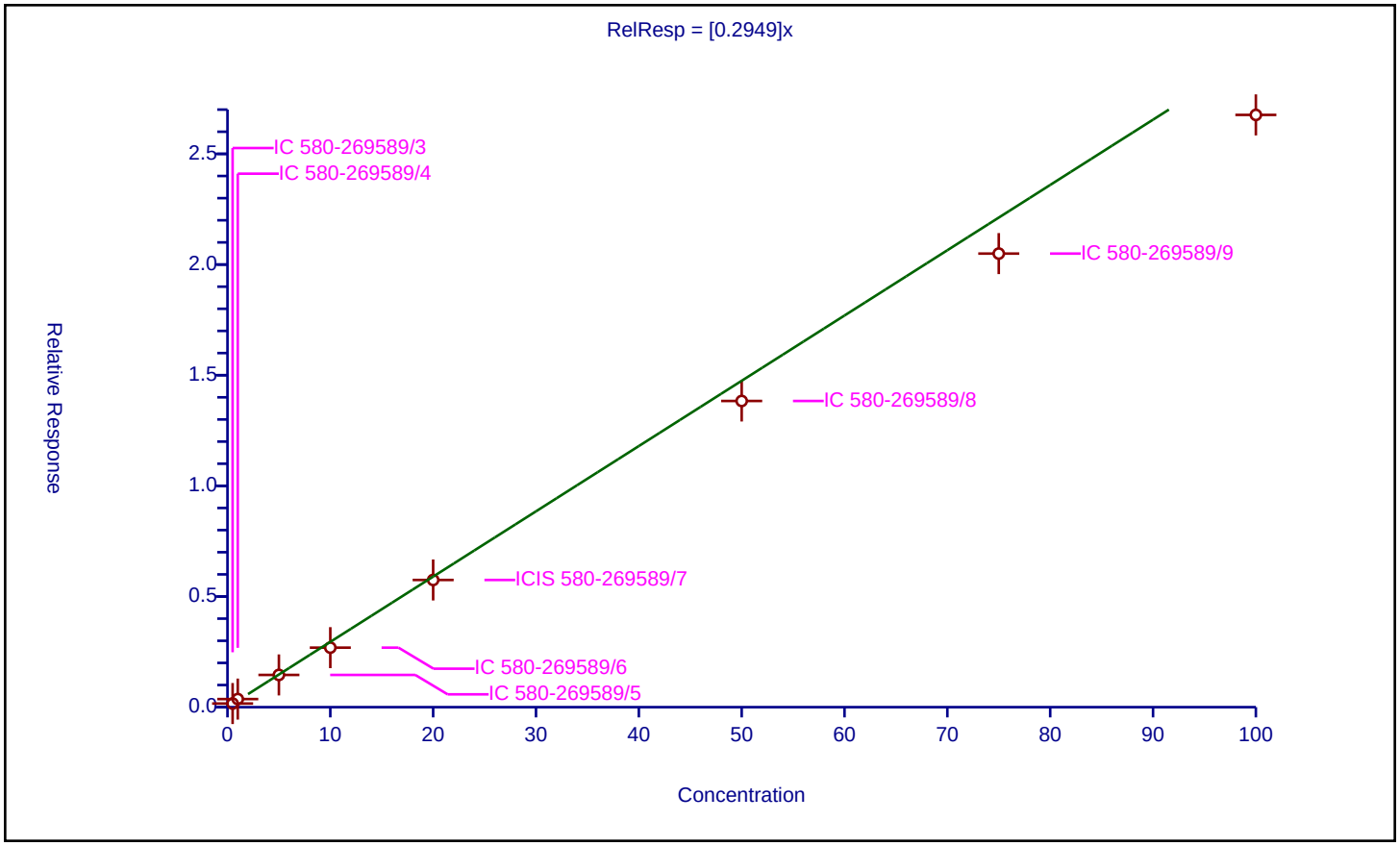
Curve Coefficients

Intercept:	0
Slope:	0.2949

Error Coefficients

Standard Error:	415000
Relative Standard Error:	11.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.981

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.16444	48.75	1385953.0	0.32888	Y
2	IC 580-269589/4	1.0	0.365487	48.75	1359845.0	0.365487	Y
3	IC 580-269589/5	5.0	1.457038	48.75	1422948.0	0.291408	Y
4	IC 580-269589/6	10.0	2.688684	48.75	1358597.0	0.268868	Y
5	ICIS 580-269589/7	20.0	5.747708	48.75	1364764.0	0.287385	Y
6	IC 580-269589/8	50.0	13.834755	48.75	1405755.0	0.276695	Y
7	IC 580-269589/9	75.0	20.49424	48.75	1473218.0	0.273257	Y
8	IC 580-269589/10	100.0	26.760818	48.75	1444559.0	0.267608	Y



Calibration / 1,1-Dichloroethene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

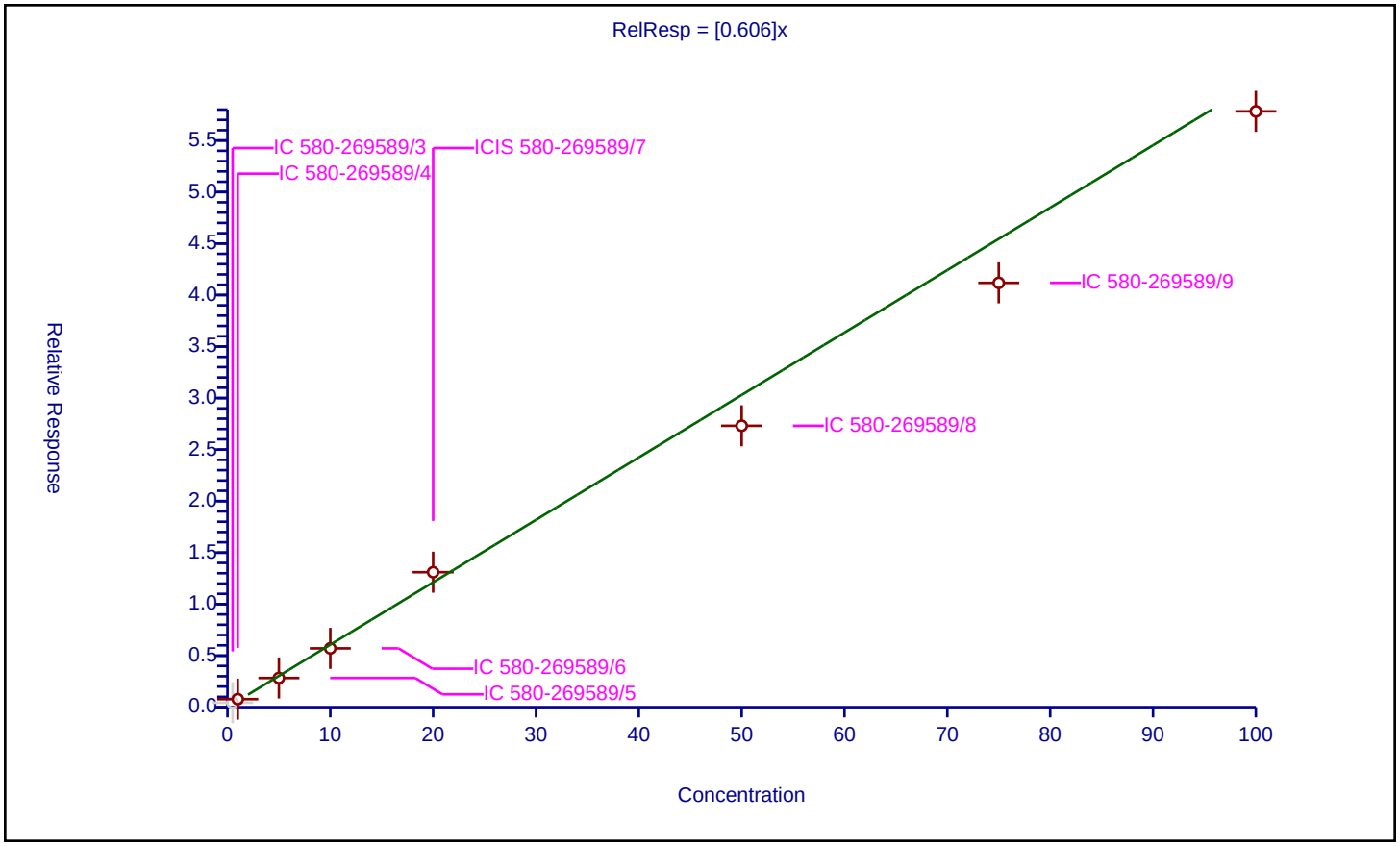
Curve Coefficients

Intercept:	0
Slope:	0.606

Error Coefficients

Standard Error:	408000
Relative Standard Error:	13.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.975

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.431832	48.75	577890.0	0.863663	N
2	IC 580-269589/4	1.0	0.776715	48.75	545171.0	0.776715	Y
3	IC 580-269589/5	5.0	2.829983	48.75	608190.0	0.565997	Y
4	IC 580-269589/6	10.0	5.705817	48.75	548784.0	0.570582	Y
5	ICIS 580-269589/7	20.0	13.099629	48.75	548520.0	0.654981	Y
6	IC 580-269589/8	50.0	27.310224	48.75	605359.0	0.546204	Y
7	IC 580-269589/9	75.0	41.183157	48.75	643994.0	0.549109	Y
8	IC 580-269589/10	100.0	57.829085	48.75	631607.0	0.578291	Y



Calibration / 2-Methyl-2-propanol

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

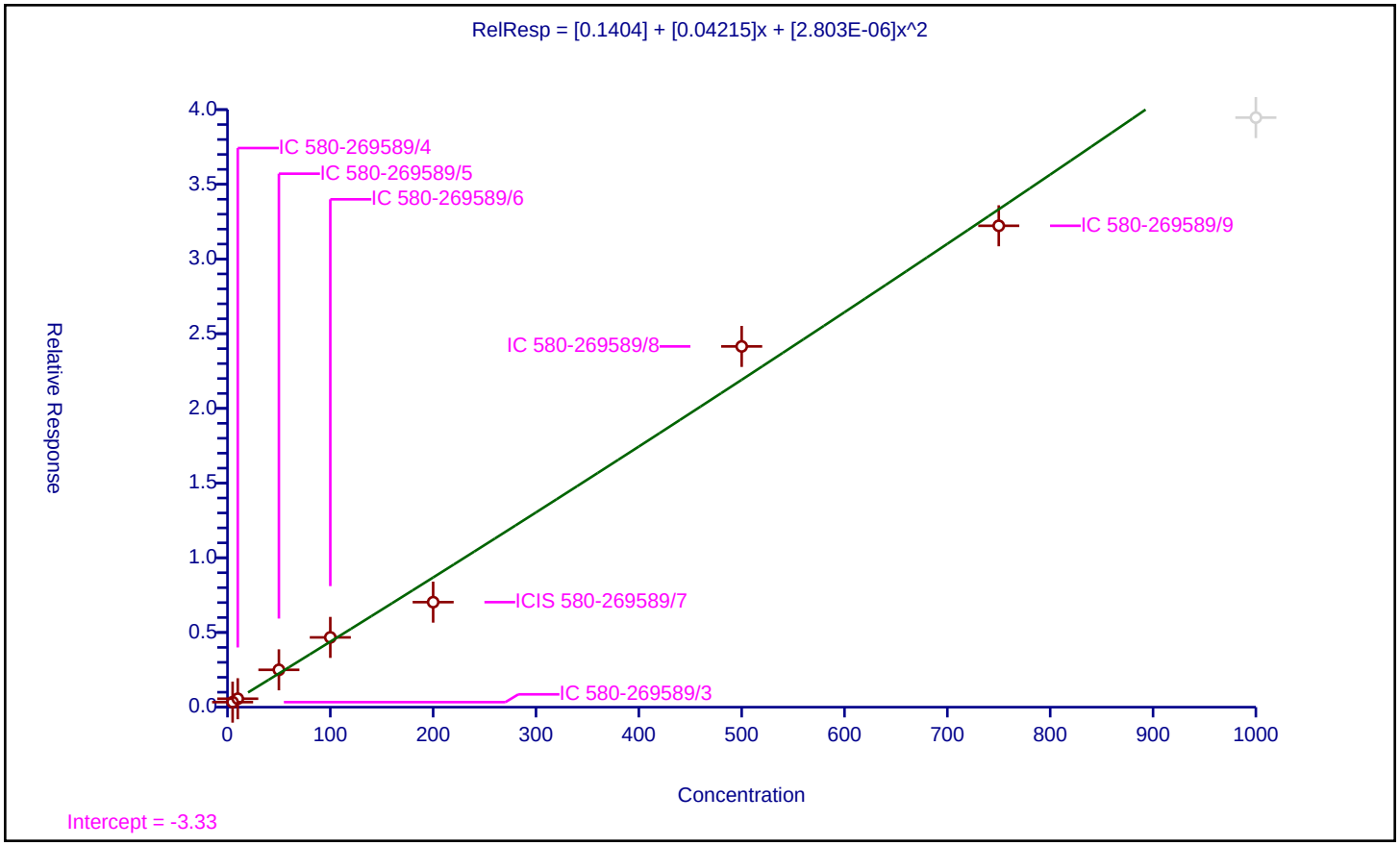
Curve Coefficients

Intercept:	0.1404
Slope:	0.04215
Second Order:	2.803E-06

Error Coefficients

Standard Error:	611000
Relative Standard Error:	13.2
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	5.0	0.337041	48.75	1385953.0	0.067408	Y
2	IC 580-269589/4	10.0	0.565385	48.75	1359845.0	0.056539	Y
3	IC 580-269589/5	50.0	2.499942	48.75	1422948.0	0.049999	Y
4	IC 580-269589/6	100.0	4.669726	48.75	1358597.0	0.046697	Y
5	ICIS 580-269589/7	200.0	7.030608	48.75	1364764.0	0.035153	Y
6	IC 580-269589/8	500.0	24.147351	48.75	1405755.0	0.048295	Y
7	IC 580-269589/9	750.0	32.223449	48.75	1473218.0	0.042965	Y
8	IC 580-269589/10	1000.0	39.466246	48.75	1444559.0	0.039466	N



Calibration / Acrylonitrile

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

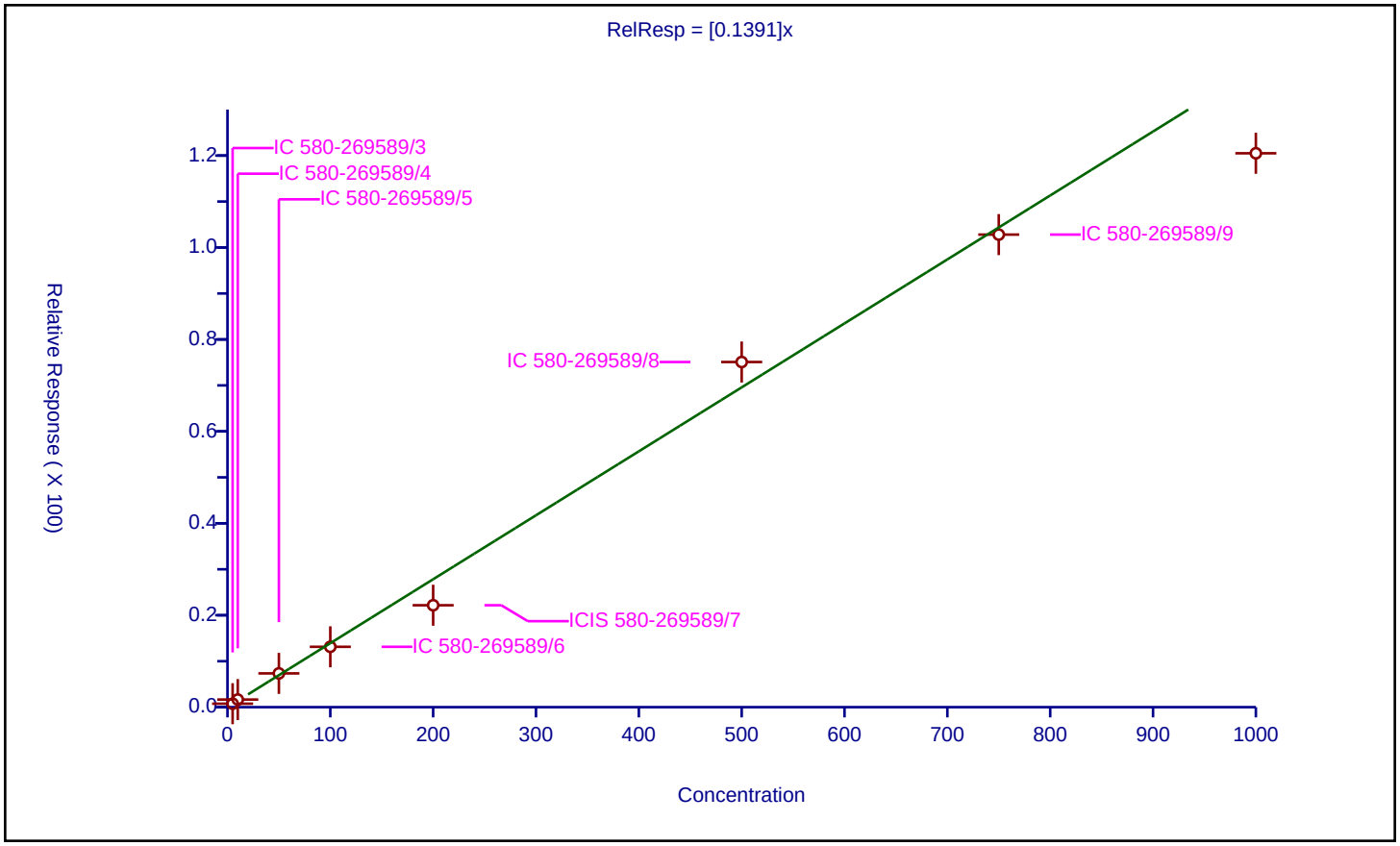
Curve Coefficients

Intercept:	0
Slope:	0.1391

Error Coefficients

Standard Error:	1990000
Relative Standard Error:	12.8
Correlation Coefficient:	0.986
Coefficient of Determination (Adjusted):	0.978

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	5.0	0.753435	48.75	1385953.0	0.150687	Y
2	IC 580-269589/4	10.0	1.656327	48.75	1359845.0	0.165633	Y
3	IC 580-269589/5	50.0	7.346342	48.75	1422948.0	0.146927	Y
4	IC 580-269589/6	100.0	13.132029	48.75	1358597.0	0.13132	Y
5	ICIS 580-269589/7	200.0	22.172083	48.75	1364764.0	0.11086	Y
6	IC 580-269589/8	500.0	75.087564	48.75	1405755.0	0.150175	Y
7	IC 580-269589/9	750.0	102.805717	48.75	1473218.0	0.137074	Y
8	IC 580-269589/10	1000.0	120.497181	48.75	1444559.0	0.120497	Y



Calibration / Iodomethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

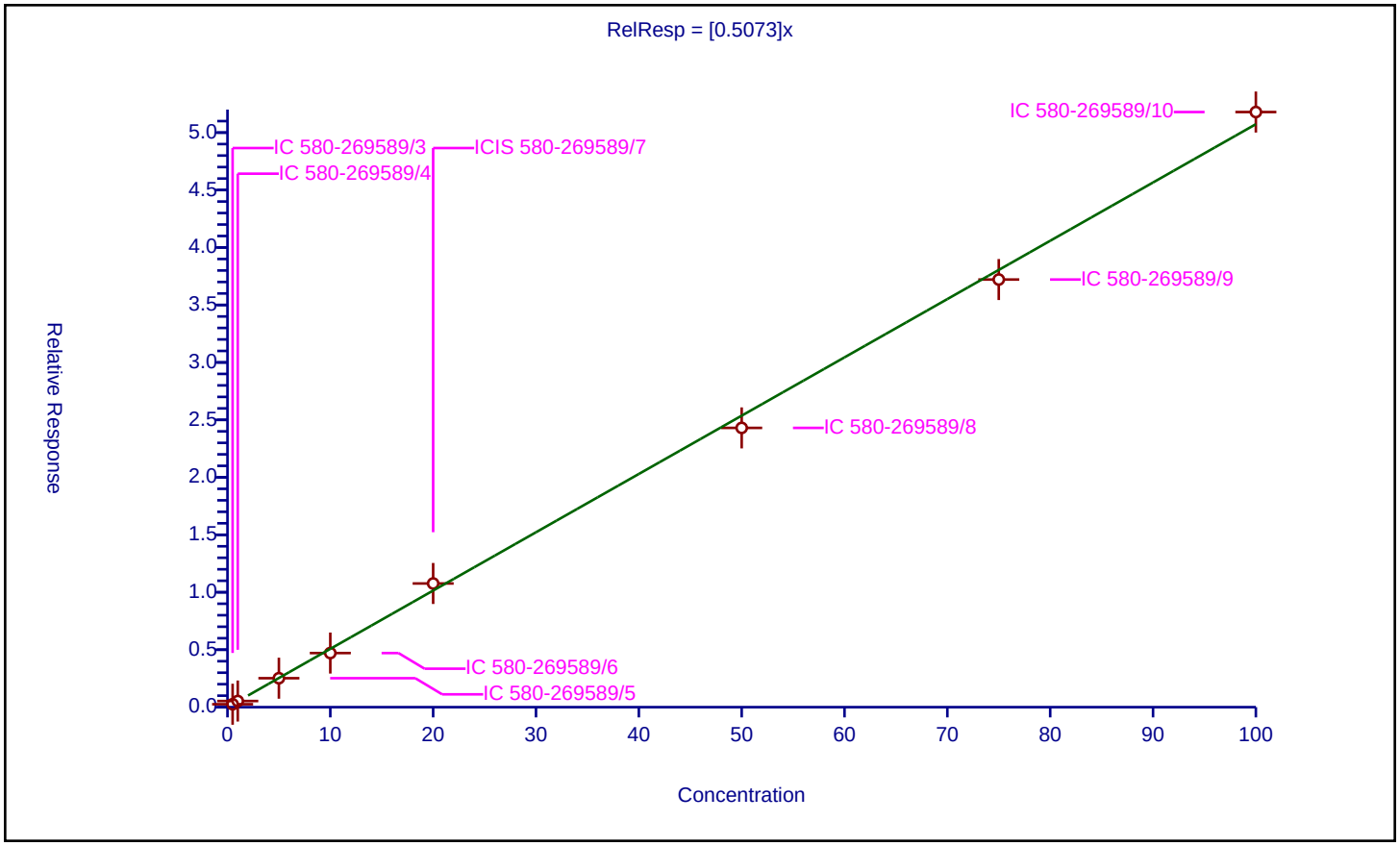
Curve Coefficients

Intercept:	0
Slope:	0.5073

Error Coefficients

Standard Error:	777000
Relative Standard Error:	4.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.255753	48.75	1385953.0	0.511505	Y
2	IC 580-269589/4	1.0	0.533945	48.75	1359845.0	0.533945	Y
3	IC 580-269589/5	5.0	2.519778	48.75	1422948.0	0.503956	Y
4	IC 580-269589/6	10.0	4.709125	48.75	1358597.0	0.470913	Y
5	ICIS 580-269589/7	20.0	10.763182	48.75	1364764.0	0.538159	Y
6	IC 580-269589/8	50.0	24.302469	48.75	1405755.0	0.486049	Y
7	IC 580-269589/9	75.0	37.212751	48.75	1473218.0	0.49617	Y
8	IC 580-269589/10	100.0	51.788744	48.75	1444559.0	0.517887	Y



Calibration / Methylene Chloride

Curve Type:	Quadratic
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

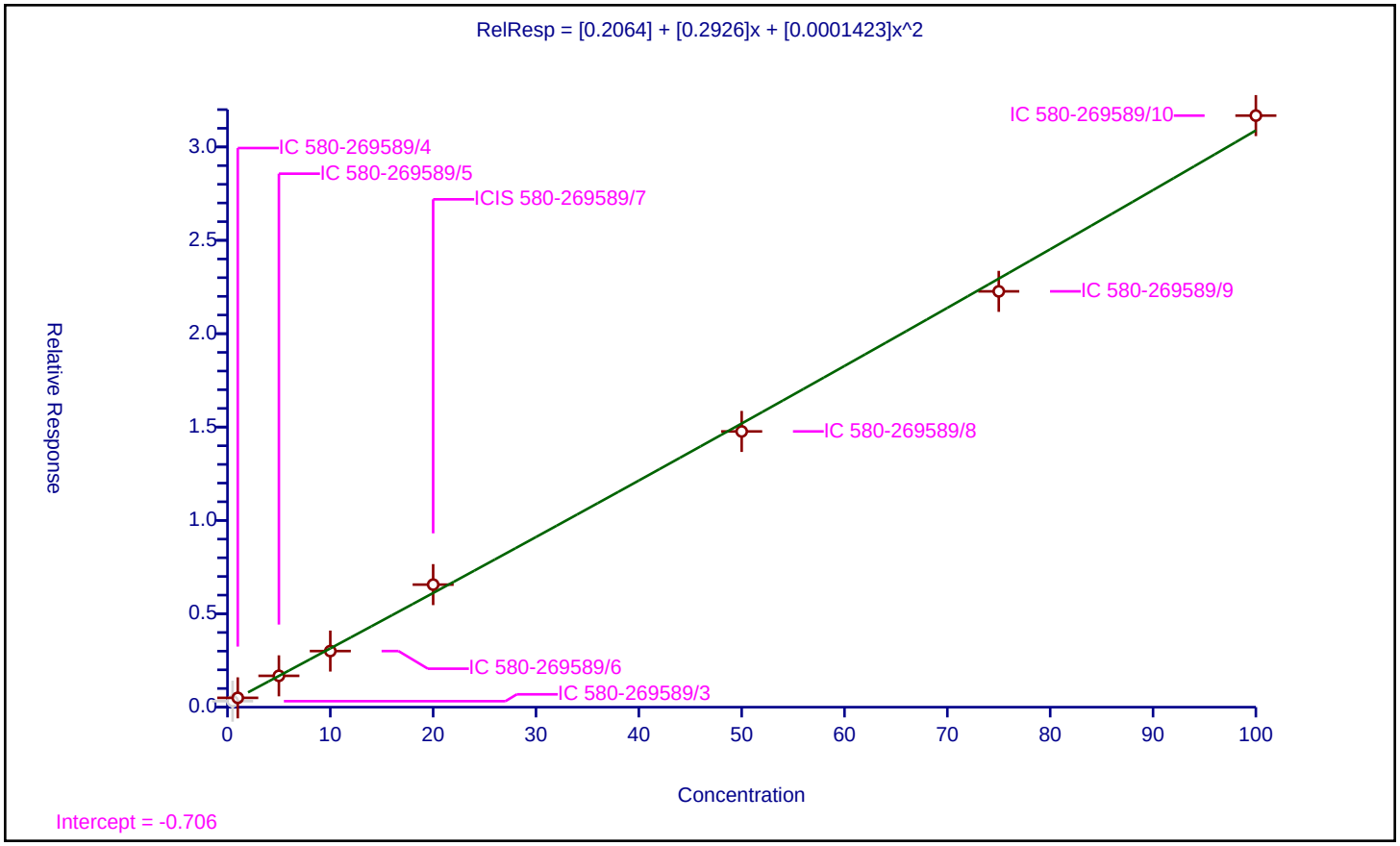
Curve Coefficients

Intercept:	0.2064
Slope:	0.2926
Second Order:	0.0001423

Error Coefficients

Standard Error:	624000
Relative Standard Error:	5.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.320685	48.75	1385953.0	0.641369	N
2	IC 580-269589/4	1.0	0.499422	48.75	1359845.0	0.499422	Y
3	IC 580-269589/5	5.0	1.678665	48.75	1422948.0	0.335733	Y
4	IC 580-269589/6	10.0	3.004307	48.75	1358597.0	0.300431	Y
5	ICIS 580-269589/7	20.0	6.562277	48.75	1364764.0	0.328114	Y
6	IC 580-269589/8	50.0	14.765571	48.75	1405755.0	0.295311	Y
7	IC 580-269589/9	75.0	22.267445	48.75	1473218.0	0.296899	Y
8	IC 580-269589/10	100.0	31.67976	48.75	1444559.0	0.316798	Y



Calibration / Methyl acetate

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

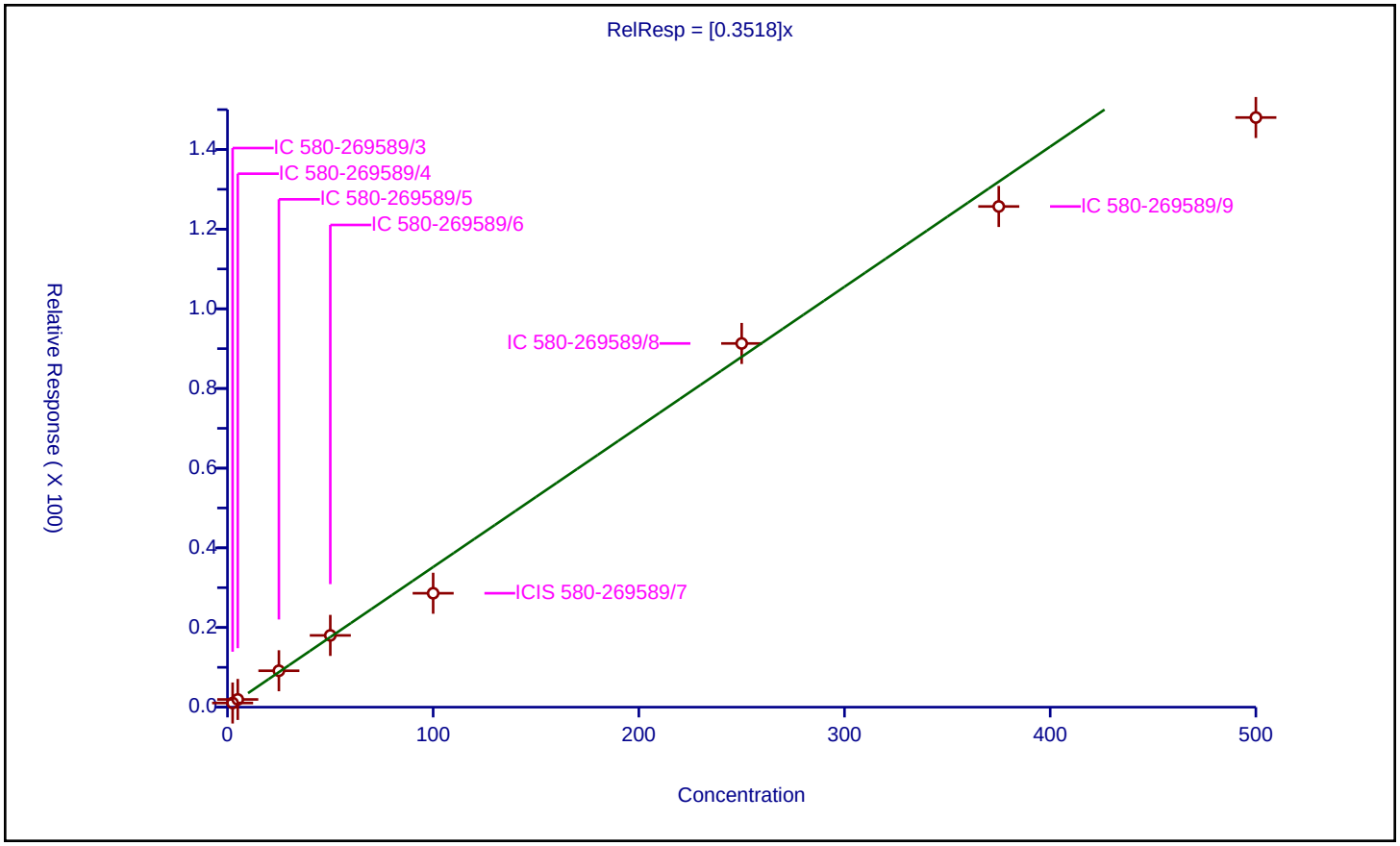
Curve Coefficients

Intercept:	0
Slope:	0.3518

Error Coefficients

Standard Error:	2440000
Relative Standard Error:	12.6
Correlation Coefficient:	0.988
Coefficient of Determination (Adjusted):	0.978

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	2.5	1.045452	48.75	1385953.0	0.418181	Y
2	IC 580-269589/4	5.0	1.938105	48.75	1359845.0	0.387621	Y
3	IC 580-269589/5	25.0	9.138989	48.75	1422948.0	0.36556	Y
4	IC 580-269589/6	50.0	18.017948	48.75	1358597.0	0.360359	Y
5	ICIS 580-269589/7	100.0	28.594158	48.75	1364764.0	0.285942	Y
6	IC 580-269589/8	250.0	91.298932	48.75	1405755.0	0.365196	Y
7	IC 580-269589/9	375.0	125.685375	48.75	1473218.0	0.335161	Y
8	IC 580-269589/10	500.0	148.015154	48.75	1444559.0	0.29603	Y



Calibration / 1,1,2-Trichloro-1,2,2-trifluoroethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

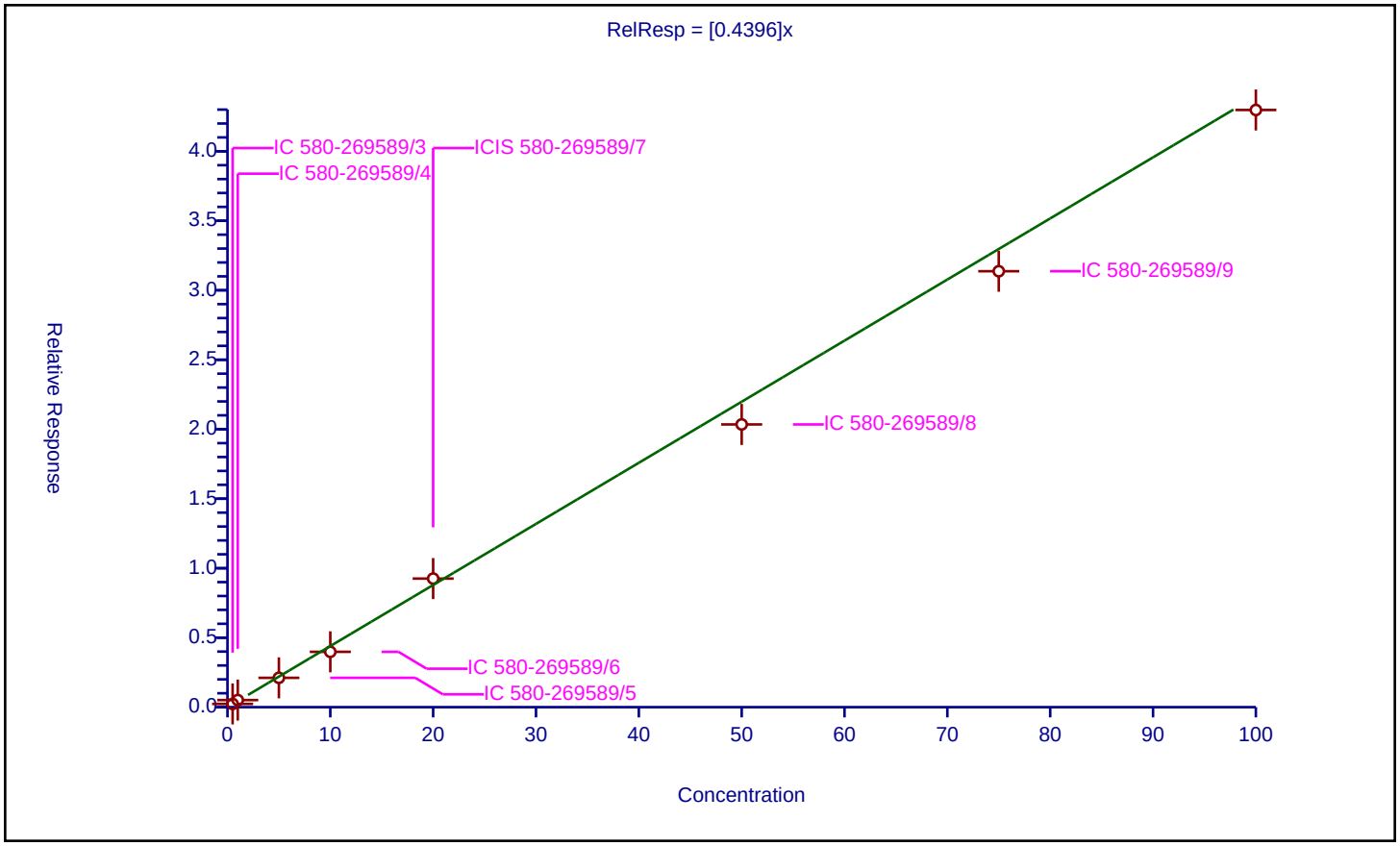
Curve Coefficients

Intercept:	0
Slope:	0.4396

Error Coefficients

Standard Error:	324000
Relative Standard Error:	8.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.233875	48.75	712257.0	0.467749	Y
2	IC 580-269589/4	1.0	0.510957	48.75	697537.0	0.510957	Y
3	IC 580-269589/5	5.0	2.111833	48.75	712171.0	0.422367	Y
4	IC 580-269589/6	10.0	3.981181	48.75	673677.0	0.398118	Y
5	ICIS 580-269589/7	20.0	9.253244	48.75	664680.0	0.462662	Y
6	IC 580-269589/8	50.0	20.345119	48.75	720868.0	0.406902	Y
7	IC 580-269589/9	75.0	31.370038	48.75	735675.0	0.418267	Y
8	IC 580-269589/10	100.0	42.973744	48.75	718634.0	0.429737	Y



Calibration / 3-Chloro-1-propene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

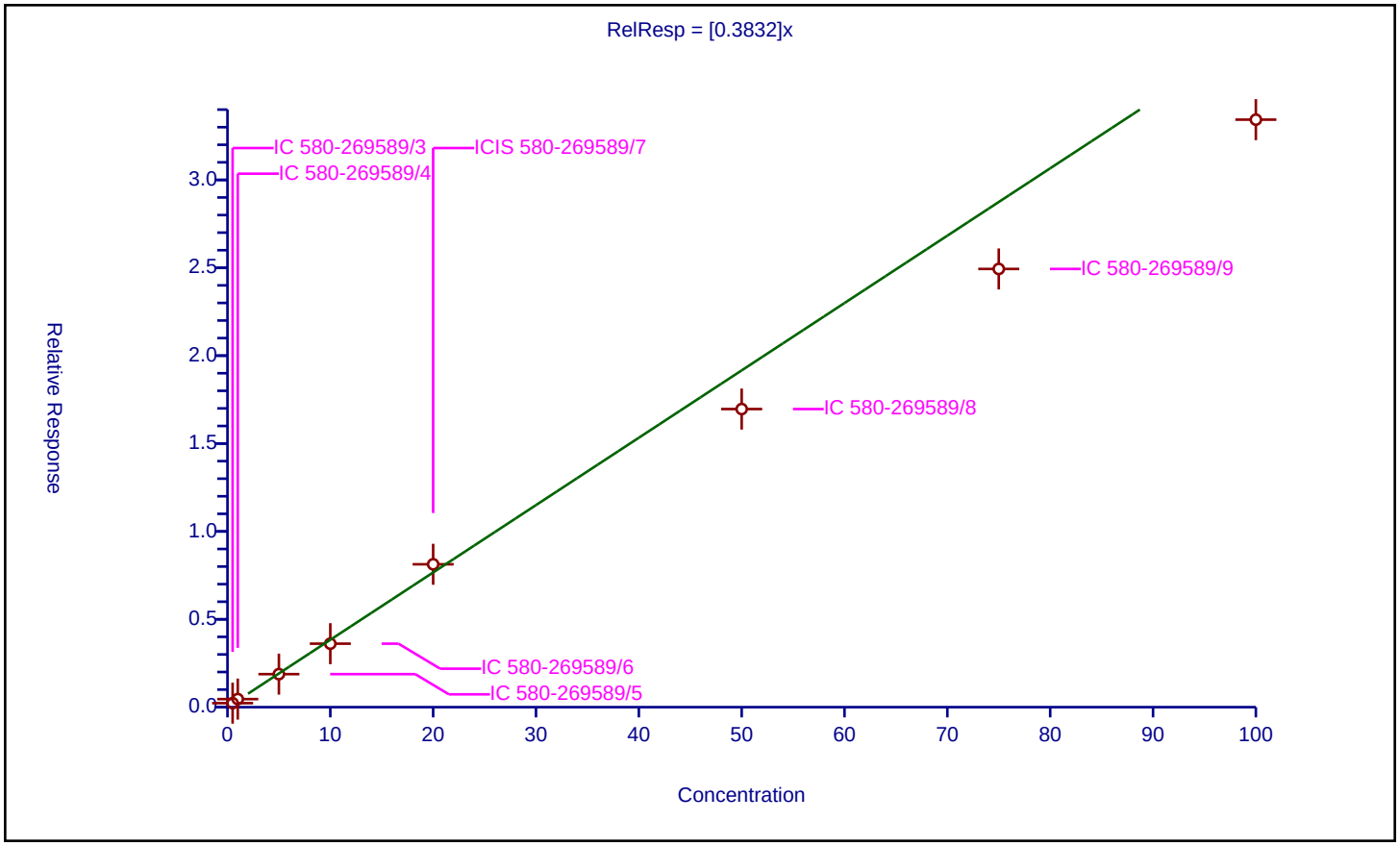
Curve Coefficients

Intercept:	0
Slope:	0.3832

Error Coefficients

Standard Error:	224000
Relative Standard Error:	13.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.974

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.228865	48.75	577890.0	0.45773	Y
2	IC 580-269589/4	1.0	0.458822	48.75	545171.0	0.458822	Y
3	IC 580-269589/5	5.0	1.878934	48.75	608190.0	0.375787	Y
4	IC 580-269589/6	10.0	3.611851	48.75	548784.0	0.361185	Y
5	ICIS 580-269589/7	20.0	8.129177	48.75	548520.0	0.406459	Y
6	IC 580-269589/8	50.0	16.96267	48.75	605359.0	0.339253	Y
7	IC 580-269589/9	75.0	24.933586	48.75	643994.0	0.332448	Y
8	IC 580-269589/10	100.0	33.428885	48.75	631607.0	0.334289	Y



Calibration / Carbon disulfide

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

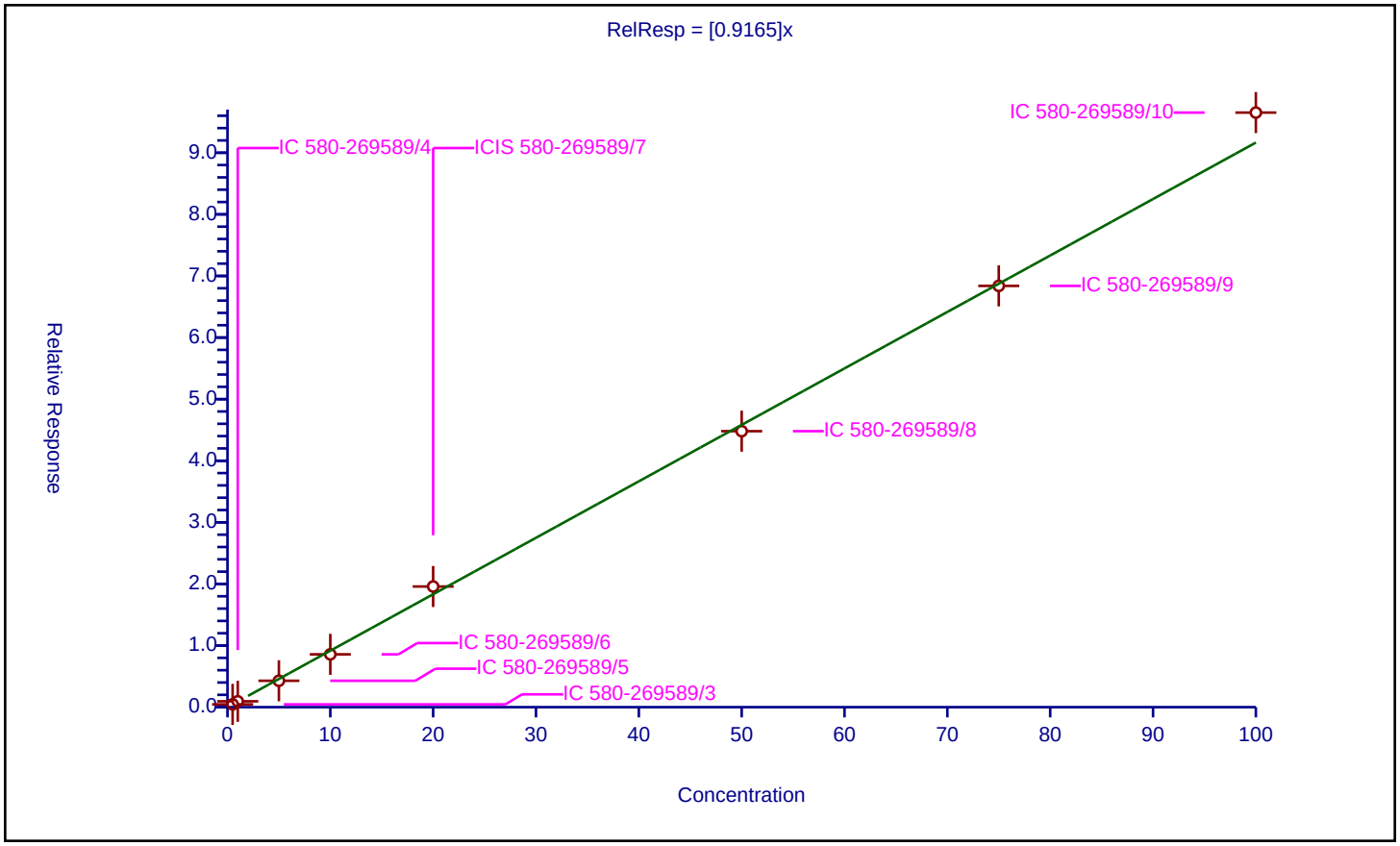
Curve Coefficients

Intercept:	0
Slope:	0.9165

Error Coefficients

Standard Error:	1440000
Relative Standard Error:	5.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.457548	48.75	1385953.0	0.915096	Y
2	IC 580-269589/4	1.0	0.950482	48.75	1359845.0	0.950482	Y
3	IC 580-269589/5	5.0	4.283236	48.75	1422948.0	0.856647	Y
4	IC 580-269589/6	10.0	8.574507	48.75	1358597.0	0.857451	Y
5	ICIS 580-269589/7	20.0	19.584422	48.75	1364764.0	0.979221	Y
6	IC 580-269589/8	50.0	44.800527	48.75	1405755.0	0.896011	Y
7	IC 580-269589/9	75.0	68.382092	48.75	1473218.0	0.911761	Y
8	IC 580-269589/10	100.0	96.515388	48.75	1444559.0	0.965154	Y



Calibration / trans-1,2-Dichloroethene

Curve Type:	Quadratic
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

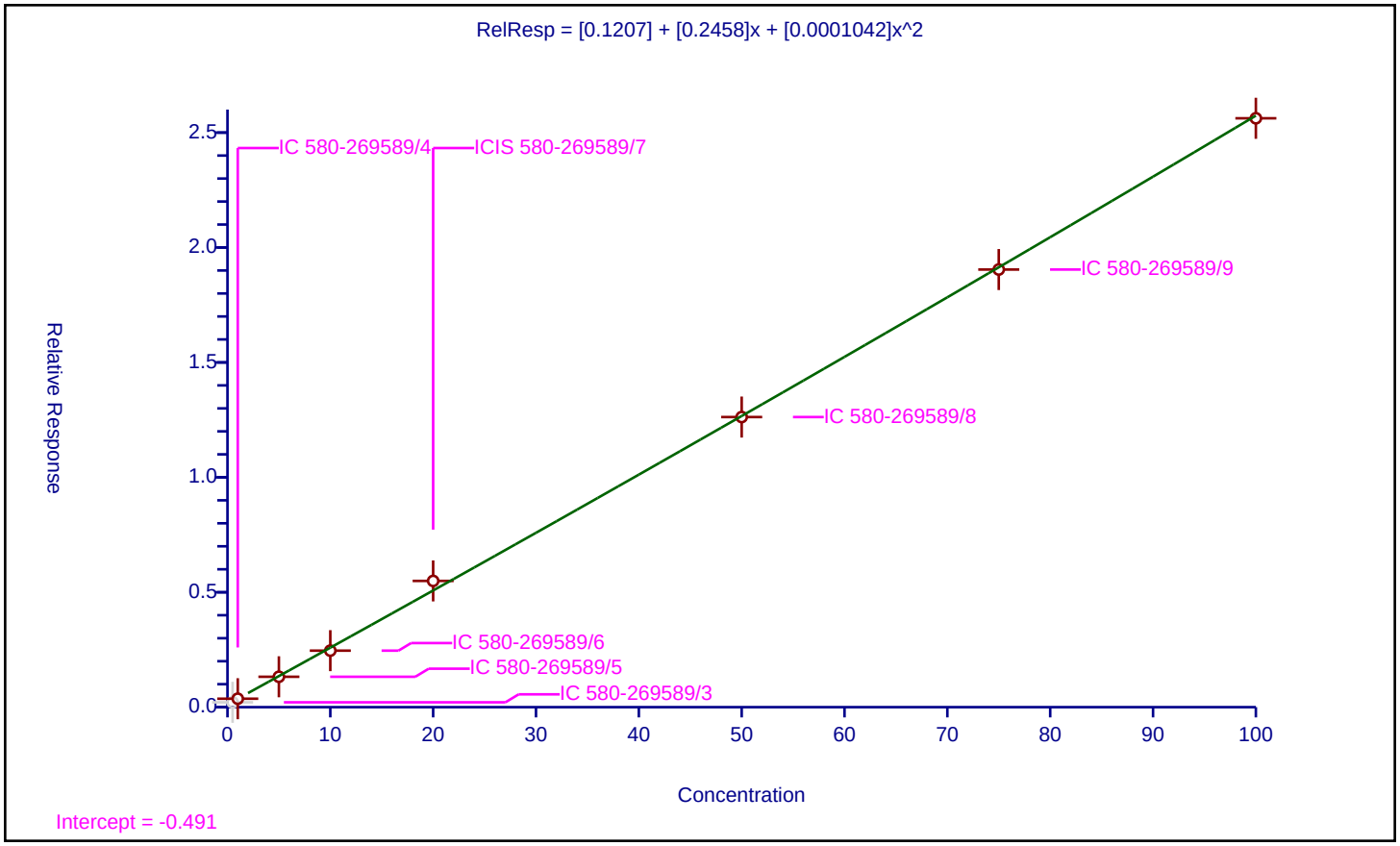
Curve Coefficients

Intercept:	0.1207
Slope:	0.2458
Second Order:	0.0001042

Error Coefficients

Standard Error:	517000
Relative Standard Error:	5.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.21175	48.75	1385953.0	0.423499	N
2	IC 580-269589/4	1.0	0.368069	48.75	1359845.0	0.368069	Y
3	IC 580-269589/5	5.0	1.322568	48.75	1422948.0	0.264514	Y
4	IC 580-269589/6	10.0	2.458497	48.75	1358597.0	0.24585	Y
5	ICIS 580-269589/7	20.0	5.492985	48.75	1364764.0	0.274649	Y
6	IC 580-269589/8	50.0	12.623179	48.75	1405755.0	0.252464	Y
7	IC 580-269589/9	75.0	19.041586	48.75	1473218.0	0.253888	Y
8	IC 580-269589/10	100.0	25.622284	48.75	1444559.0	0.256223	Y



Calibration / Methyl tert-butyl ether

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

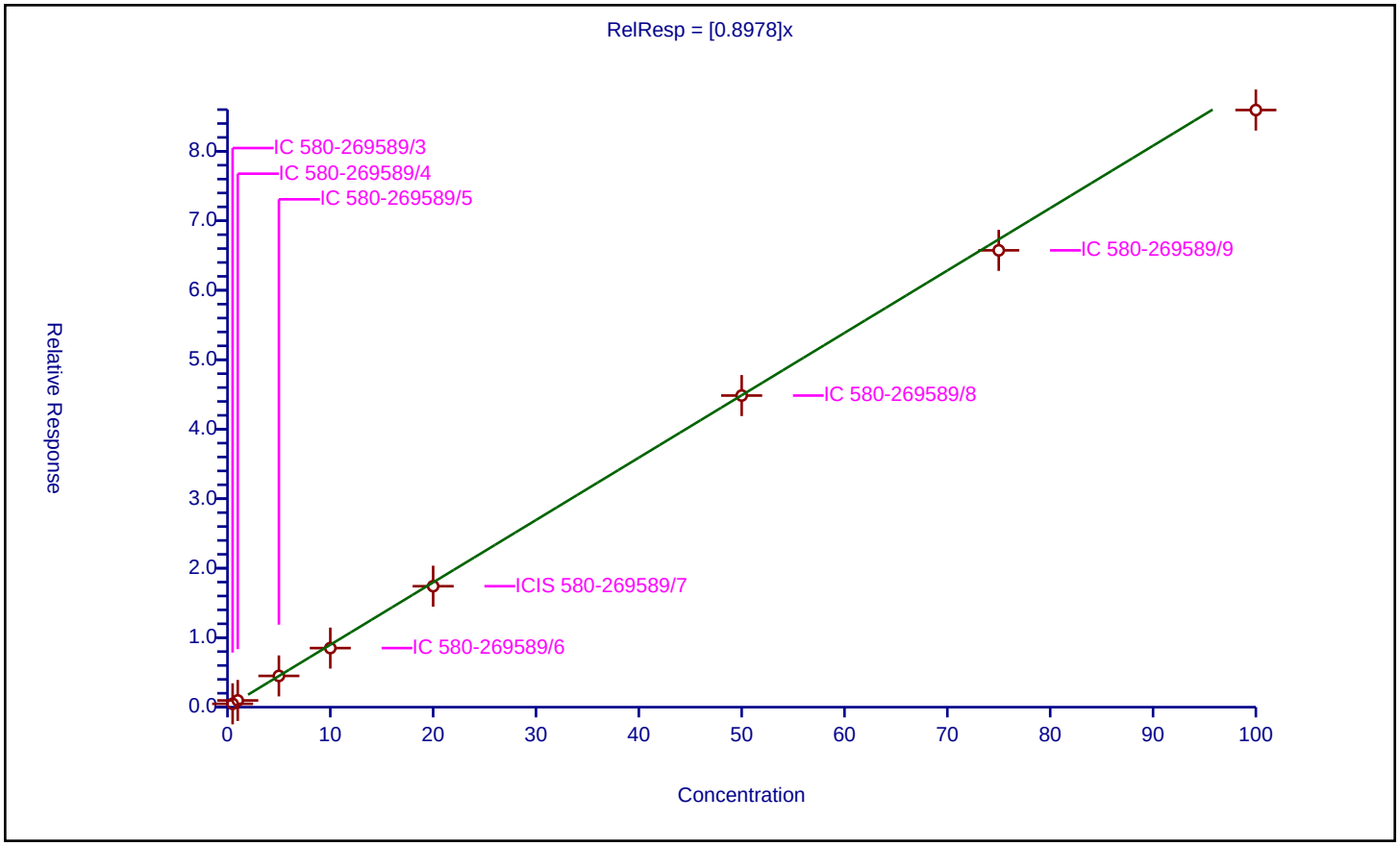
Curve Coefficients

Intercept:	0
Slope:	0.8978

Error Coefficients

Standard Error:	1330000
Relative Standard Error:	5.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.480517	48.75	1385953.0	0.961034	Y
2	IC 580-269589/4	1.0	0.967941	48.75	1359845.0	0.967941	Y
3	IC 580-269589/5	5.0	4.497566	48.75	1422948.0	0.899513	Y
4	IC 580-269589/6	10.0	8.502025	48.75	1358597.0	0.850202	Y
5	ICIS 580-269589/7	20.0	17.407903	48.75	1364764.0	0.870395	Y
6	IC 580-269589/8	50.0	44.849806	48.75	1405755.0	0.896996	Y
7	IC 580-269589/9	75.0	65.745878	48.75	1473218.0	0.876612	Y
8	IC 580-269589/10	100.0	85.938099	48.75	1444559.0	0.859381	Y



Calibration / Propionitrile

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

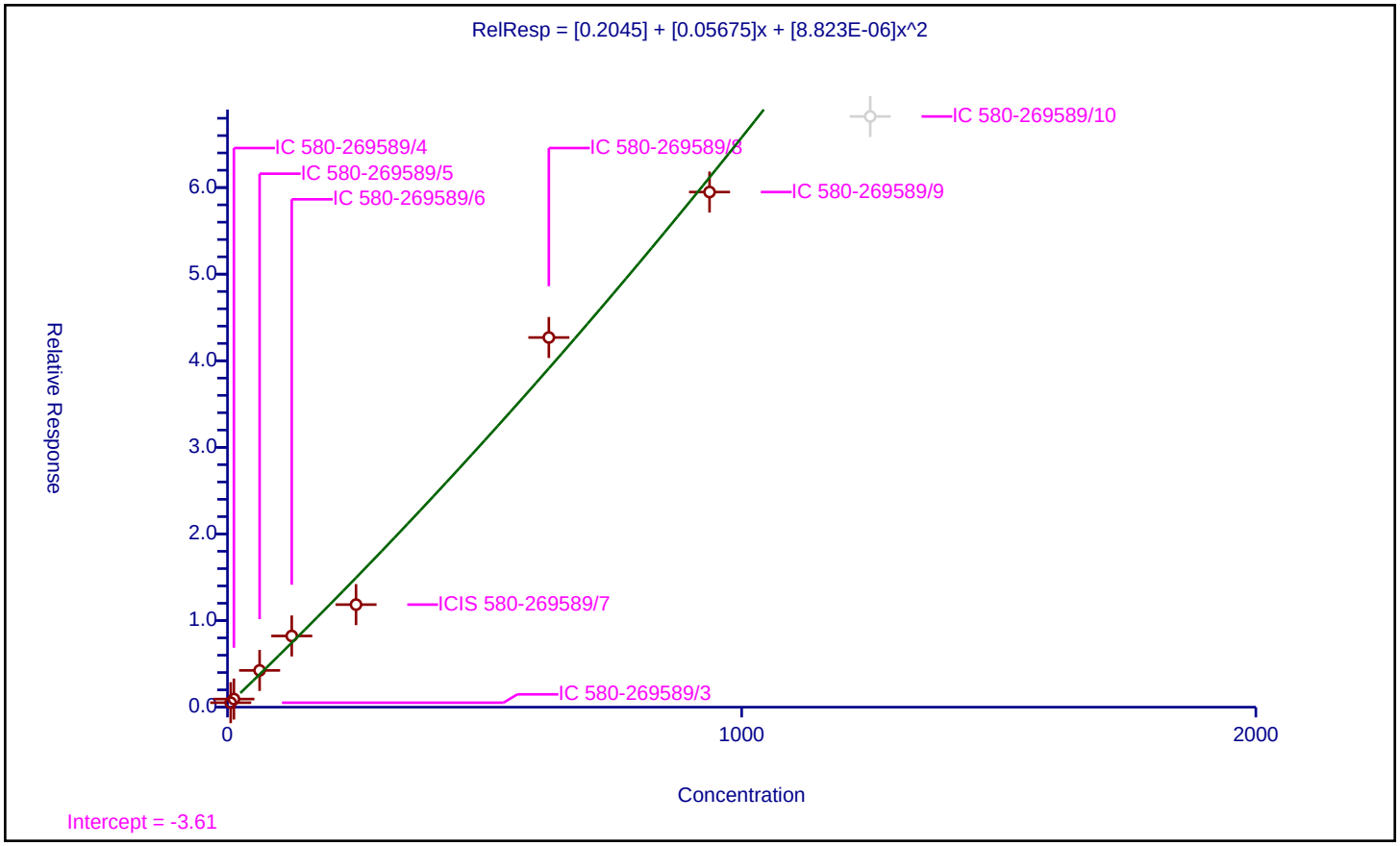
Curve Coefficients

Intercept:	0.2045
Slope:	0.05675
Second Order:	8.823E-06

Error Coefficients

Standard Error:	1110000
Relative Standard Error:	15.2
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	6.25	0.516852	48.75	1385953.0	0.082696	Y
2	IC 580-269589/4	12.5	0.936895	48.75	1359845.0	0.074952	Y
3	IC 580-269589/5	62.5	4.244077	48.75	1422948.0	0.067905	Y
4	IC 580-269589/6	125.0	8.221315	48.75	1358597.0	0.065771	Y
5	ICIS 580-269589/7	250.0	11.84269	48.75	1364764.0	0.047371	Y
6	IC 580-269589/8	625.0	42.684353	48.75	1405755.0	0.068295	Y
7	IC 580-269589/9	937.5	59.480991	48.75	1473218.0	0.063446	Y
8	IC 580-269589/10	1250.0	68.207188	48.75	1444559.0	0.054566	N



Calibration / 1,1-Dichloroethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

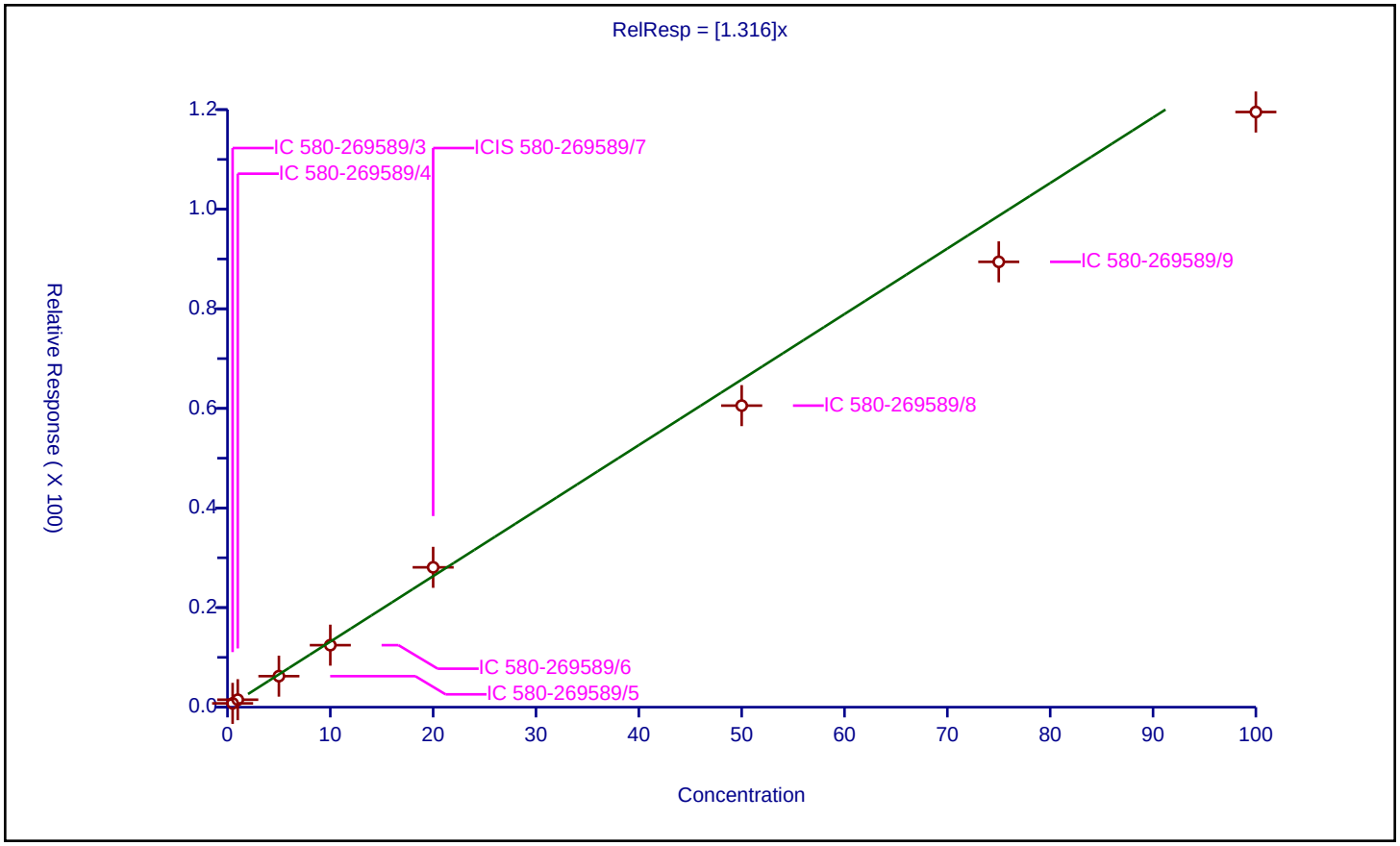
Curve Coefficients

Intercept:	0
Slope:	1.316

Error Coefficients

Standard Error:	800000
Relative Standard Error:	10.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.984

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.764795	48.75	577890.0	1.52959	Y
2	IC 580-269589/4	1.0	1.502907	48.75	545171.0	1.502907	Y
3	IC 580-269589/5	5.0	6.225787	48.75	608190.0	1.245157	Y
4	IC 580-269589/6	10.0	12.449912	48.75	548784.0	1.244991	Y
5	ICIS 580-269589/7	20.0	28.078621	48.75	548520.0	1.403931	Y
6	IC 580-269589/8	50.0	60.554274	48.75	605359.0	1.211085	Y
7	IC 580-269589/9	75.0	89.429529	48.75	643994.0	1.192394	Y
8	IC 580-269589/10	100.0	119.521002	48.75	631607.0	1.19521	Y



Calibration / Vinyl acetate

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

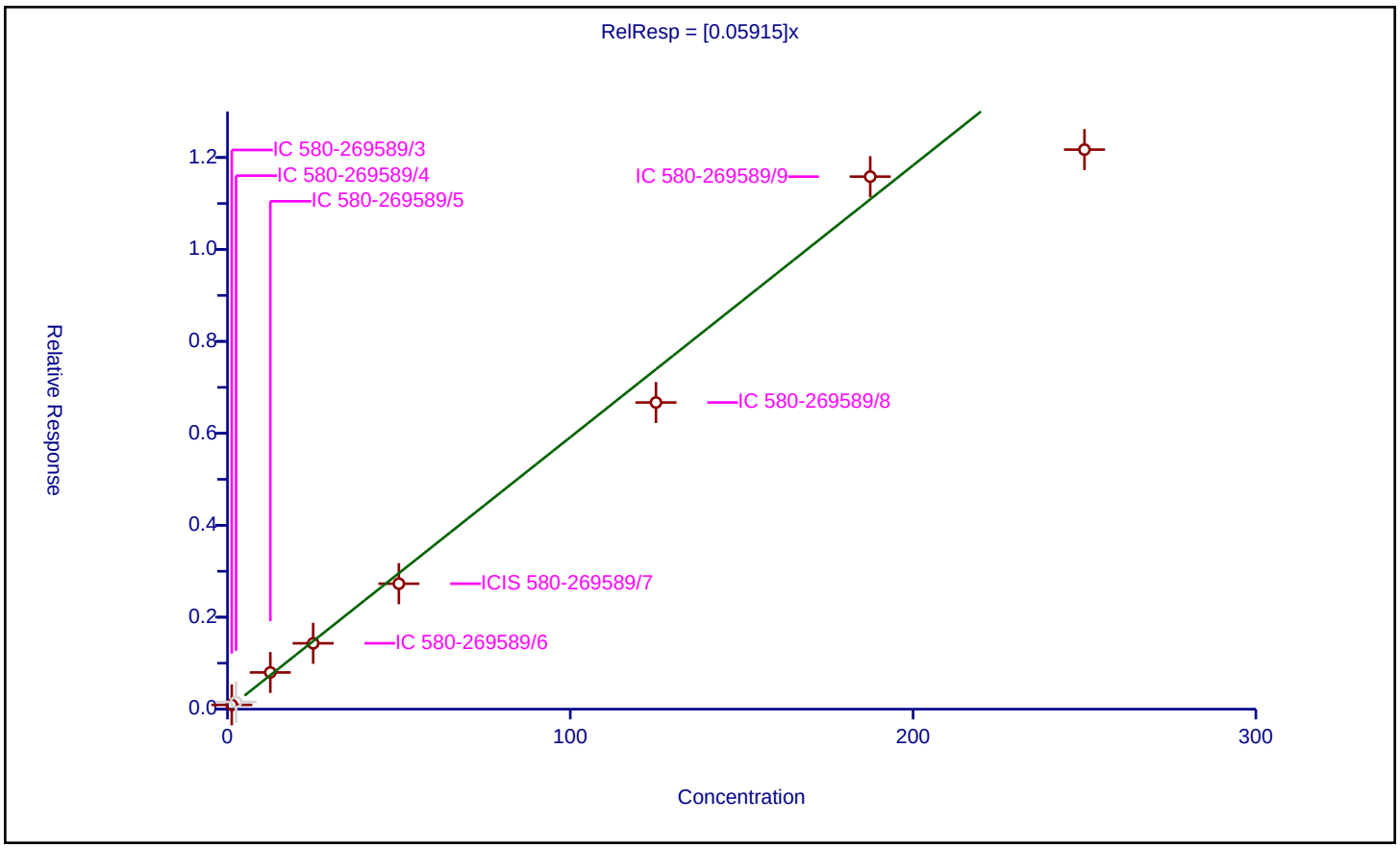
Curve Coefficients

Intercept:	0
Slope:	0.05915

Error Coefficients

Standard Error:	223000
Relative Standard Error:	14.3
Correlation Coefficient:	0.971
Coefficient of Determination (Adjusted):	0.976

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	1.25	0.093036	48.75	1385953.0	0.074429	Y
2	IC 580-269589/4	2.5	0.156484	48.75	1359845.0	0.062594	N
3	IC 580-269589/5	12.5	0.798632	48.75	1422948.0	0.063891	Y
4	IC 580-269589/6	25.0	1.432326	48.75	1358597.0	0.057293	Y
5	ICIS 580-269589/7	50.0	2.729436	48.75	1364764.0	0.054589	Y
6	IC 580-269589/8	125.0	6.67114	48.75	1405755.0	0.053369	Y
7	IC 580-269589/9	187.5	11.584271	48.75	1473218.0	0.061783	Y
8	IC 580-269589/10	250.0	12.171816	48.75	1444559.0	0.048687	Y



Calibration / 2-Chloro-1,3-butadiene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

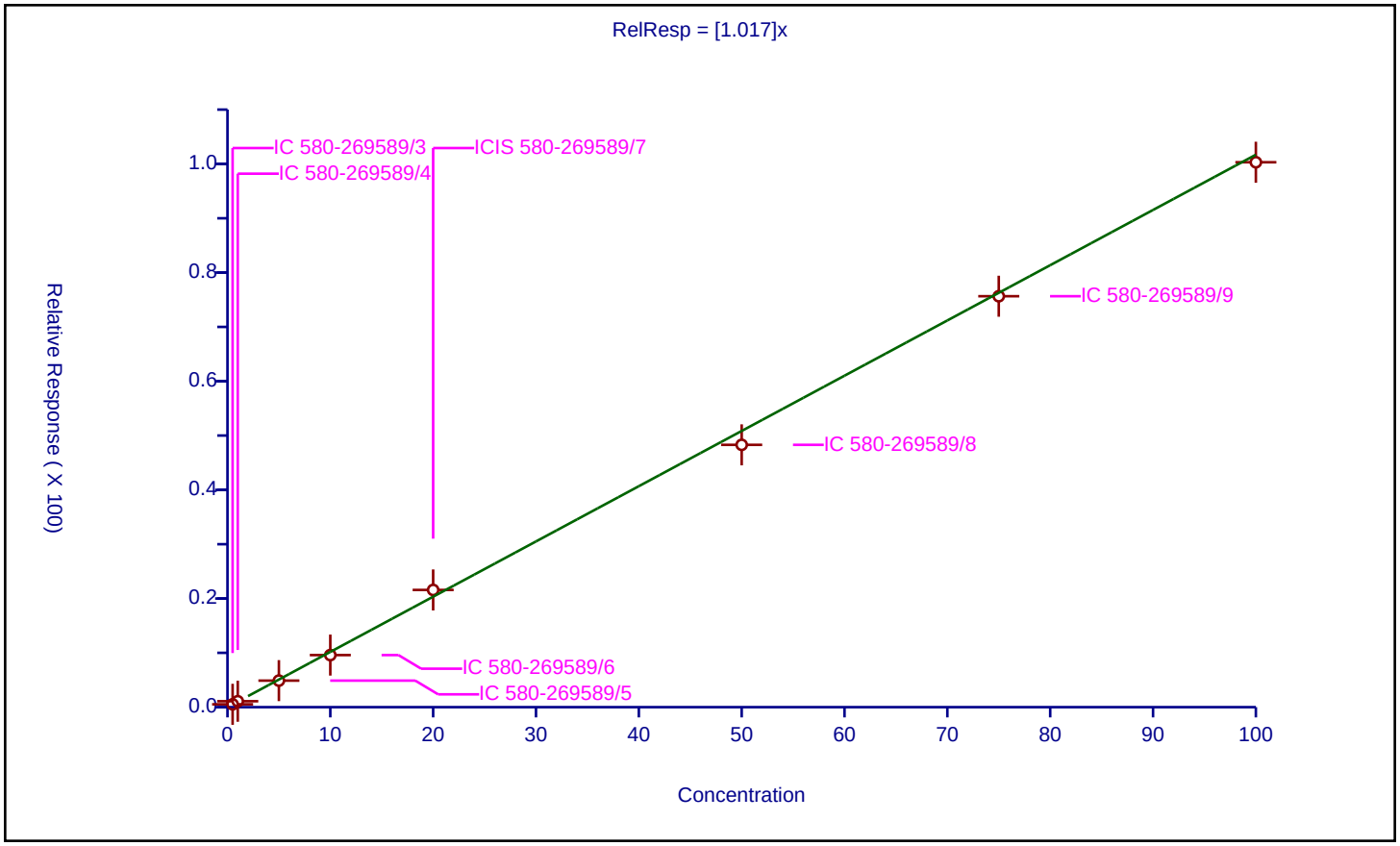
Curve Coefficients

Intercept:	0
Slope:	1.017

Error Coefficients

Standard Error:	766000
Relative Standard Error:	5.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.526269	48.75	712257.0	1.052538	Y
2	IC 580-269589/4	1.0	1.091593	48.75	697537.0	1.091593	Y
3	IC 580-269589/5	5.0	4.88444	48.75	712171.0	0.976888	Y
4	IC 580-269589/6	10.0	9.585126	48.75	673677.0	0.958513	Y
5	ICIS 580-269589/7	20.0	21.57731	48.75	664680.0	1.078865	Y
6	IC 580-269589/8	50.0	48.289461	48.75	720868.0	0.965789	Y
7	IC 580-269589/9	75.0	75.645713	48.75	735675.0	1.00861	Y
8	IC 580-269589/10	100.0	100.308725	48.75	718634.0	1.003087	Y



Calibration / Hexane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

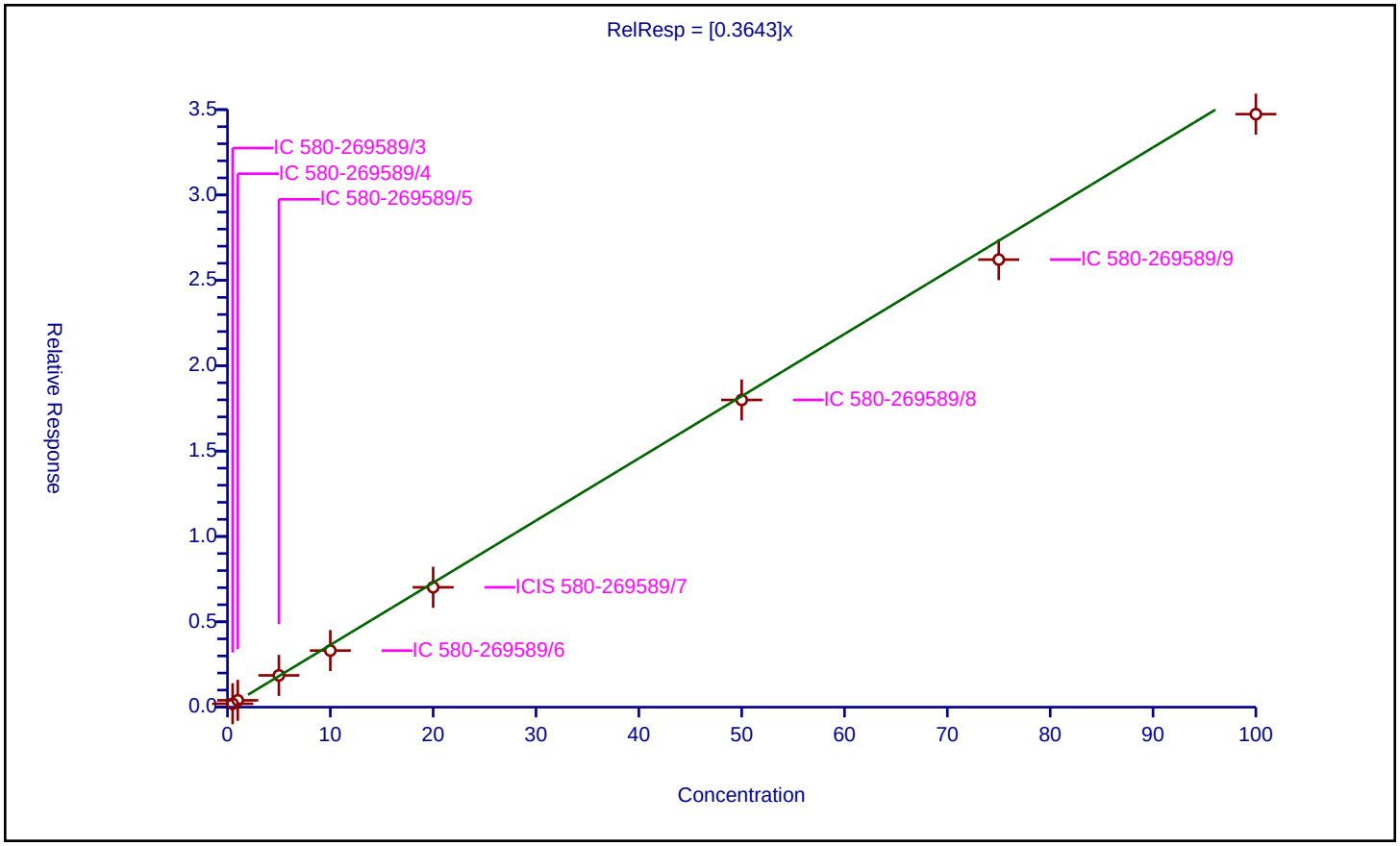
Curve Coefficients

Intercept:	0
Slope:	0.3643

Error Coefficients

Standard Error:	535000
Relative Standard Error:	7.0
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.200459	48.75	1385953.0	0.400917	Y
2	IC 580-269589/4	1.0	0.401875	48.75	1359845.0	0.401875	Y
3	IC 580-269589/5	5.0	1.861886	48.75	1422948.0	0.372377	Y
4	IC 580-269589/6	10.0	3.314297	48.75	1358597.0	0.33143	Y
5	ICIS 580-269589/7	20.0	7.020071	48.75	1364764.0	0.351004	Y
6	IC 580-269589/8	50.0	17.993342	48.75	1405755.0	0.359867	Y
7	IC 580-269589/9	75.0	26.213725	48.75	1473218.0	0.349516	Y
8	IC 580-269589/10	100.0	34.732239	48.75	1444559.0	0.347322	Y



Calibration / 2-Butanone (MEK)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

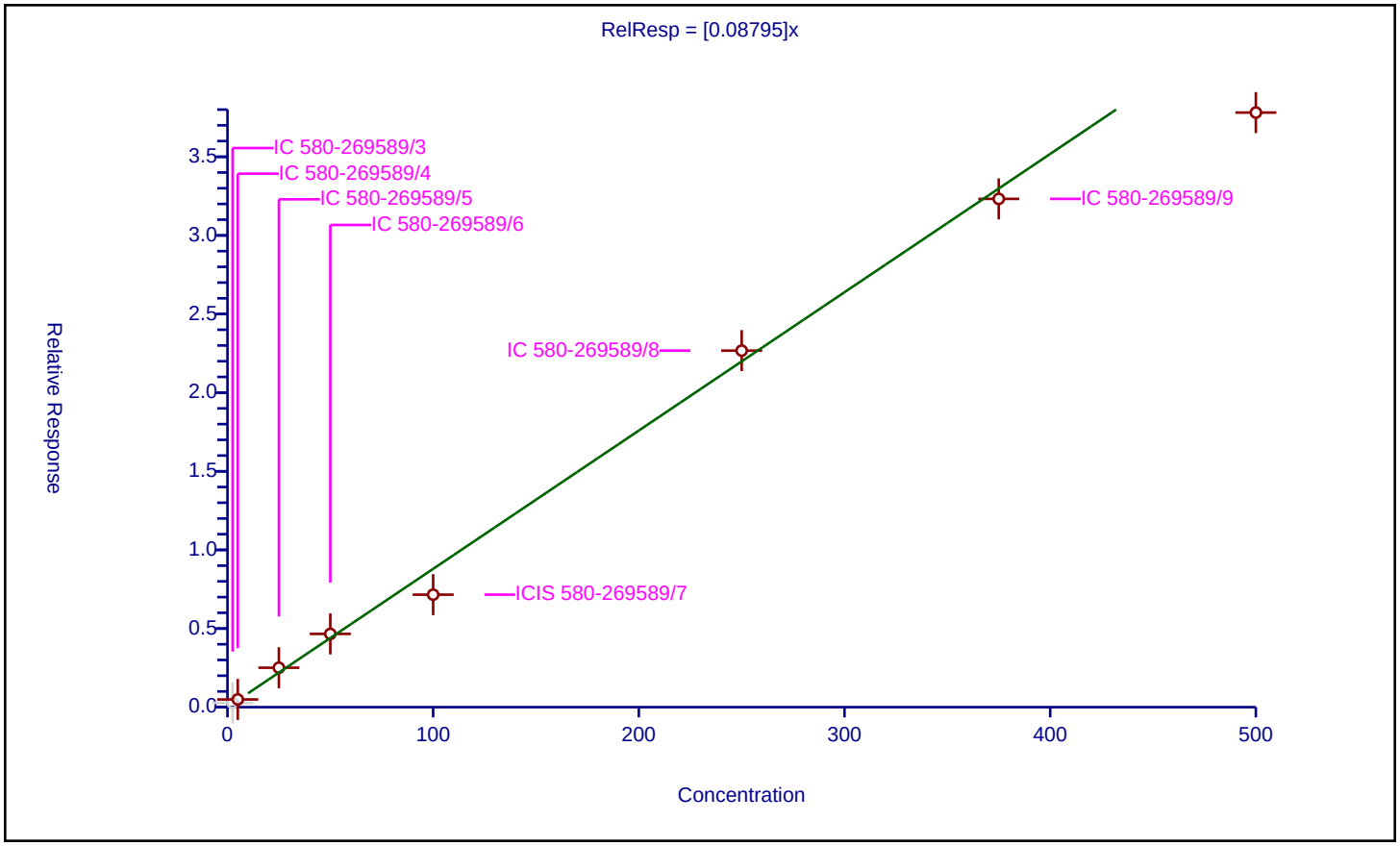
Curve Coefficients

Intercept:	0
Slope:	0.08795

Error Coefficients

Standard Error:	292000
Relative Standard Error:	12.4
Correlation Coefficient:	0.986
Coefficient of Determination (Adjusted):	0.981

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	2.5	0.273828	48.75	577890.0	0.109531	N
2	IC 580-269589/4	5.0	0.490566	48.75	545171.0	0.098113	Y
3	IC 580-269589/5	25.0	2.508558	48.75	608190.0	0.100342	Y
4	IC 580-269589/6	50.0	4.65839	48.75	548784.0	0.093168	Y
5	ICIS 580-269589/7	100.0	7.154213	48.75	548520.0	0.071542	Y
6	IC 580-269589/8	250.0	22.672862	48.75	605359.0	0.090691	Y
7	IC 580-269589/9	375.0	32.322611	48.75	643994.0	0.086194	Y
8	IC 580-269589/10	500.0	37.811396	48.75	631607.0	0.075623	Y



Calibration / Isopropyl ether

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

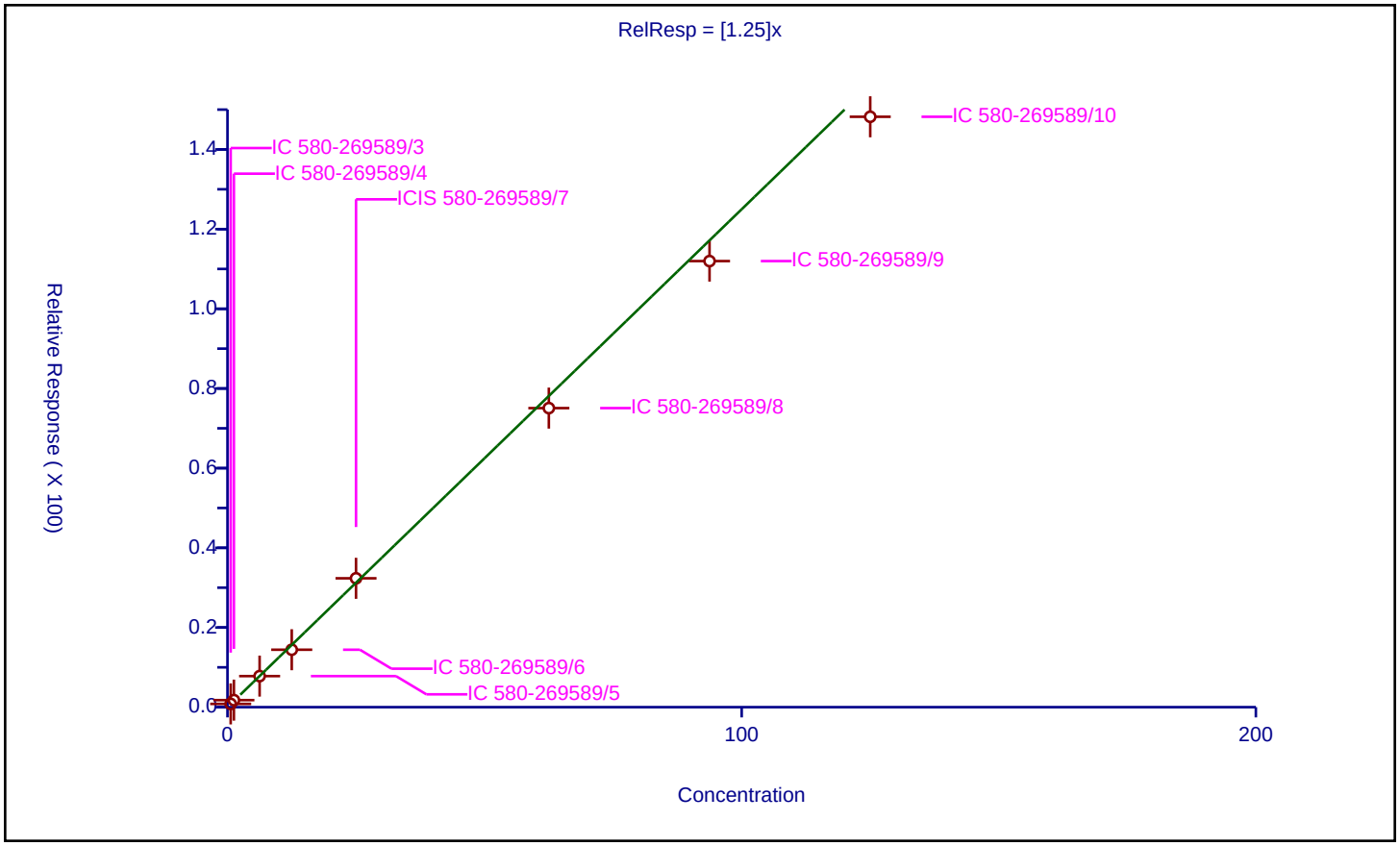
Curve Coefficients

Intercept:	0
Slope:	1.25

Error Coefficients

Standard Error:	2280000
Relative Standard Error:	6.8
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.625	0.819035	48.75	1385953.0	1.310456	Y
2	IC 580-269589/4	1.25	1.765561	48.75	1359845.0	1.412448	Y
3	IC 580-269589/5	6.25	7.797681	48.75	1422948.0	1.247629	Y
4	IC 580-269589/6	12.5	14.415837	48.75	1358597.0	1.153267	Y
5	ICIS 580-269589/7	25.0	32.344771	48.75	1364764.0	1.293791	Y
6	IC 580-269589/8	62.5	75.070294	48.75	1405755.0	1.201125	Y
7	IC 580-269589/9	93.75	111.975317	48.75	1473218.0	1.194403	Y
8	IC 580-269589/10	125.0	148.204038	48.75	1444559.0	1.185632	Y



Calibration / Methacrylonitrile

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

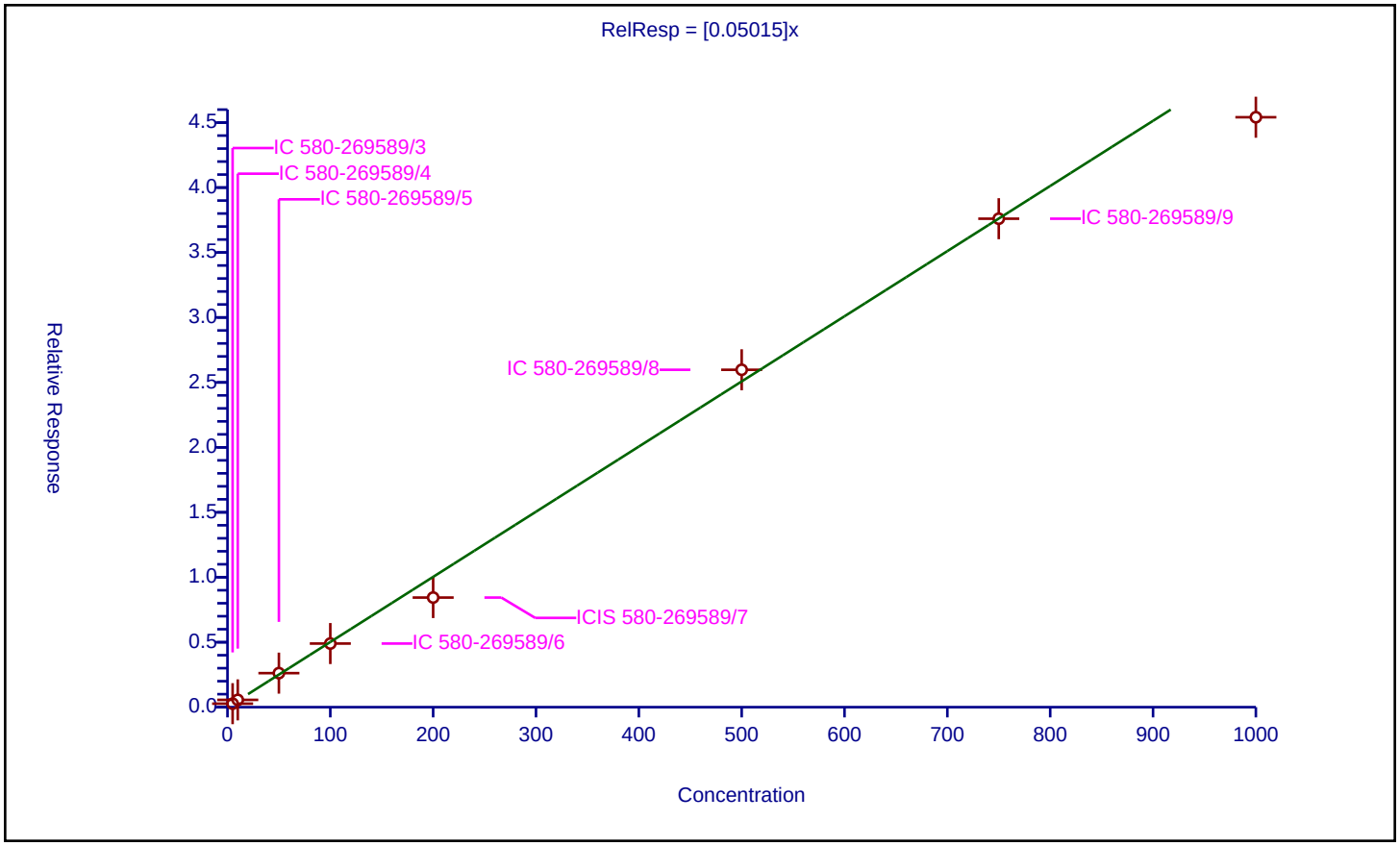
Curve Coefficients

Intercept:	0
Slope:	0.05015

Error Coefficients

Standard Error:	731000
Relative Standard Error:	9.1
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.989

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	5.0	0.269893	48.75	1385953.0	0.053979	Y
2	IC 580-269589/4	10.0	0.561836	48.75	1359845.0	0.056184	Y
3	IC 580-269589/5	50.0	2.619817	48.75	1422948.0	0.052396	Y
4	IC 580-269589/6	100.0	4.897617	48.75	1358597.0	0.048976	Y
5	ICIS 580-269589/7	200.0	8.43778	48.75	1364764.0	0.042189	Y
6	IC 580-269589/8	500.0	25.971563	48.75	1405755.0	0.051943	Y
7	IC 580-269589/9	750.0	37.601535	48.75	1473218.0	0.050135	Y
8	IC 580-269589/10	1000.0	45.413503	48.75	1444559.0	0.045414	Y



Calibration / cis-1,2-Dichloroethene

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

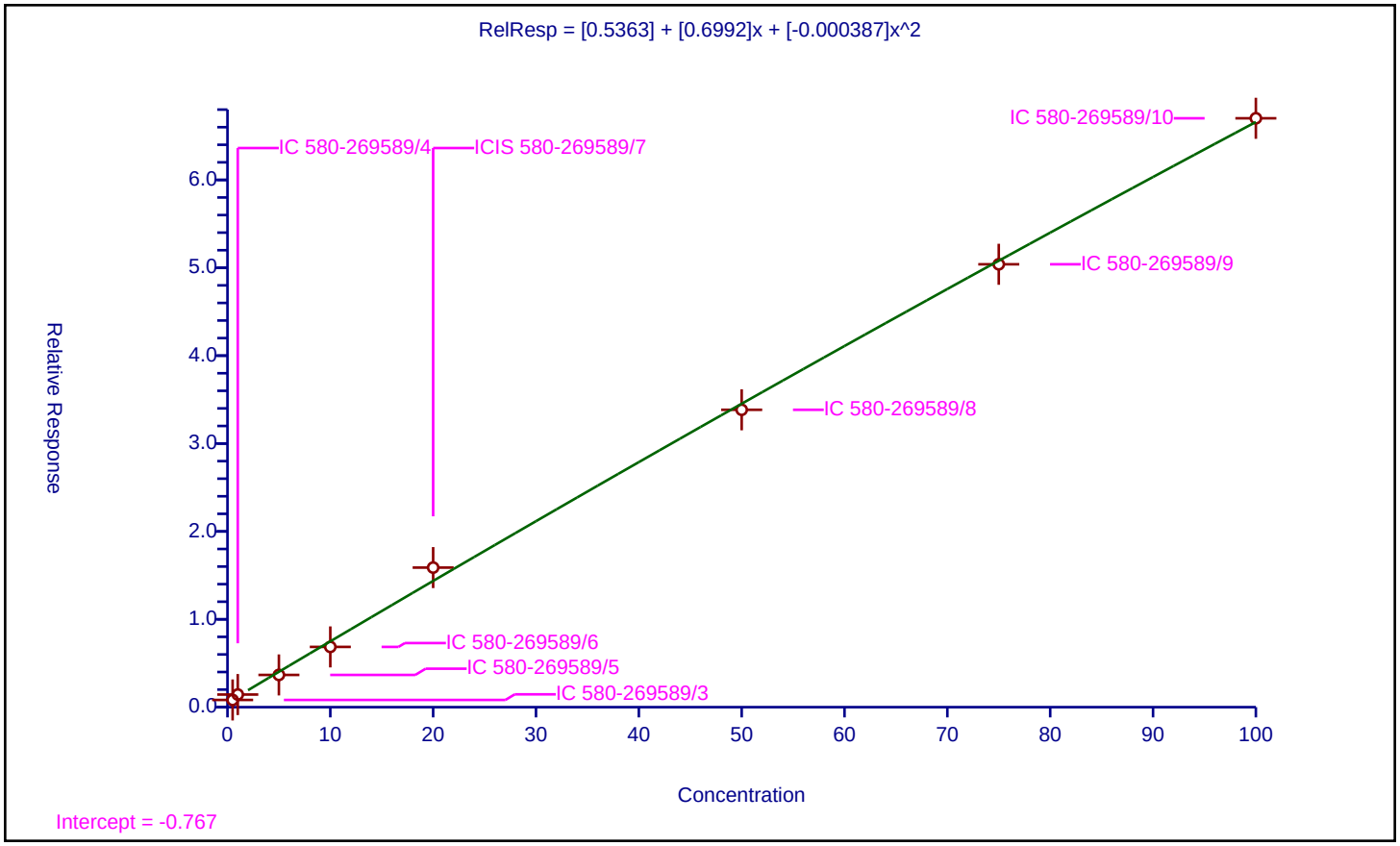
Curve Coefficients

Intercept:	0.5363
Slope:	0.6992
Second Order:	-0.000387

Error Coefficients

Standard Error:	532000
Relative Standard Error:	17.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.820978	48.75	577890.0	1.641956	Y
2	IC 580-269589/4	1.0	1.437719	48.75	545171.0	1.437719	Y
3	IC 580-269589/5	5.0	3.669135	48.75	608190.0	0.733827	Y
4	IC 580-269589/6	10.0	6.8586	48.75	548784.0	0.68586	Y
5	ICIS 580-269589/7	20.0	15.883922	48.75	548520.0	0.794196	Y
6	IC 580-269589/8	50.0	33.839575	48.75	605359.0	0.676791	Y
7	IC 580-269589/9	75.0	50.397447	48.75	643994.0	0.671966	Y
8	IC 580-269589/10	100.0	67.012523	48.75	631607.0	0.670125	Y



Calibration / Ethyl acetate

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

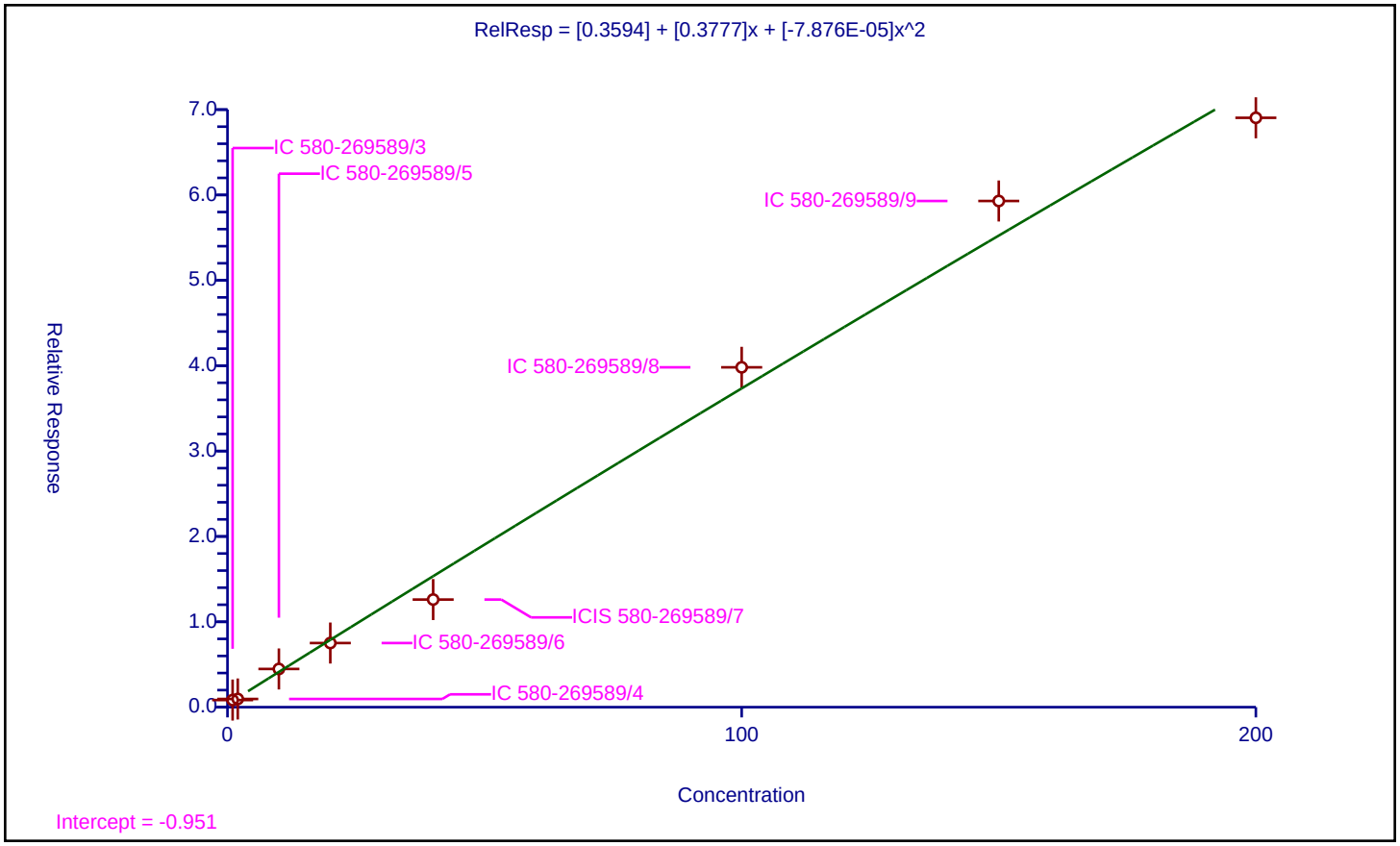
Curve Coefficients

Intercept:	0.3594
Slope:	0.3777
Second Order:	-7.876E-05

Error Coefficients

Standard Error:	1330000
Relative Standard Error:	18.2
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	1.0	0.833245	48.75	1385953.0	0.833245	Y
2	IC 580-269589/4	2.0	0.959983	48.75	1359845.0	0.479991	Y
3	IC 580-269589/5	10.0	4.475503	48.75	1422948.0	0.44755	Y
4	IC 580-269589/6	20.0	7.512454	48.75	1358597.0	0.375623	Y
5	ICIS 580-269589/7	40.0	12.606358	48.75	1364764.0	0.315159	Y
6	IC 580-269589/8	100.0	39.810792	48.75	1405755.0	0.398108	Y
7	IC 580-269589/9	150.0	59.294193	48.75	1473218.0	0.395295	Y
8	IC 580-269589/10	200.0	69.041489	48.75	1444559.0	0.345207	Y



Calibration / Chlorobromomethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

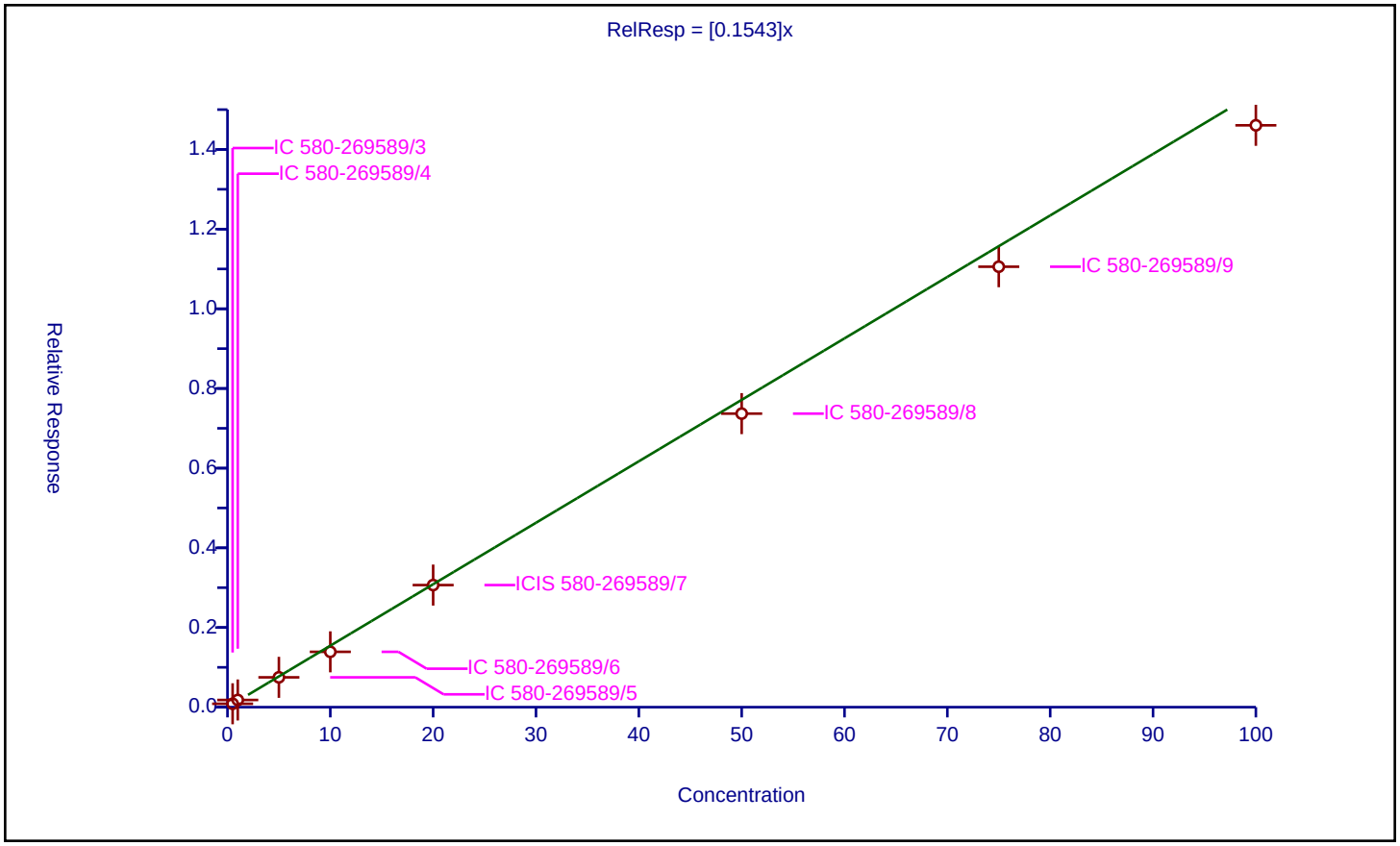
Curve Coefficients

Intercept:	0
Slope:	0.1543

Error Coefficients

Standard Error:	225000
Relative Standard Error:	9.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.989

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.085509	48.75	1385953.0	0.171018	Y
2	IC 580-269589/4	1.0	0.180611	48.75	1359845.0	0.180611	Y
3	IC 580-269589/5	5.0	0.748544	48.75	1422948.0	0.149709	Y
4	IC 580-269589/6	10.0	1.388836	48.75	1358597.0	0.138884	Y
5	ICIS 580-269589/7	20.0	3.06503	48.75	1364764.0	0.153251	Y
6	IC 580-269589/8	50.0	7.368498	48.75	1405755.0	0.14737	Y
7	IC 580-269589/9	75.0	11.056207	48.75	1473218.0	0.147416	Y
8	IC 580-269589/10	100.0	14.606112	48.75	1444559.0	0.146061	Y



Calibration / Chloroform

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

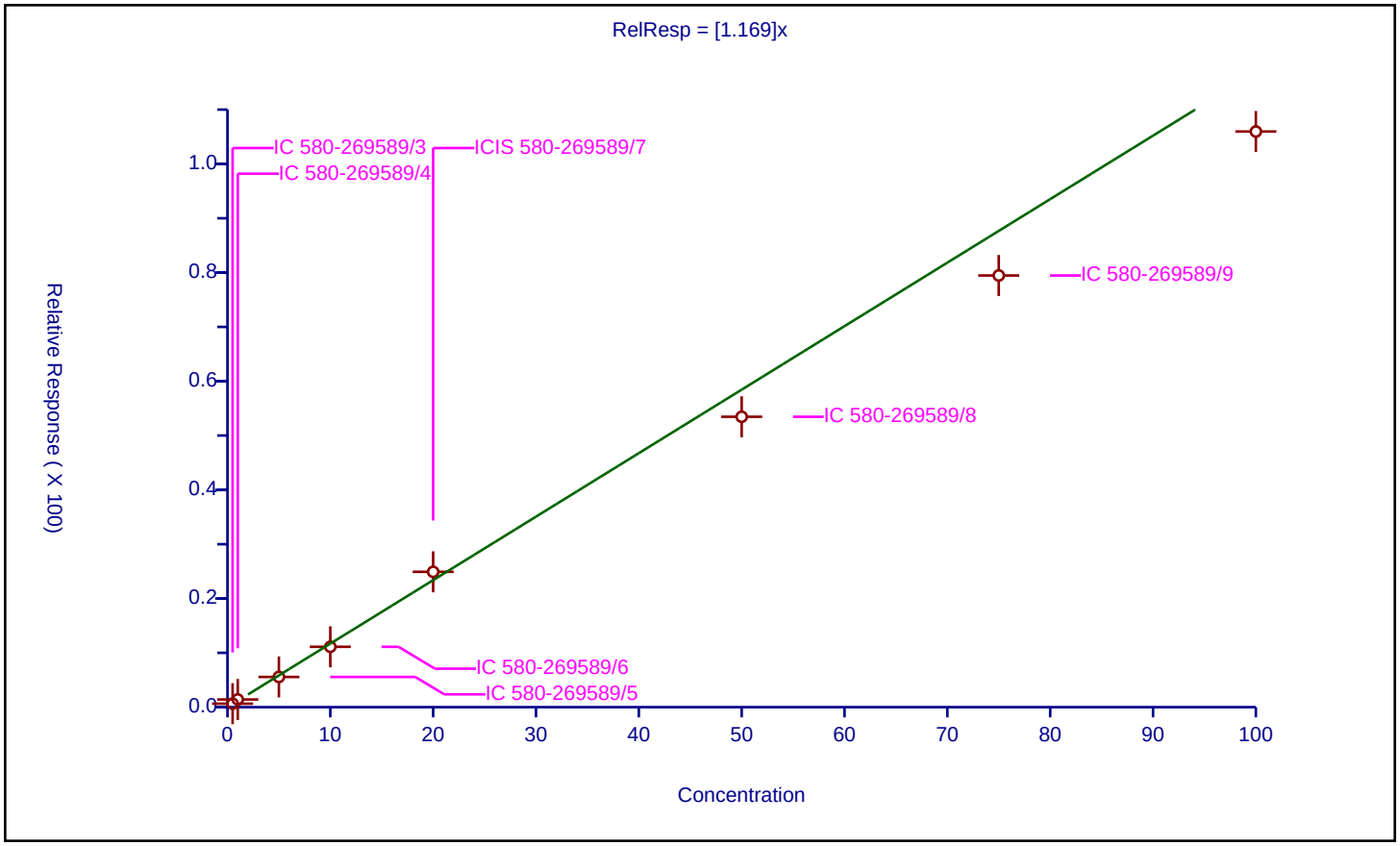
Curve Coefficients

Intercept:	0
Slope:	1.169

Error Coefficients

Standard Error:	710000
Relative Standard Error:	11.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.983

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.639354	48.75	577890.0	1.278708	Y
2	IC 580-269589/4	1.0	1.415453	48.75	545171.0	1.415453	Y
3	IC 580-269589/5	5.0	5.562657	48.75	608190.0	1.112531	Y
4	IC 580-269589/6	10.0	11.109692	48.75	548784.0	1.110969	Y
5	ICIS 580-269589/7	20.0	24.913586	48.75	548520.0	1.245679	Y
6	IC 580-269589/8	50.0	53.455169	48.75	605359.0	1.069103	Y
7	IC 580-269589/9	75.0	79.462408	48.75	643994.0	1.059499	Y
8	IC 580-269589/10	100.0	105.965781	48.75	631607.0	1.059658	Y



Calibration / Tert-butyl ethyl ether

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

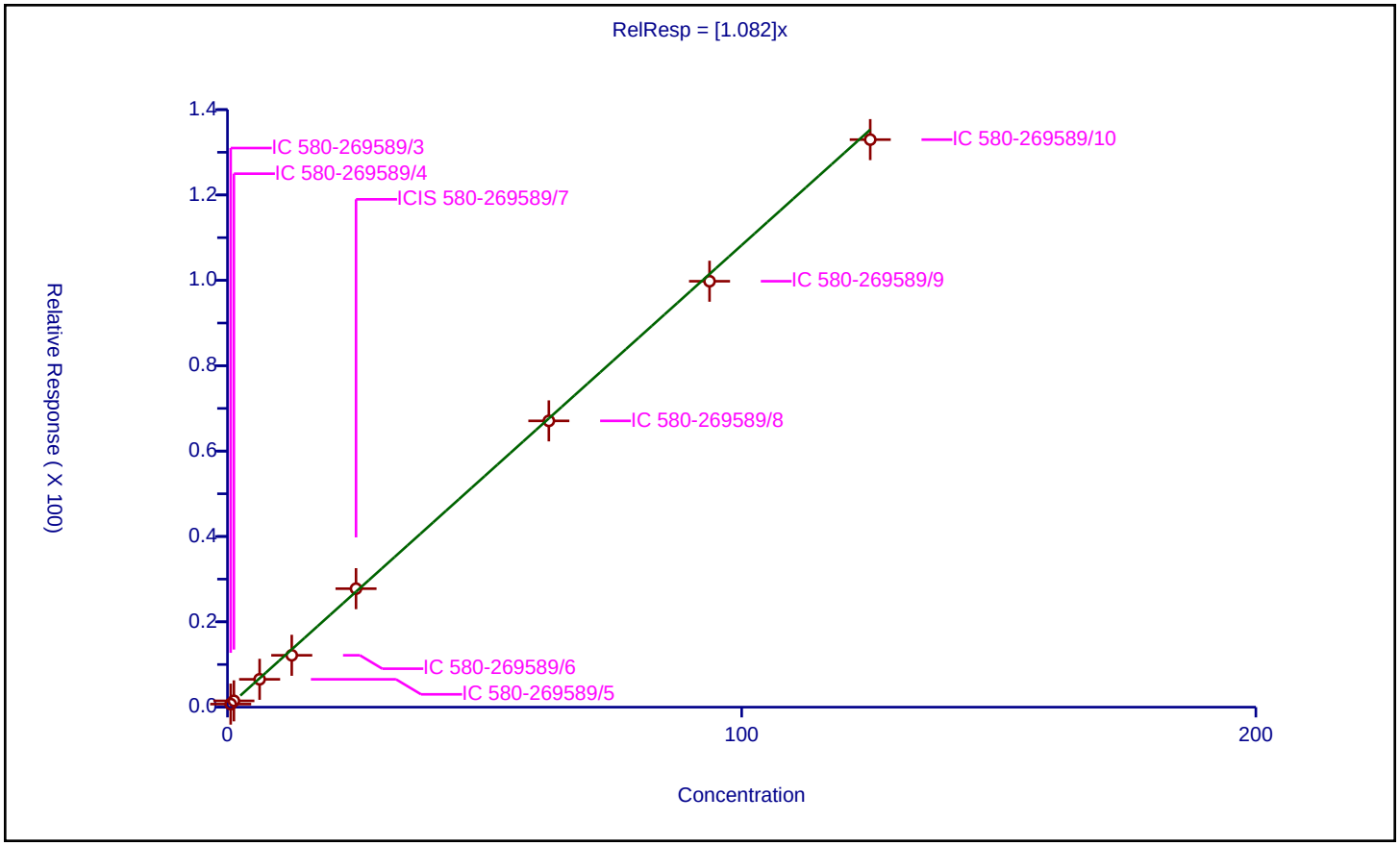
Curve Coefficients

Intercept:	0
Slope:	1.082

Error Coefficients

Standard Error:	2040000
Relative Standard Error:	6.0
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.625	0.715939	48.75	1385953.0	1.145502	Y
2	IC 580-269589/4	1.25	1.480878	48.75	1359845.0	1.184703	Y
3	IC 580-269589/5	6.25	6.528593	48.75	1422948.0	1.044575	Y
4	IC 580-269589/6	12.5	12.155268	48.75	1358597.0	0.972421	Y
5	ICIS 580-269589/7	25.0	27.765229	48.75	1364764.0	1.110609	Y
6	IC 580-269589/8	62.5	67.07501	48.75	1405755.0	1.0732	Y
7	IC 580-269589/9	93.75	99.792334	48.75	1473218.0	1.064452	Y
8	IC 580-269589/10	125.0	132.969348	48.75	1444559.0	1.063755	Y



Calibration / Isobutyl alcohol

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

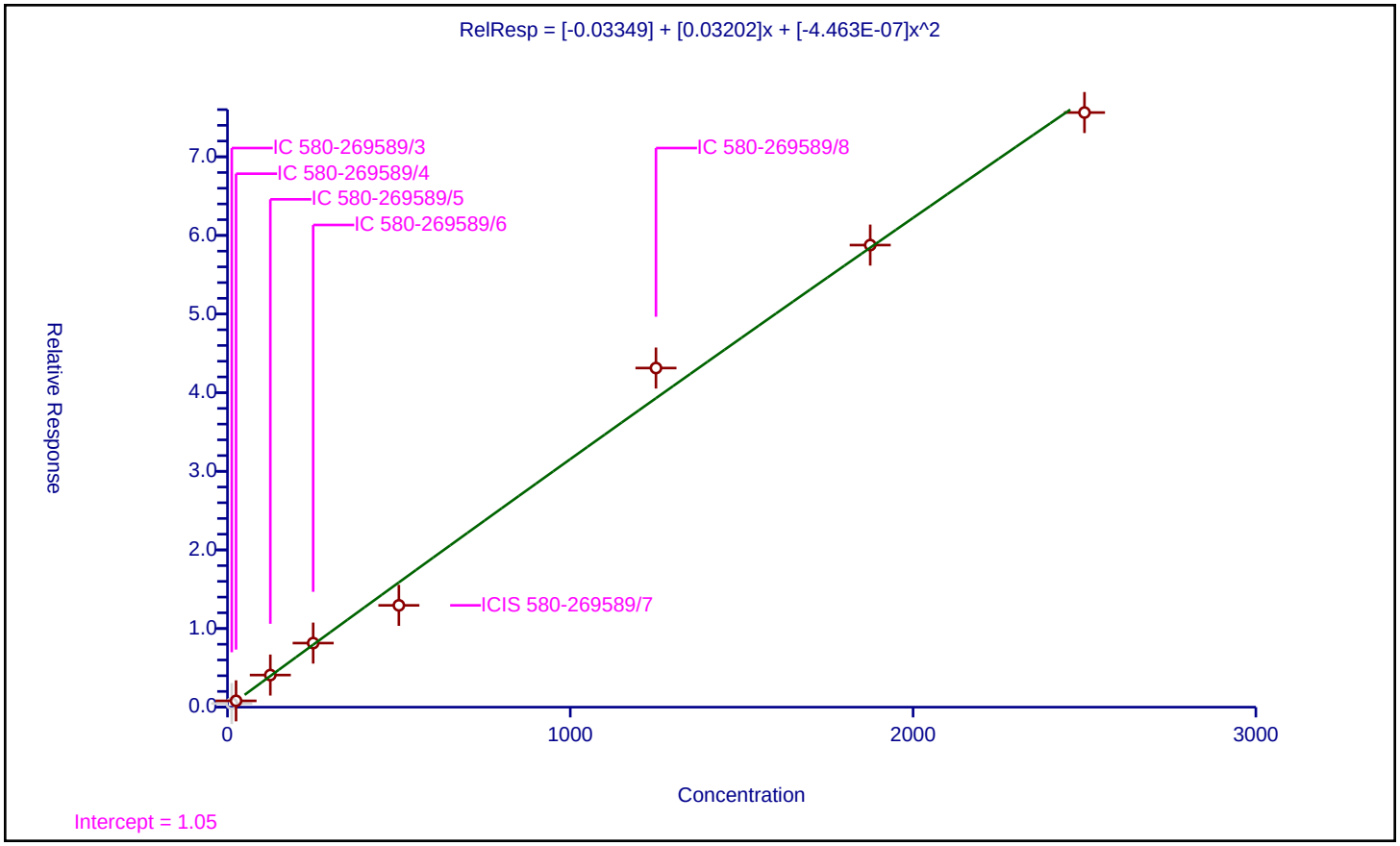
Curve Coefficients

Intercept:	-0.03349
Slope:	0.03202
Second Order:	-4.463E-07

Error Coefficients

Standard Error:	1570000
Relative Standard Error:	11.0
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	12.5	0.462648	48.75	1385953.0	0.037012	N
2	IC 580-269589/4	25.0	0.803176	48.75	1359845.0	0.032127	Y
3	IC 580-269589/5	125.0	4.082336	48.75	1422948.0	0.032659	Y
4	IC 580-269589/6	250.0	8.149478	48.75	1358597.0	0.032598	Y
5	ICIS 580-269589/7	500.0	12.947917	48.75	1364764.0	0.025896	Y
6	IC 580-269589/8	1250.0	43.132993	48.75	1405755.0	0.034506	Y
7	IC 580-269589/9	1875.0	58.768082	48.75	1473218.0	0.031343	Y
8	IC 580-269589/10	2500.0	75.62593	48.75	1444559.0	0.03025	Y



Calibration / 2,2-Dichloropropane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

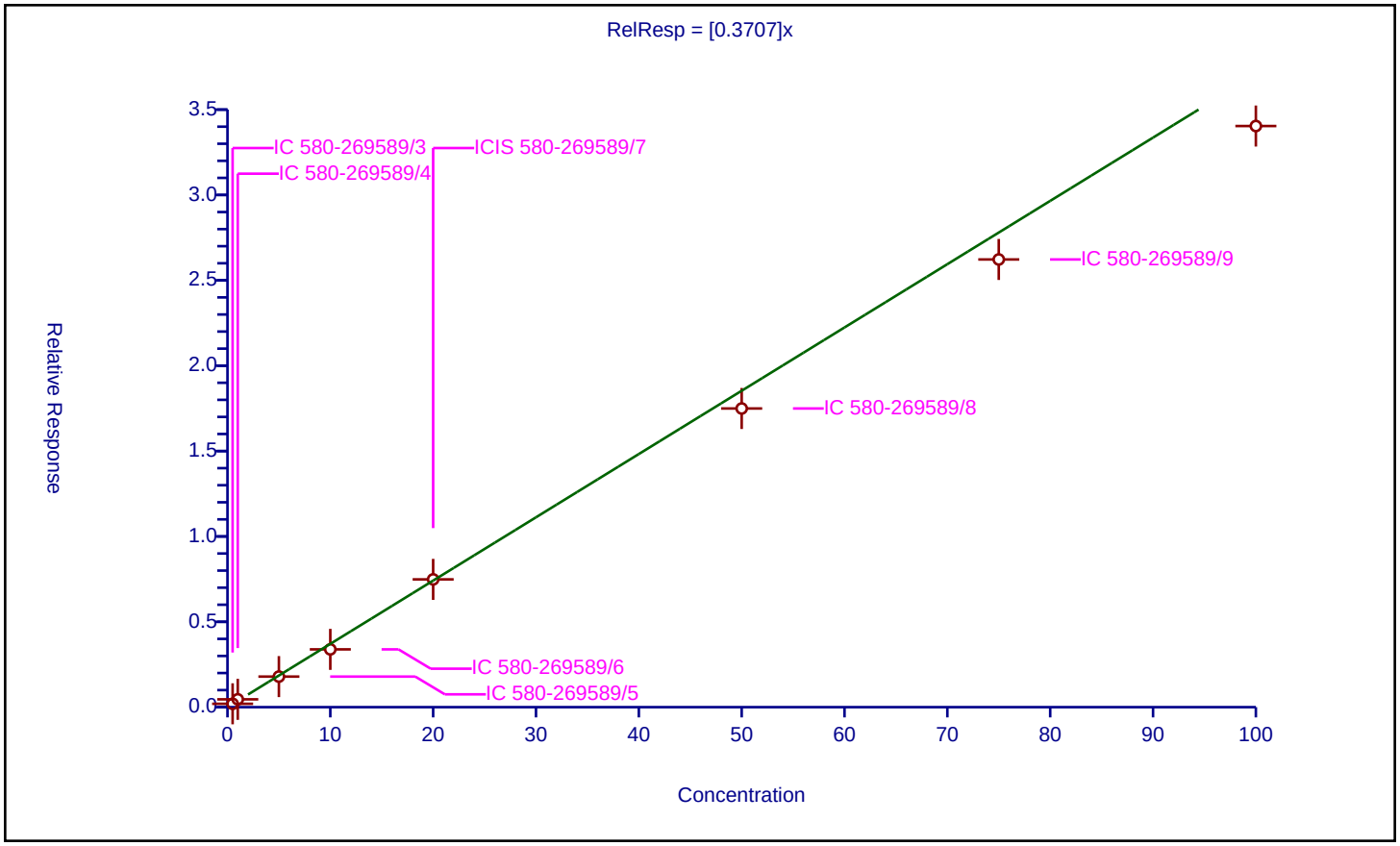
Curve Coefficients

Intercept:	0
Slope:	0.3707

Error Coefficients

Standard Error:	529000
Relative Standard Error:	10.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.985

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.198172	48.75	1385953.0	0.396345	Y
2	IC 580-269589/4	1.0	0.45798	48.75	1359845.0	0.45798	Y
3	IC 580-269589/5	5.0	1.791243	48.75	1422948.0	0.358249	Y
4	IC 580-269589/6	10.0	3.38599	48.75	1358597.0	0.338599	Y
5	ICIS 580-269589/7	20.0	7.484401	48.75	1364764.0	0.37422	Y
6	IC 580-269589/8	50.0	17.494001	48.75	1405755.0	0.34988	Y
7	IC 580-269589/9	75.0	26.22309	48.75	1473218.0	0.349641	Y
8	IC 580-269589/10	100.0	34.038226	48.75	1444559.0	0.340382	Y



Calibration / Dibromofluoromethane (Surr)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

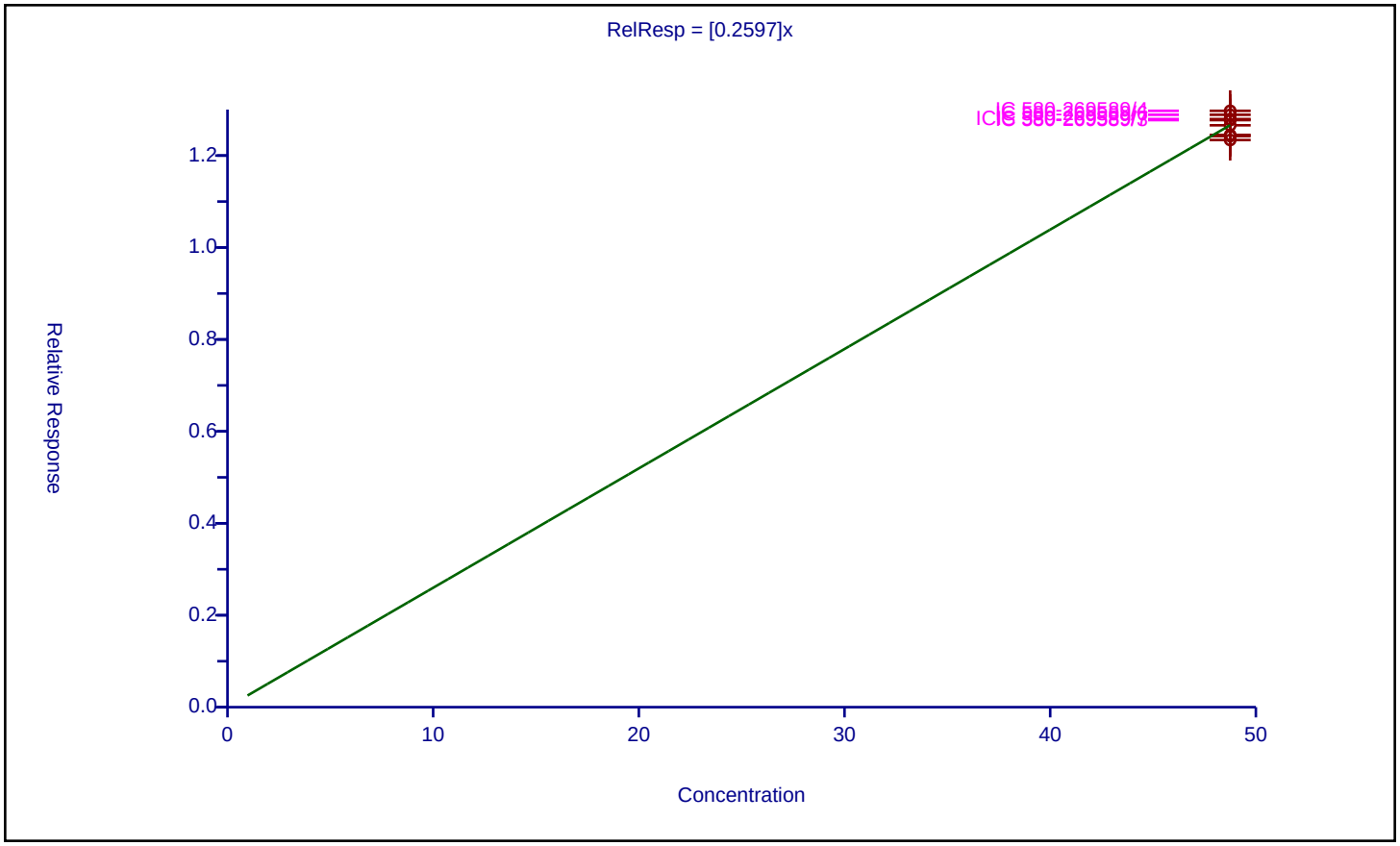
Curve Coefficients

Intercept:	0
Slope:	0.2597

Error Coefficients

Standard Error:	389000
Relative Standard Error:	1.8
Correlation Coefficient:	0
Coefficient of Determination (Adjusted):	0.000000000000000222

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	48.75	12.771139	48.75	1385953.0	0.261972	Y
2	IC 580-269589/4	48.75	12.97328	48.75	1359845.0	0.266119	Y
3	IC 580-269589/5	48.75	12.423345	48.75	1422948.0	0.254838	Y
4	IC 580-269589/6	48.75	12.887417	48.75	1358597.0	0.264357	Y
5	ICIS 580-269589/7	48.75	12.794355	48.75	1364764.0	0.262448	Y
6	IC 580-269589/8	48.75	12.658725	48.75	1405755.0	0.259666	Y
7	IC 580-269589/9	48.75	12.449695	48.75	1473218.0	0.255378	Y
8	IC 580-269589/10	48.75	12.338966	48.75	1444559.0	0.253107	Y



Calibration / Tetrahydrofuran

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

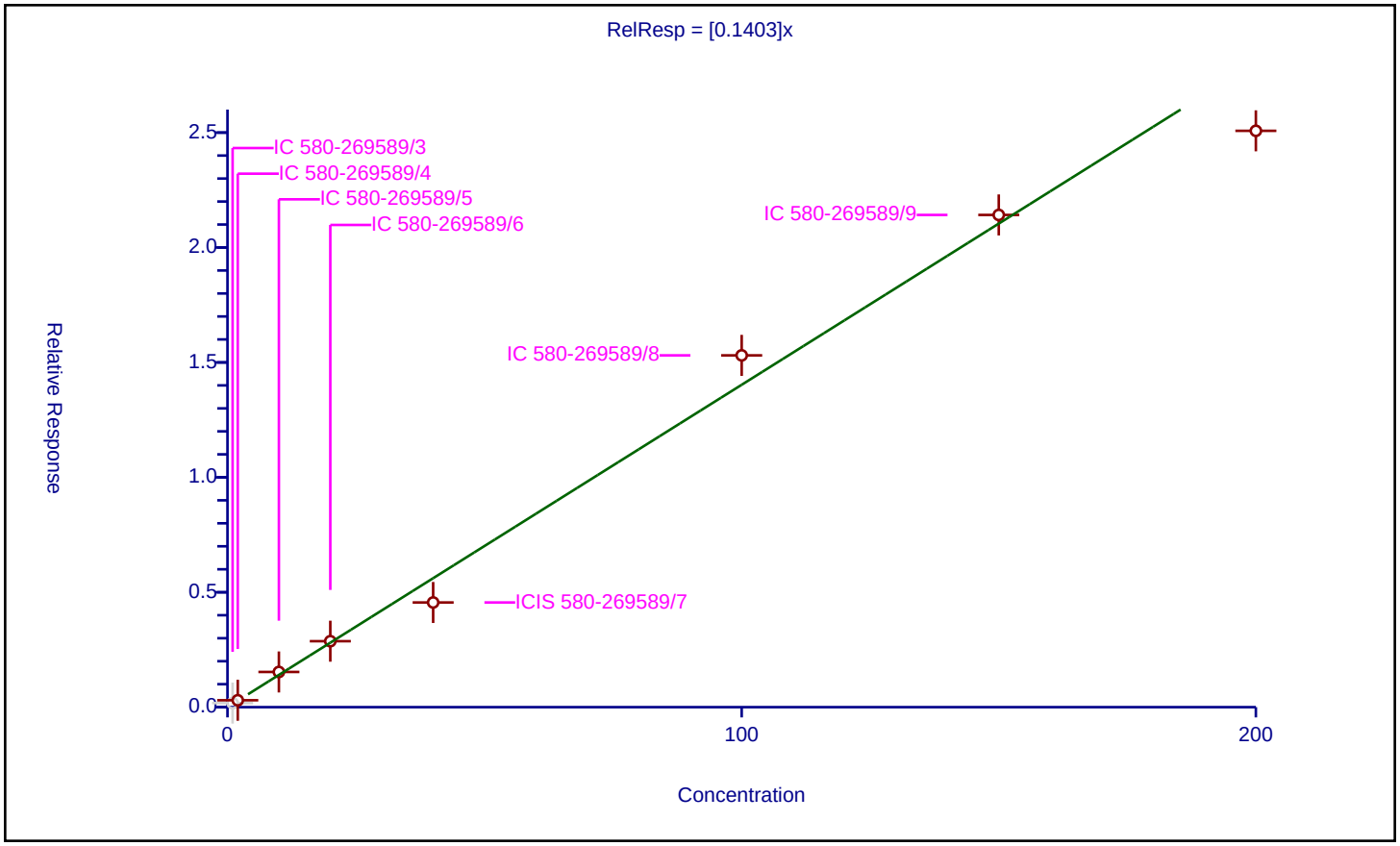
Curve Coefficients

Intercept:	0
Slope:	0.1403

Error Coefficients

Standard Error:	445000
Relative Standard Error:	10.7
Correlation Coefficient:	0.986
Coefficient of Determination (Adjusted):	0.986

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	1.0	0.177595	48.75	1385953.0	0.177595	N
2	IC 580-269589/4	2.0	0.300169	48.75	1359845.0	0.150085	Y
3	IC 580-269589/5	10.0	1.531827	48.75	1422948.0	0.153183	Y
4	IC 580-269589/6	20.0	2.870214	48.75	1358597.0	0.143511	Y
5	ICIS 580-269589/7	40.0	4.55468	48.75	1364764.0	0.113867	Y
6	IC 580-269589/8	100.0	15.306284	48.75	1405755.0	0.153063	Y
7	IC 580-269589/9	150.0	21.417011	48.75	1473218.0	0.14278	Y
8	IC 580-269589/10	200.0	25.077231	48.75	1444559.0	0.125386	Y



Calibration / 1,2-Dichloroethane-d4 (Surr)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

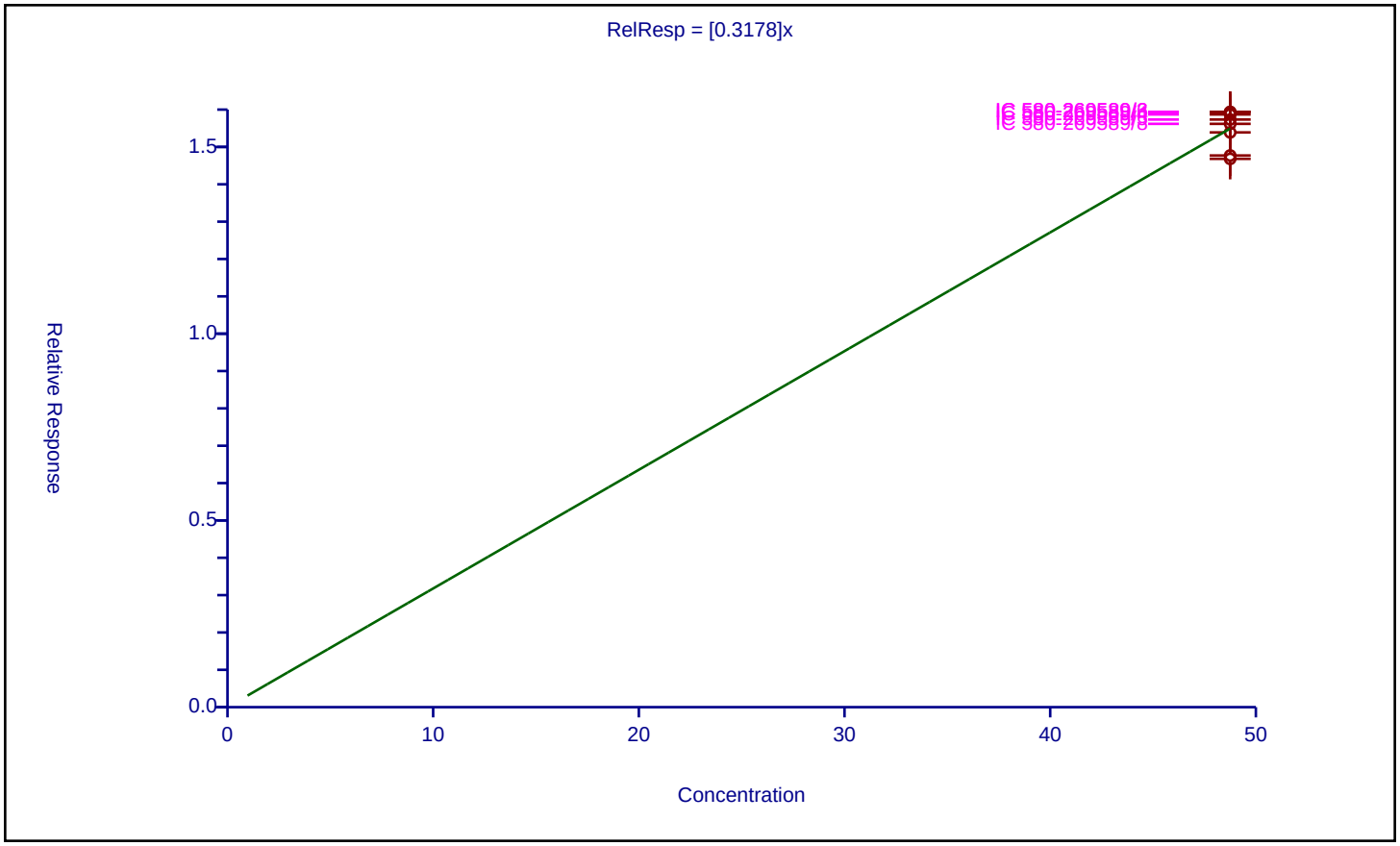
Curve Coefficients

Intercept:	0
Slope:	0.3178

Error Coefficients

Standard Error:	476000
Relative Standard Error:	3.3
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	48.75	15.935635	48.75	1385953.0	0.326885	Y
2	IC 580-269589/4	48.75	15.869934	48.75	1359845.0	0.325537	Y
3	IC 580-269589/5	48.75	15.734115	48.75	1422948.0	0.322751	Y
4	IC 580-269589/6	48.75	15.936613	48.75	1358597.0	0.326905	Y
5	ICIS 580-269589/7	48.75	14.771661	48.75	1364764.0	0.303008	Y
6	IC 580-269589/8	48.75	15.618949	48.75	1405755.0	0.320389	Y
7	IC 580-269589/9	48.75	15.389451	48.75	1473218.0	0.315681	Y
8	IC 580-269589/10	48.75	14.681402	48.75	1444559.0	0.301157	Y



Calibration / 1,2-Dichloroethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

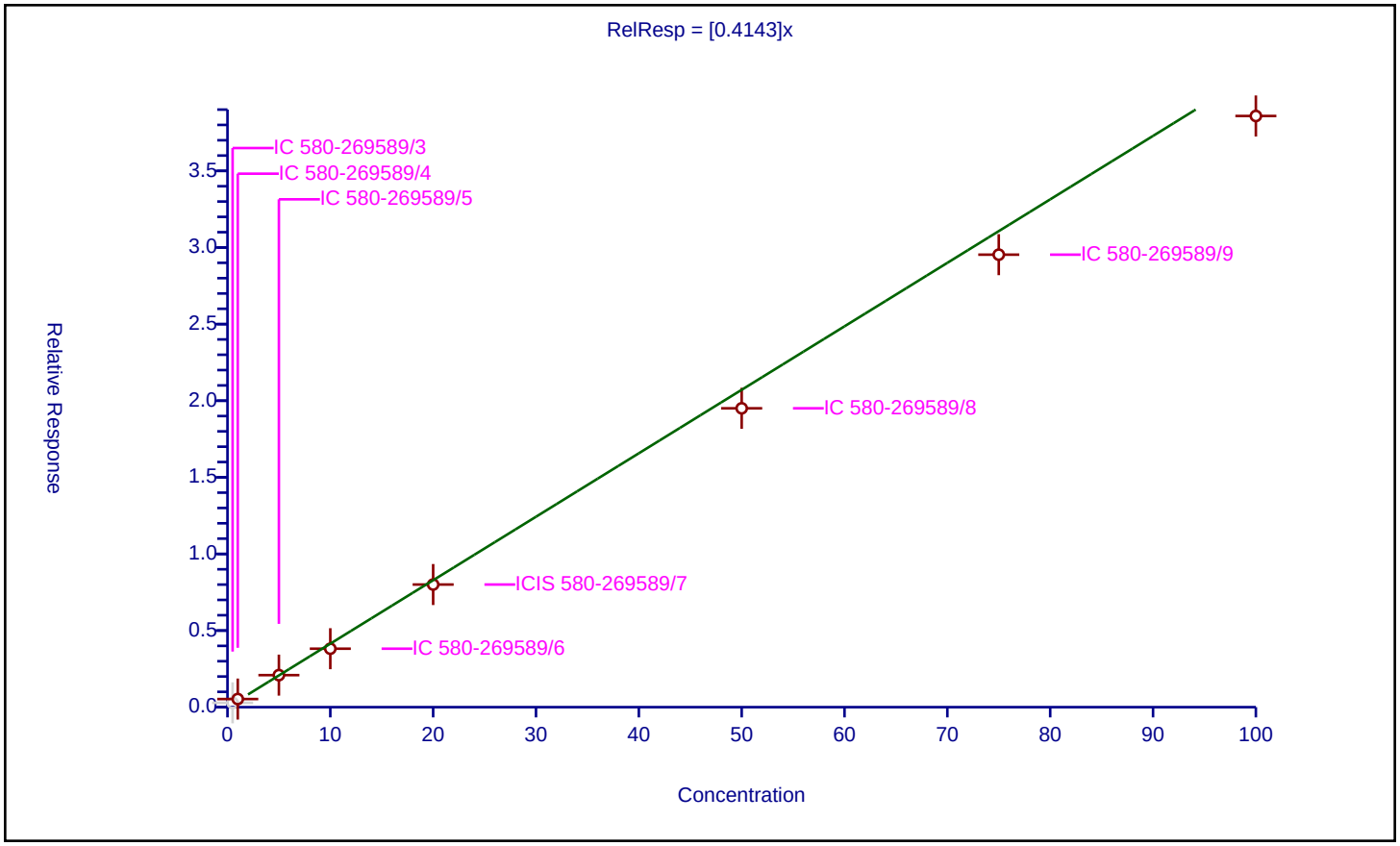
Curve Coefficients

Intercept:	0
Slope:	0.4143

Error Coefficients

Standard Error:	644000
Relative Standard Error:	12.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.978

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.281641	48.75	1385953.0	0.563282	N
2	IC 580-269589/4	1.0	0.530181	48.75	1359845.0	0.530181	Y
3	IC 580-269589/5	5.0	2.091051	48.75	1422948.0	0.41821	Y
4	IC 580-269589/6	10.0	3.815326	48.75	1358597.0	0.381533	Y
5	ICIS 580-269589/7	20.0	8.003669	48.75	1364764.0	0.400183	Y
6	IC 580-269589/8	50.0	19.505618	48.75	1405755.0	0.390112	Y
7	IC 580-269589/9	75.0	29.531841	48.75	1473218.0	0.393758	Y
8	IC 580-269589/10	100.0	38.584462	48.75	1444559.0	0.385845	Y



Calibration / 1,1,1-Trichloroethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

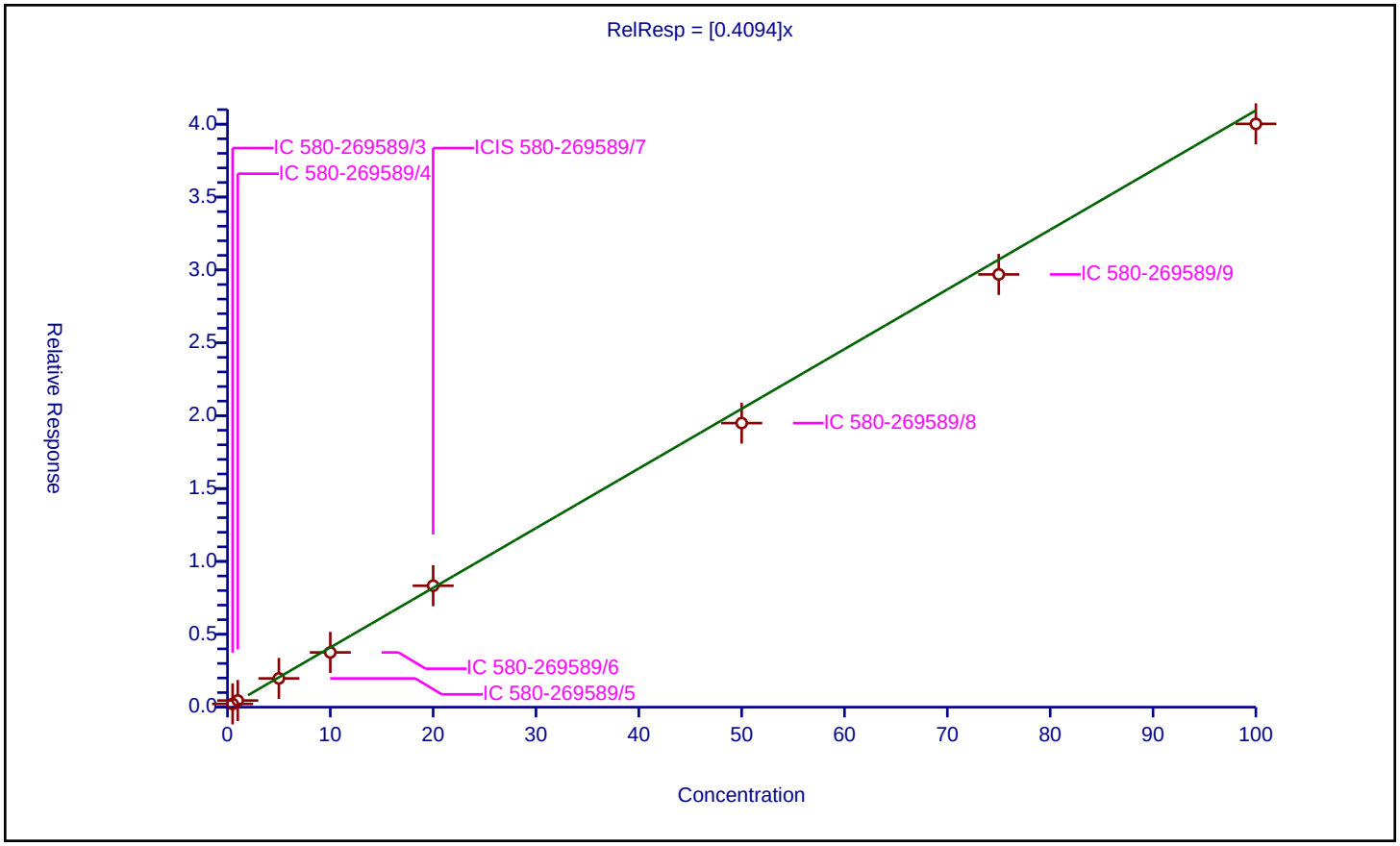
Curve Coefficients

Intercept:	0
Slope:	0.4094

Error Coefficients

Standard Error:	609000
Relative Standard Error:	6.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.223568	48.75	1385953.0	0.447136	Y
2	IC 580-269589/4	1.0	0.4559	48.75	1359845.0	0.4559	Y
3	IC 580-269589/5	5.0	1.972511	48.75	1422948.0	0.394502	Y
4	IC 580-269589/6	10.0	3.755438	48.75	1358597.0	0.375544	Y
5	ICIS 580-269589/7	20.0	8.332441	48.75	1364764.0	0.416622	Y
6	IC 580-269589/8	50.0	19.489804	48.75	1405755.0	0.389796	Y
7	IC 580-269589/9	75.0	29.691968	48.75	1473218.0	0.395893	Y
8	IC 580-269589/10	100.0	40.020411	48.75	1444559.0	0.400204	Y



Calibration / n-Butanol

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

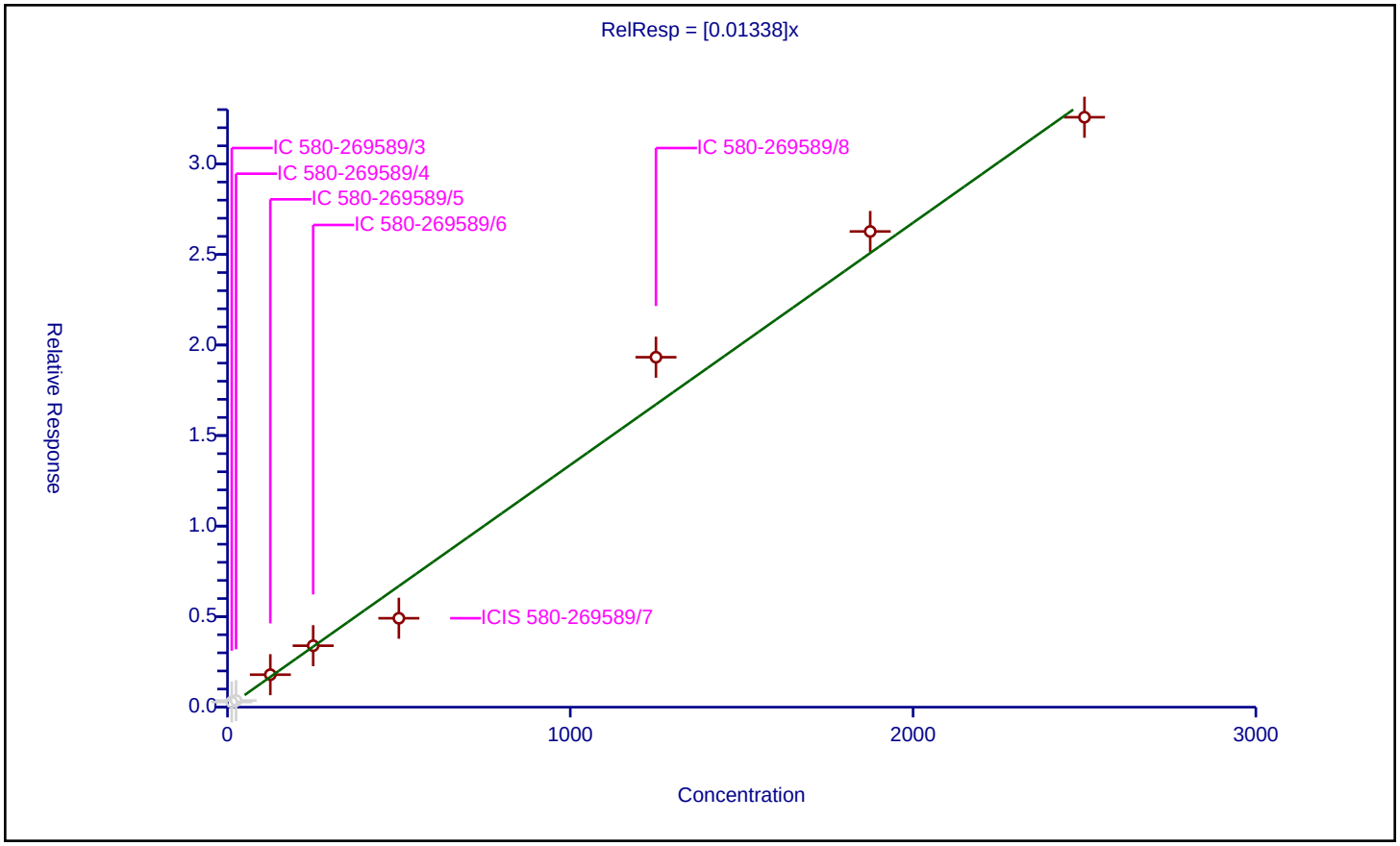
Curve Coefficients

Intercept:	0
Slope:	0.01338

Error Coefficients

Standard Error:	617000
Relative Standard Error:	14.4
Correlation Coefficient:	0.987
Coefficient of Determination (Adjusted):	0.967

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	12.5	0.285686	48.75	1385953.0	0.022855	N
2	IC 580-269589/4	25.0	0.364376	48.75	1359845.0	0.014575	N
3	IC 580-269589/5	125.0	1.794223	48.75	1422948.0	0.014354	Y
4	IC 580-269589/6	250.0	3.394064	48.75	1358597.0	0.013576	Y
5	ICIS 580-269589/7	500.0	4.910492	48.75	1364764.0	0.009821	Y
6	IC 580-269589/8	1250.0	19.326398	48.75	1405755.0	0.015461	Y
7	IC 580-269589/9	1875.0	26.270476	48.75	1473218.0	0.014011	Y
8	IC 580-269589/10	2500.0	32.578654	48.75	1444559.0	0.013031	Y



Calibration / 1,1-Dichloropropene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

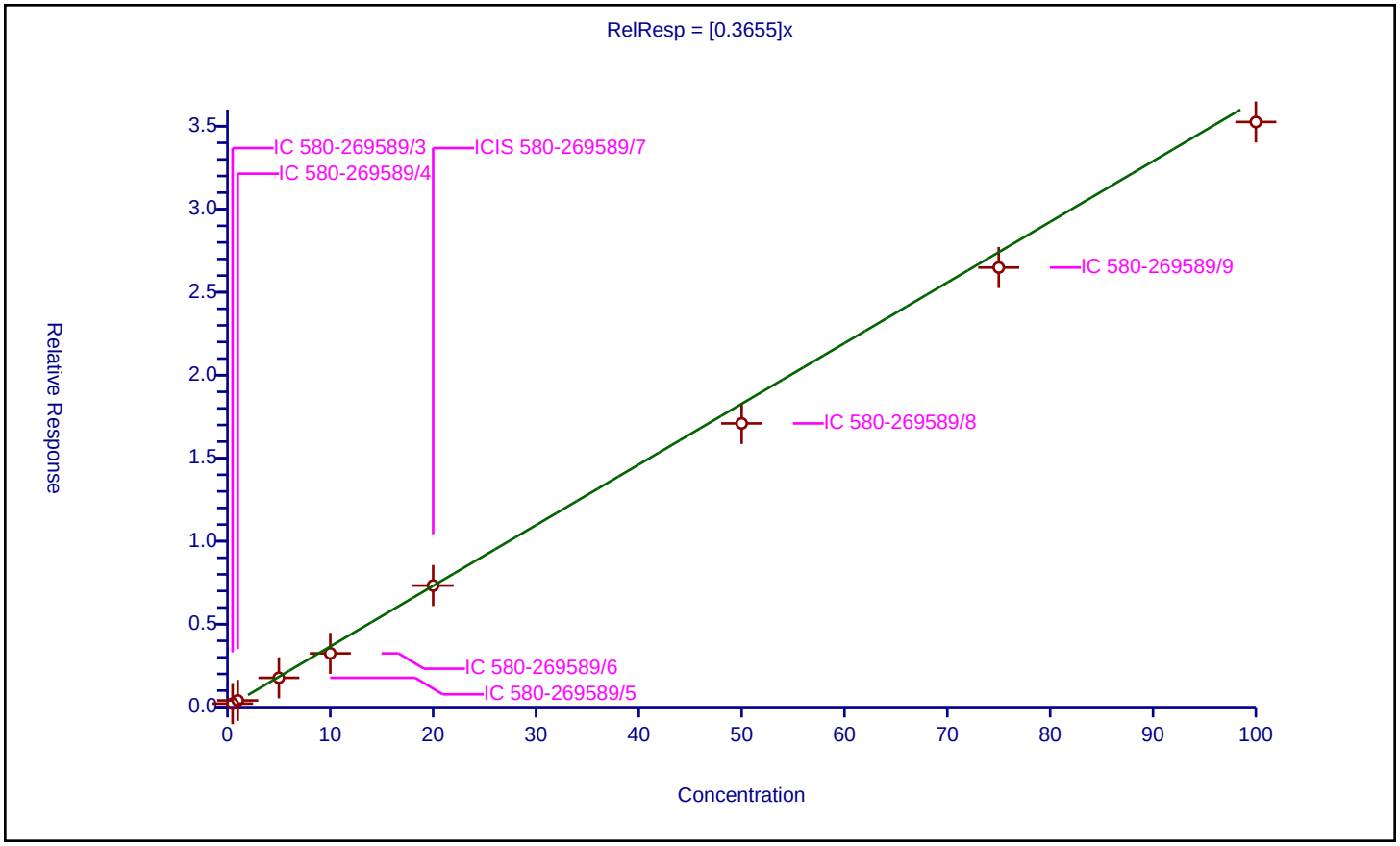
Curve Coefficients

Intercept:	0
Slope:	0.3655

Error Coefficients

Standard Error:	538000
Relative Standard Error:	9.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.988

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.213332	48.75	1385953.0	0.426665	Y
2	IC 580-269589/4	1.0	0.405782	48.75	1359845.0	0.405782	Y
3	IC 580-269589/5	5.0	1.767363	48.75	1422948.0	0.353473	Y
4	IC 580-269589/6	10.0	3.239625	48.75	1358597.0	0.323963	Y
5	ICIS 580-269589/7	20.0	7.326981	48.75	1364764.0	0.366349	Y
6	IC 580-269589/8	50.0	17.095194	48.75	1405755.0	0.341904	Y
7	IC 580-269589/9	75.0	26.487022	48.75	1473218.0	0.35316	Y
8	IC 580-269589/10	100.0	35.255289	48.75	1444559.0	0.352553	Y



Calibration / Cyclohexane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

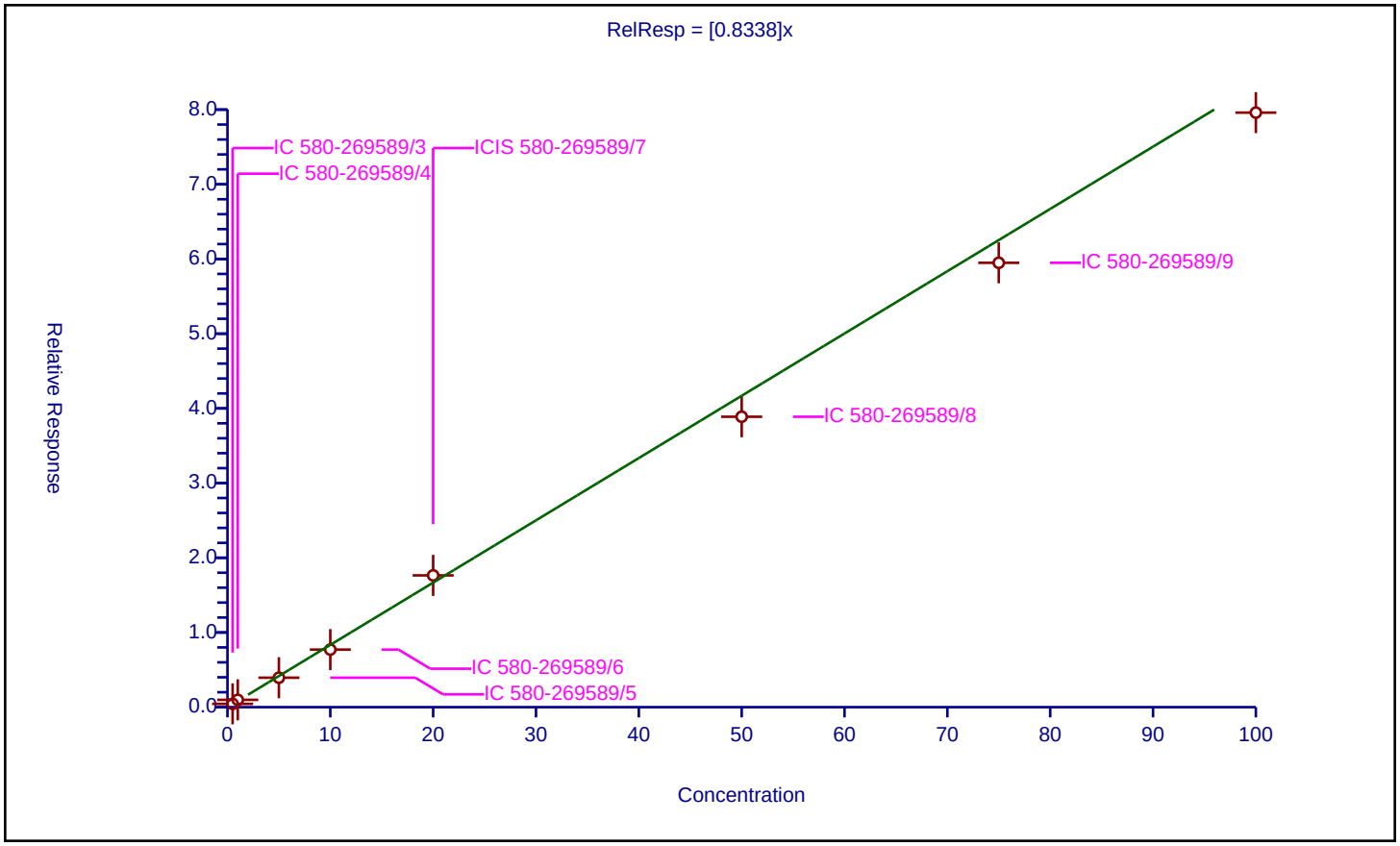
Curve Coefficients

Intercept:	0
Slope:	0.8338

Error Coefficients

Standard Error:	530000
Relative Standard Error:	8.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.441449	48.75	577890.0	0.882897	Y
2	IC 580-269589/4	1.0	0.978808	48.75	545171.0	0.978808	Y
3	IC 580-269589/5	5.0	3.944711	48.75	608190.0	0.788942	Y
4	IC 580-269589/6	10.0	7.705176	48.75	548784.0	0.770518	Y
5	ICIS 580-269589/7	20.0	17.64339	48.75	548520.0	0.88217	Y
6	IC 580-269589/8	50.0	38.882167	48.75	605359.0	0.777643	Y
7	IC 580-269589/9	75.0	59.490391	48.75	643994.0	0.793205	Y
8	IC 580-269589/10	100.0	79.59754	48.75	631607.0	0.795975	Y



Calibration / Carbon tetrachloride

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

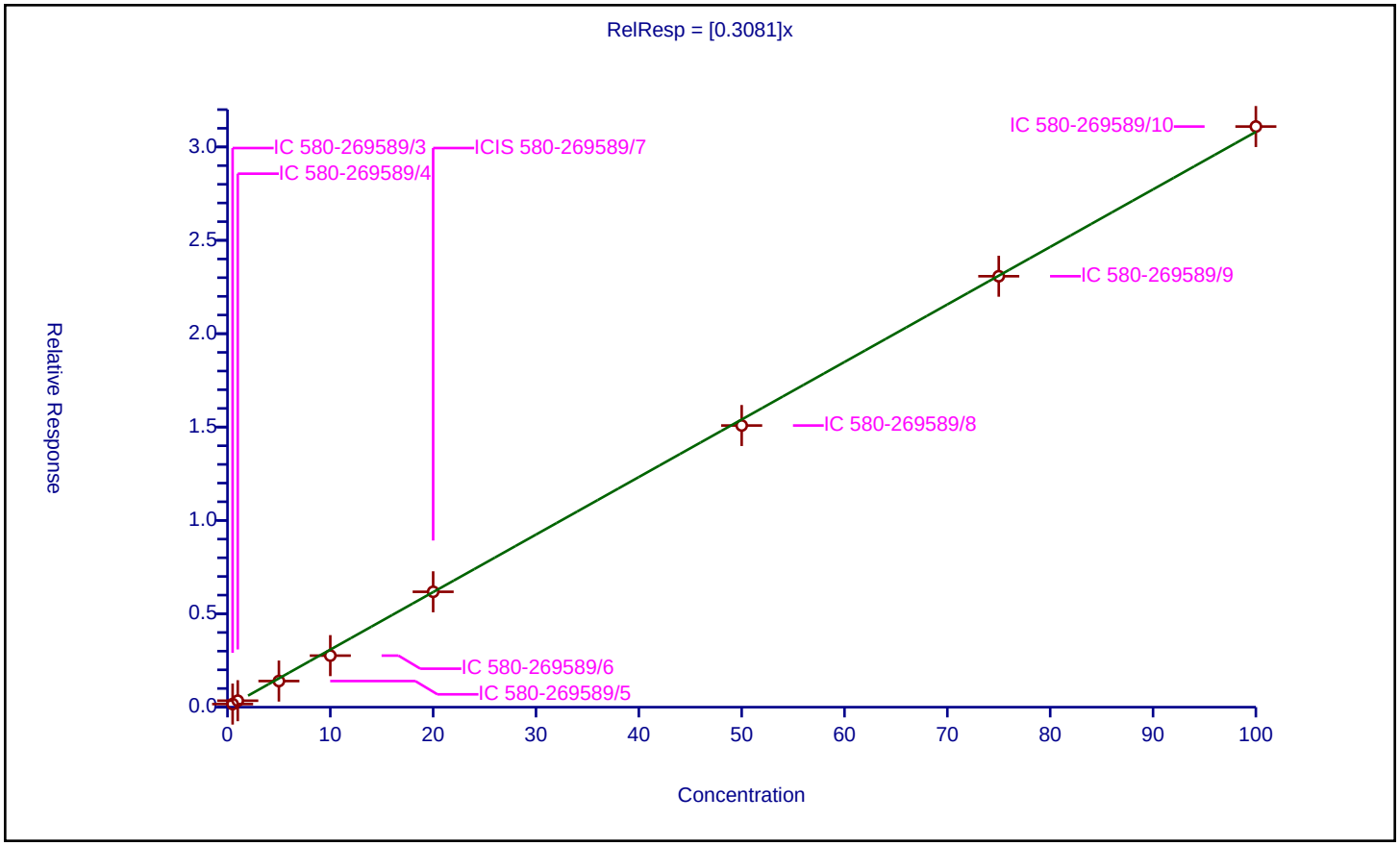
Curve Coefficients

Intercept:	0
Slope:	0.3081

Error Coefficients

Standard Error:	472000
Relative Standard Error:	7.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.166902	48.75	1385953.0	0.333805	Y
2	IC 580-269589/4	1.0	0.346021	48.75	1359845.0	0.346021	Y
3	IC 580-269589/5	5.0	1.398008	48.75	1422948.0	0.279602	Y
4	IC 580-269589/6	10.0	2.760413	48.75	1358597.0	0.276041	Y
5	ICIS 580-269589/7	20.0	6.178282	48.75	1364764.0	0.308914	Y
6	IC 580-269589/8	50.0	15.083437	48.75	1405755.0	0.301669	Y
7	IC 580-269589/9	75.0	23.076913	48.75	1473218.0	0.307692	Y
8	IC 580-269589/10	100.0	31.092725	48.75	1444559.0	0.310927	Y



Calibration / Benzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

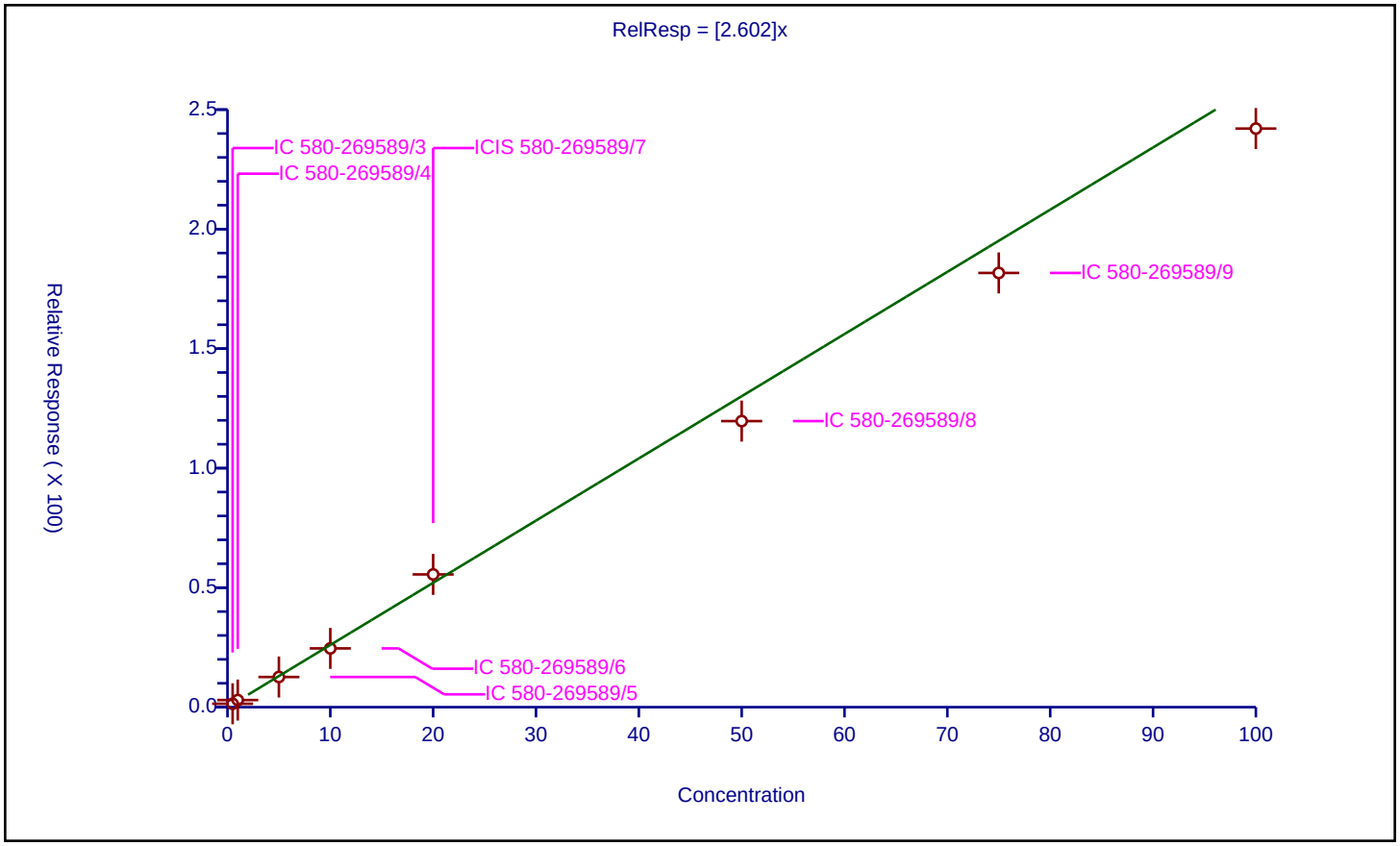
Curve Coefficients

Intercept:	0
Slope:	2.602

Error Coefficients

Standard Error:	1620000
Relative Standard Error:	8.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	1.420937	48.75	577890.0	2.841873	Y
2	IC 580-269589/4	1.0	2.975232	48.75	545171.0	2.975232	Y
3	IC 580-269589/5	5.0	12.619981	48.75	608190.0	2.523996	Y
4	IC 580-269589/6	10.0	24.58811	48.75	548784.0	2.458811	Y
5	ICIS 580-269589/7	20.0	55.53929	48.75	548520.0	2.776964	Y
6	IC 580-269589/8	50.0	119.680175	48.75	605359.0	2.393604	Y
7	IC 580-269589/9	75.0	181.659029	48.75	643994.0	2.42212	Y
8	IC 580-269589/10	100.0	242.063991	48.75	631607.0	2.42064	Y



Calibration / Tert-amyl methyl ether

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

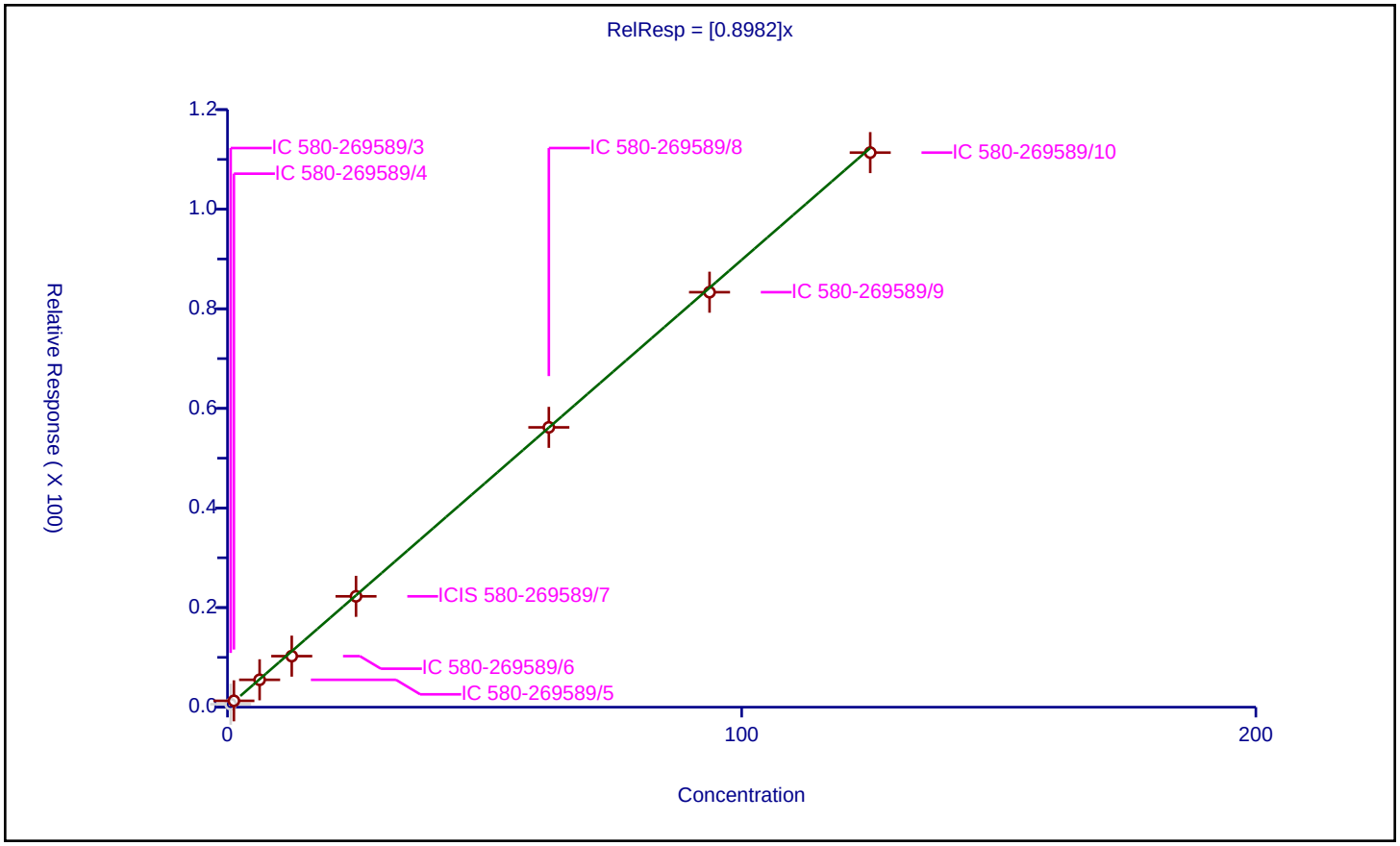
Curve Coefficients

Intercept:	0
Slope:	0.8982

Error Coefficients

Standard Error:	1840000
Relative Standard Error:	6.6
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.625	0.596381	48.75	1385953.0	0.95421	N
2	IC 580-269589/4	1.25	1.274205	48.75	1359845.0	1.019364	Y
3	IC 580-269589/5	6.25	5.494733	48.75	1422948.0	0.879157	Y
4	IC 580-269589/6	12.5	10.247211	48.75	1358597.0	0.819777	Y
5	ICIS 580-269589/7	25.0	22.260849	48.75	1364764.0	0.890434	Y
6	IC 580-269589/8	62.5	56.191739	48.75	1405755.0	0.899068	Y
7	IC 580-269589/9	93.75	83.333387	48.75	1473218.0	0.888889	Y
8	IC 580-269589/10	125.0	111.362591	48.75	1444559.0	0.890901	Y



Calibration / Ethyl acrylate

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

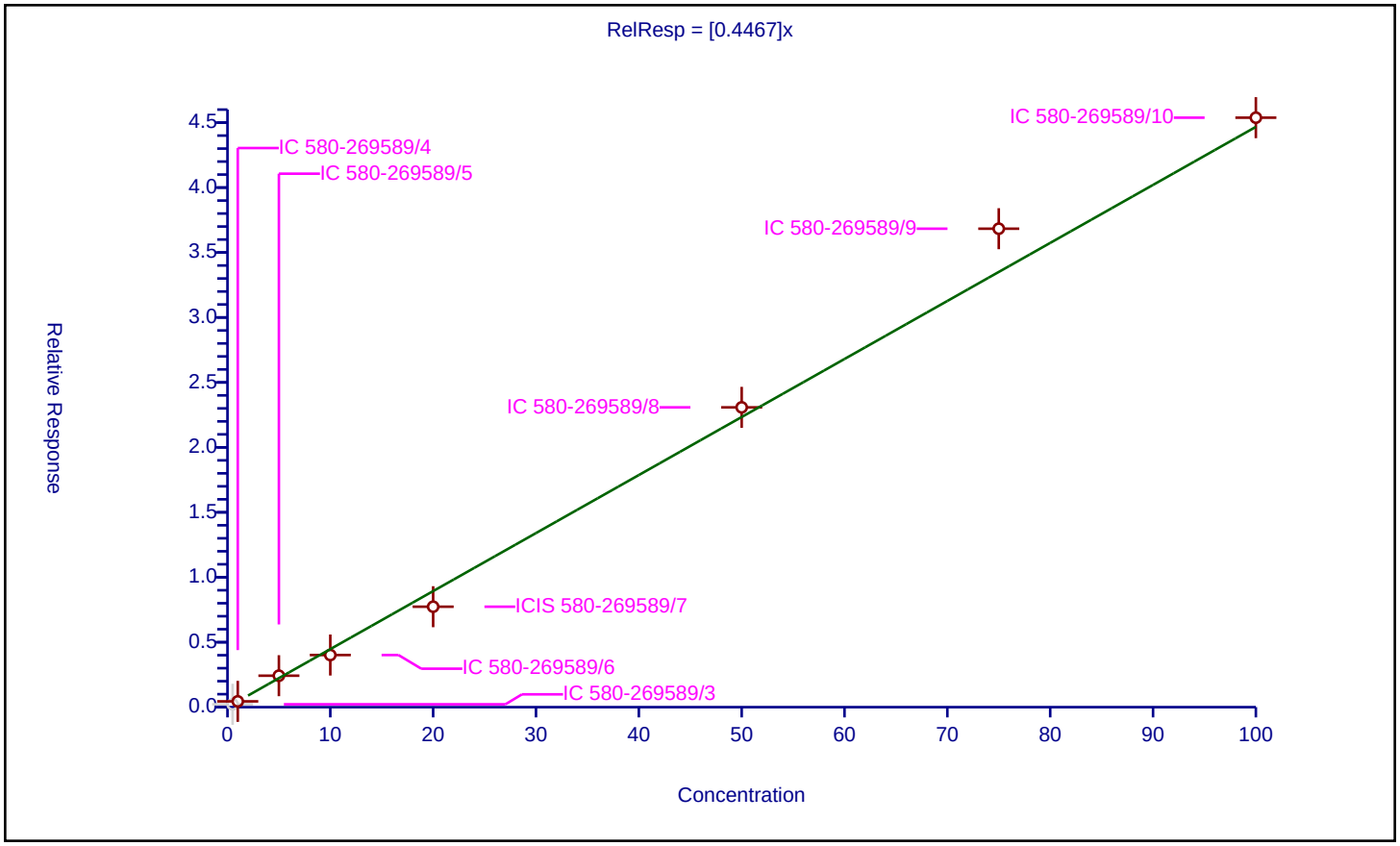
Curve Coefficients

Intercept:	0
Slope:	0.4467

Error Coefficients

Standard Error:	770000
Relative Standard Error:	8.8
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.221036	48.75	1385953.0	0.442071	N
2	IC 580-269589/4	1.0	0.447834	48.75	1359845.0	0.447834	Y
3	IC 580-269589/5	5.0	2.423131	48.75	1422948.0	0.484626	Y
4	IC 580-269589/6	10.0	4.013613	48.75	1358597.0	0.401361	Y
5	ICIS 580-269589/7	20.0	7.733087	48.75	1364764.0	0.386654	Y
6	IC 580-269589/8	50.0	23.079553	48.75	1405755.0	0.461591	Y
7	IC 580-269589/9	75.0	36.832108	48.75	1473218.0	0.491095	Y
8	IC 580-269589/10	100.0	45.379216	48.75	1444559.0	0.453792	Y



Calibration / n-Heptane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

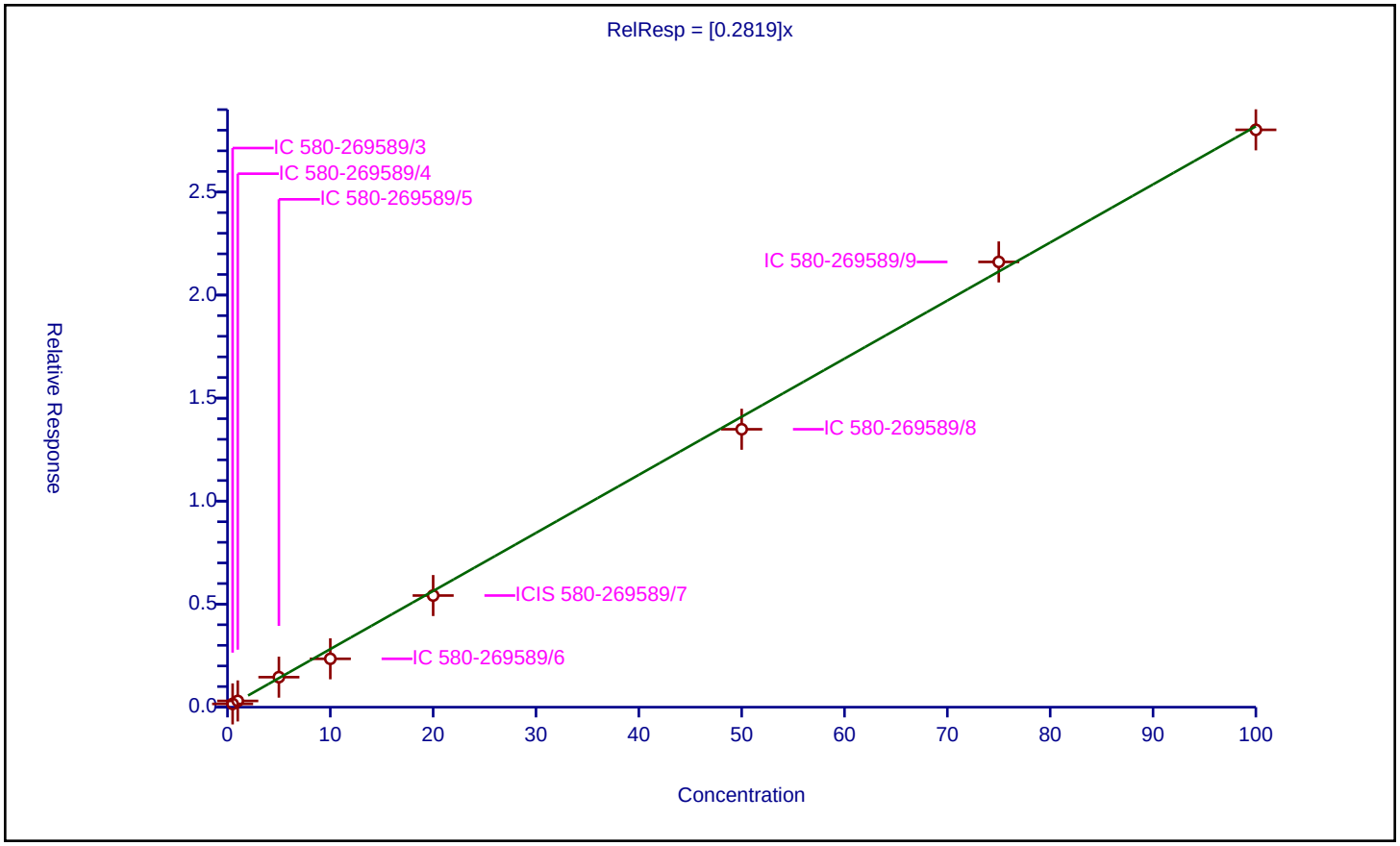
Curve Coefficients

Intercept:	0
Slope:	0.2819

Error Coefficients

Standard Error:	430000
Relative Standard Error:	8.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.15839	48.75	1385953.0	0.31678	Y
2	IC 580-269589/4	1.0	0.30336	48.75	1359845.0	0.30336	Y
3	IC 580-269589/5	5.0	1.456524	48.75	1422948.0	0.291305	Y
4	IC 580-269589/6	10.0	2.347548	48.75	1358597.0	0.234755	Y
5	ICIS 580-269589/7	20.0	5.417365	48.75	1364764.0	0.270868	Y
6	IC 580-269589/8	50.0	13.487169	48.75	1405755.0	0.269743	Y
7	IC 580-269589/9	75.0	21.607945	48.75	1473218.0	0.288106	Y
8	IC 580-269589/10	100.0	28.019154	48.75	1444559.0	0.280192	Y



Calibration / Dibromomethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

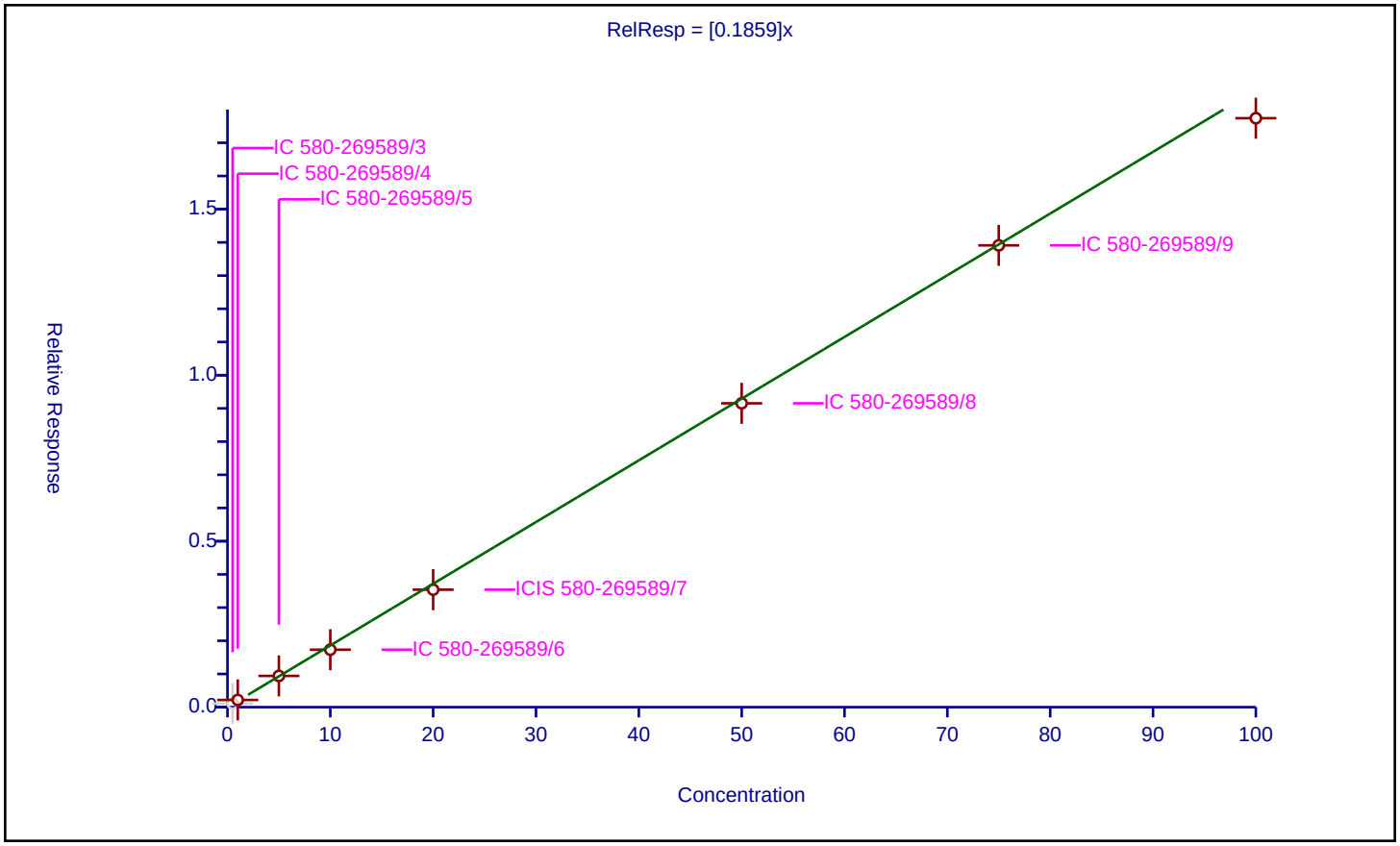
Curve Coefficients

Intercept:	0
Slope:	0.1859

Error Coefficients

Standard Error:	299000
Relative Standard Error:	7.9
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.110272	48.75	1385953.0	0.220543	N
2	IC 580-269589/4	1.0	0.216855	48.75	1359845.0	0.216855	Y
3	IC 580-269589/5	5.0	0.940639	48.75	1422948.0	0.188128	Y
4	IC 580-269589/6	10.0	1.731228	48.75	1358597.0	0.173123	Y
5	ICIS 580-269589/7	20.0	3.53904	48.75	1364764.0	0.176952	Y
6	IC 580-269589/8	50.0	9.153211	48.75	1405755.0	0.183064	Y
7	IC 580-269589/9	75.0	13.910821	48.75	1473218.0	0.185478	Y
8	IC 580-269589/10	100.0	17.740833	48.75	1444559.0	0.177408	Y



Calibration / 1,2-Dichloropropane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

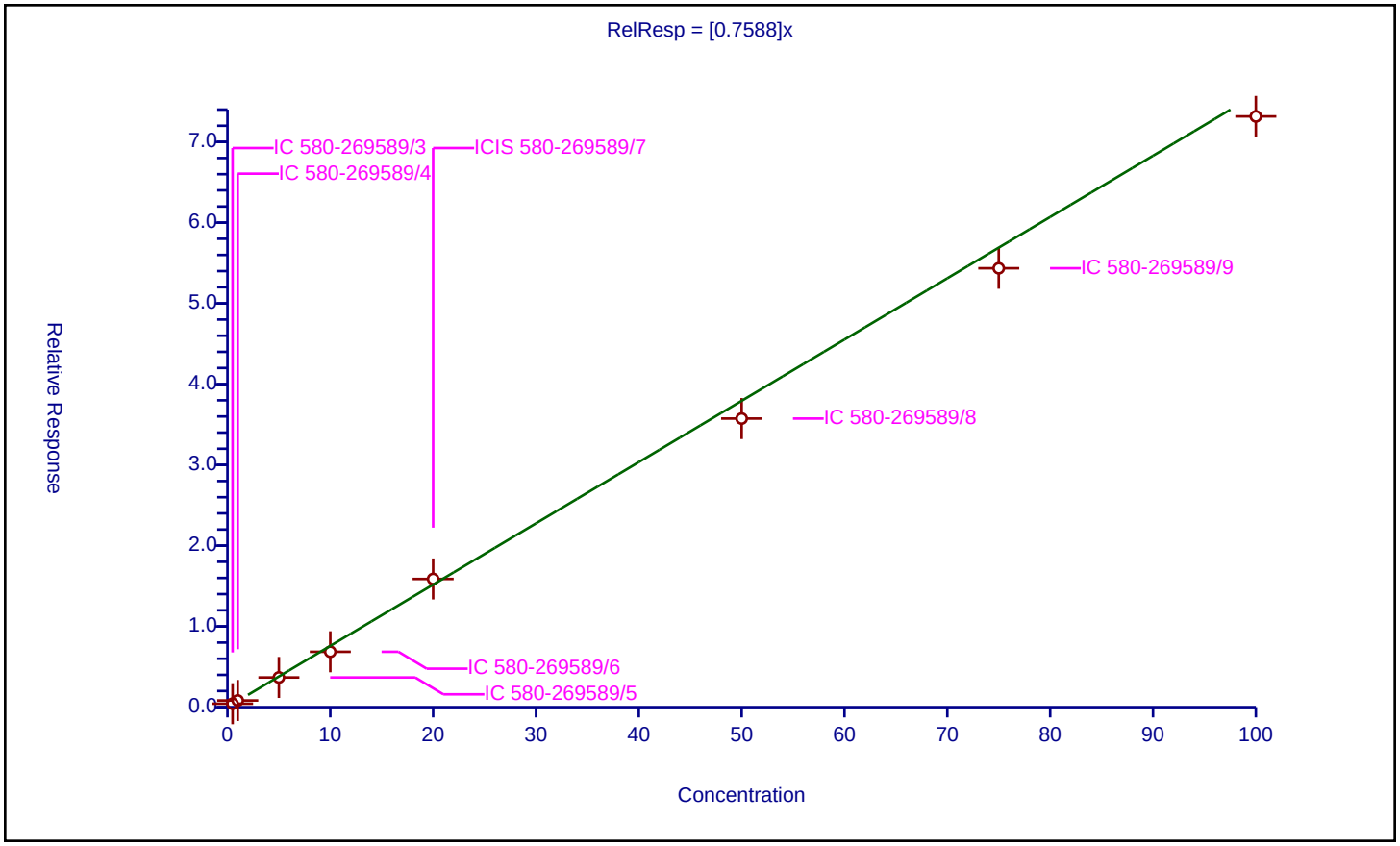
Curve Coefficients

Intercept:	0
Slope:	0.7588

Error Coefficients

Standard Error:	486000
Relative Standard Error:	7.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.428542	48.75	577890.0	0.857084	Y
2	IC 580-269589/4	1.0	0.826523	48.75	545171.0	0.826523	Y
3	IC 580-269589/5	5.0	3.677952	48.75	608190.0	0.73559	Y
4	IC 580-269589/6	10.0	6.860466	48.75	548784.0	0.686047	Y
5	ICIS 580-269589/7	20.0	15.874856	48.75	548520.0	0.793743	Y
6	IC 580-269589/8	50.0	35.740664	48.75	605359.0	0.714813	Y
7	IC 580-269589/9	75.0	54.35123	48.75	643994.0	0.724683	Y
8	IC 580-269589/10	100.0	73.157996	48.75	631607.0	0.73158	Y



Calibration / 2-Nitropropane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

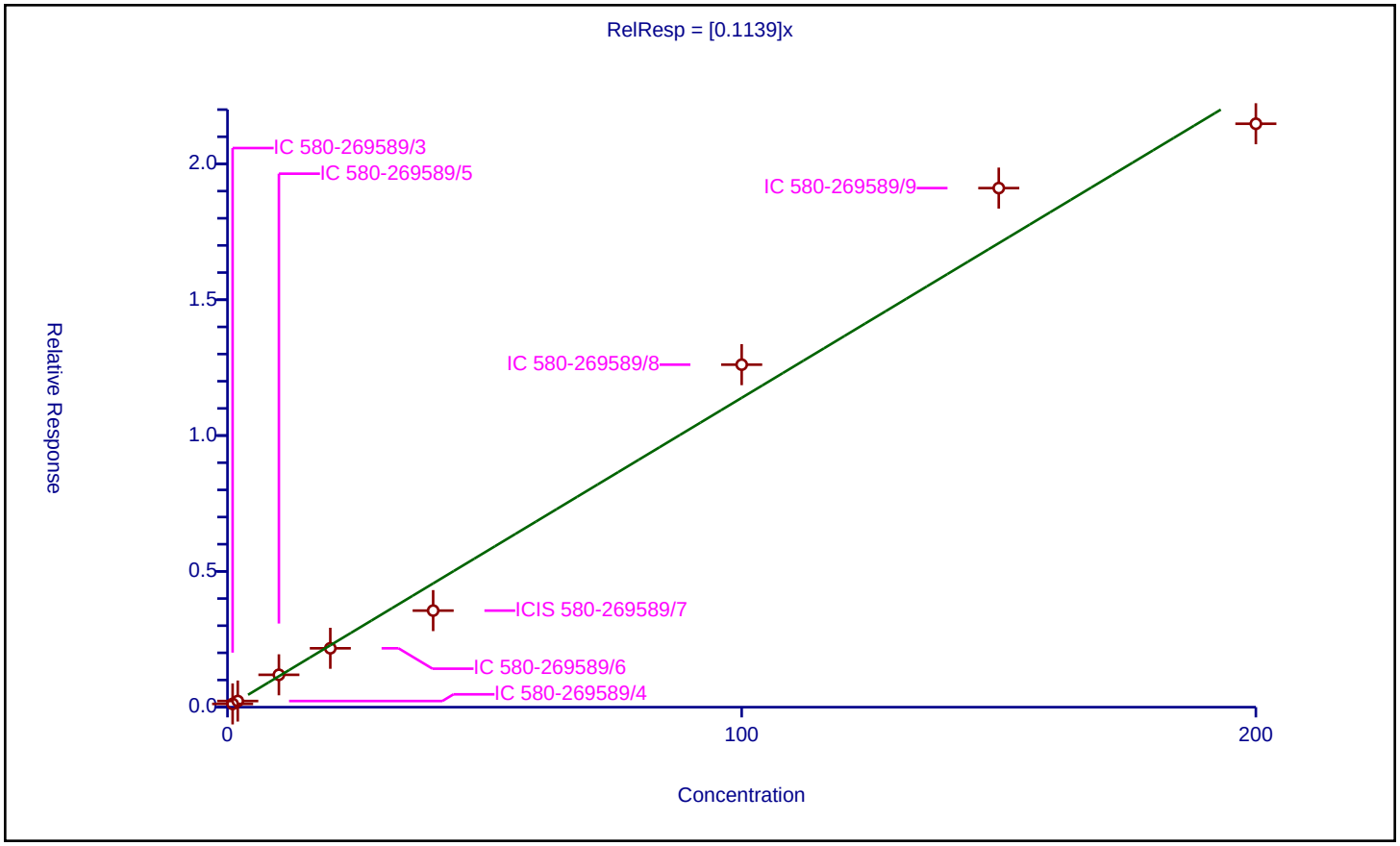
Curve Coefficients

Intercept:	0
Slope:	0.1139

Error Coefficients

Standard Error:	356000
Relative Standard Error:	11.0
Correlation Coefficient:	0.983
Coefficient of Determination (Adjusted):	0.985

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	1.0	0.120543	48.75	1385953.0	0.120543	Y
2	IC 580-269589/4	2.0	0.226498	48.75	1359845.0	0.113249	Y
3	IC 580-269589/5	10.0	1.191387	48.75	1422948.0	0.119139	Y
4	IC 580-269589/6	20.0	2.167704	48.75	1358597.0	0.108385	Y
5	ICIS 580-269589/7	40.0	3.555043	48.75	1364764.0	0.088876	Y
6	IC 580-269589/8	100.0	12.609967	48.75	1405755.0	0.1261	Y
7	IC 580-269589/9	150.0	19.110448	48.75	1473218.0	0.127403	Y
8	IC 580-269589/10	200.0	21.479328	48.75	1444559.0	0.107397	Y



Calibration / Trichloroethene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

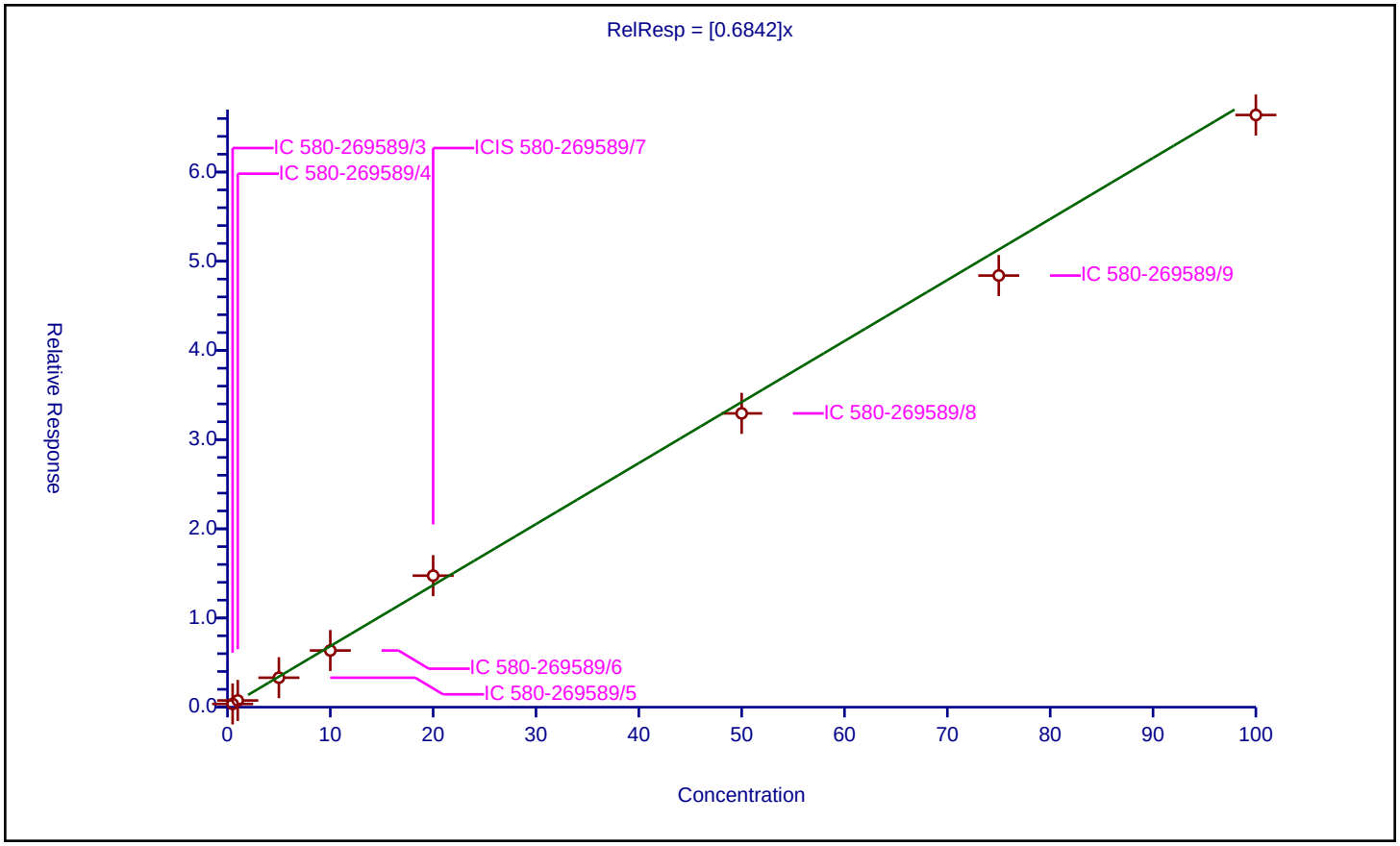
Curve Coefficients

Intercept:	0
Slope:	0.6842

Error Coefficients

Standard Error:	439000
Relative Standard Error:	6.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.360633	48.75	577890.0	0.721266	Y
2	IC 580-269589/4	1.0	0.750515	48.75	545171.0	0.750515	Y
3	IC 580-269589/5	5.0	3.305388	48.75	608190.0	0.661078	Y
4	IC 580-269589/6	10.0	6.352964	48.75	548784.0	0.635296	Y
5	ICIS 580-269589/7	20.0	14.745337	48.75	548520.0	0.737267	Y
6	IC 580-269589/8	50.0	32.939805	48.75	605359.0	0.658796	Y
7	IC 580-269589/9	75.0	48.394137	48.75	643994.0	0.645255	Y
8	IC 580-269589/10	100.0	66.395591	48.75	631607.0	0.663956	Y



Calibration / Dichlorobromomethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

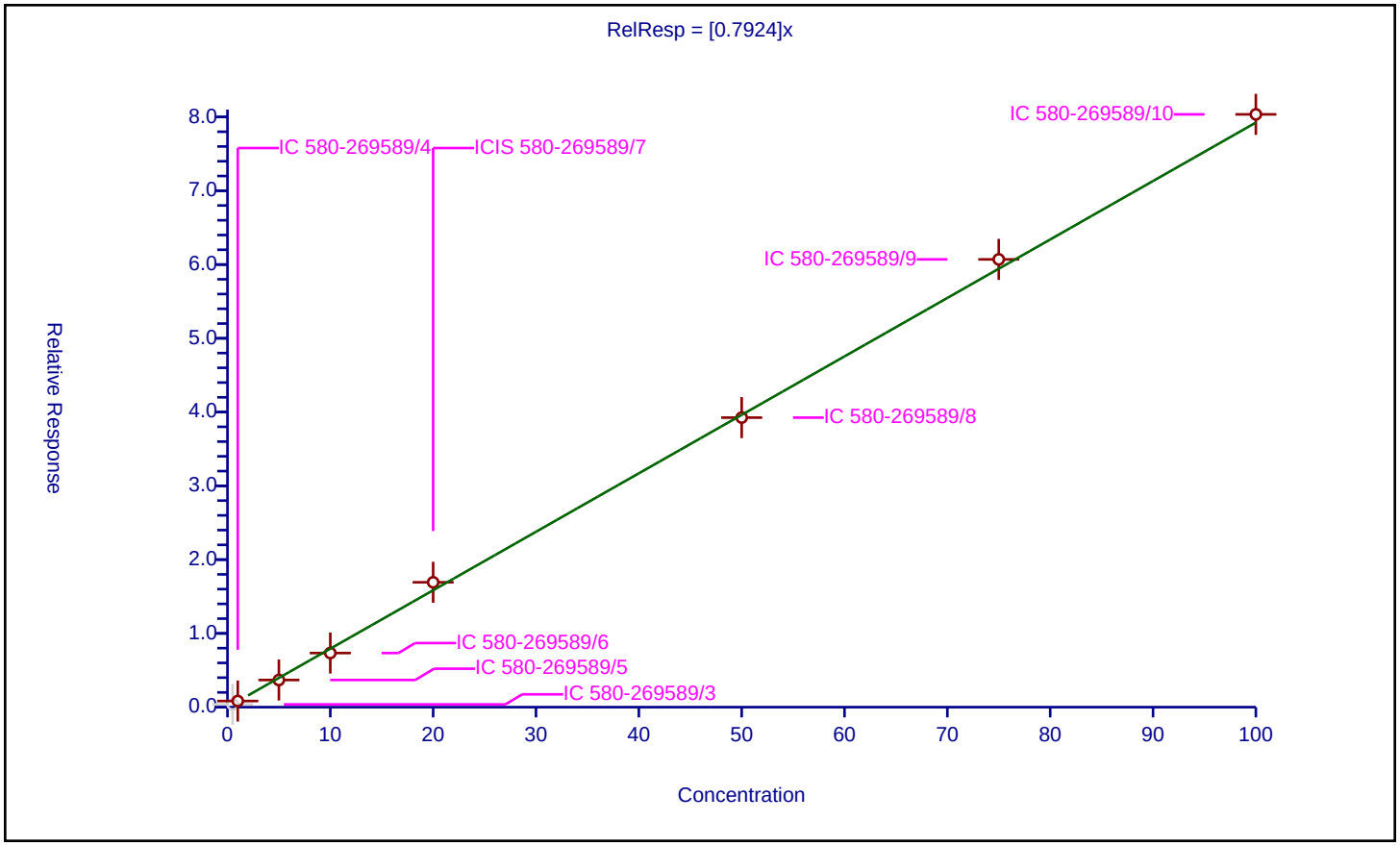
Curve Coefficients

Intercept:	0
Slope:	0.7924

Error Coefficients

Standard Error:	579000
Relative Standard Error:	5.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.372612	48.75	577890.0	0.745224	N
2	IC 580-269589/4	1.0	0.832693	48.75	545171.0	0.832693	Y
3	IC 580-269589/5	5.0	3.681239	48.75	608190.0	0.736248	Y
4	IC 580-269589/6	10.0	7.339185	48.75	548784.0	0.733919	Y
5	ICIS 580-269589/7	20.0	16.926876	48.75	548520.0	0.846344	Y
6	IC 580-269589/8	50.0	39.250193	48.75	605359.0	0.785004	Y
7	IC 580-269589/9	75.0	60.697192	48.75	643994.0	0.809296	Y
8	IC 580-269589/10	100.0	80.355025	48.75	631607.0	0.80355	Y



Calibration / Methyl methacrylate

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

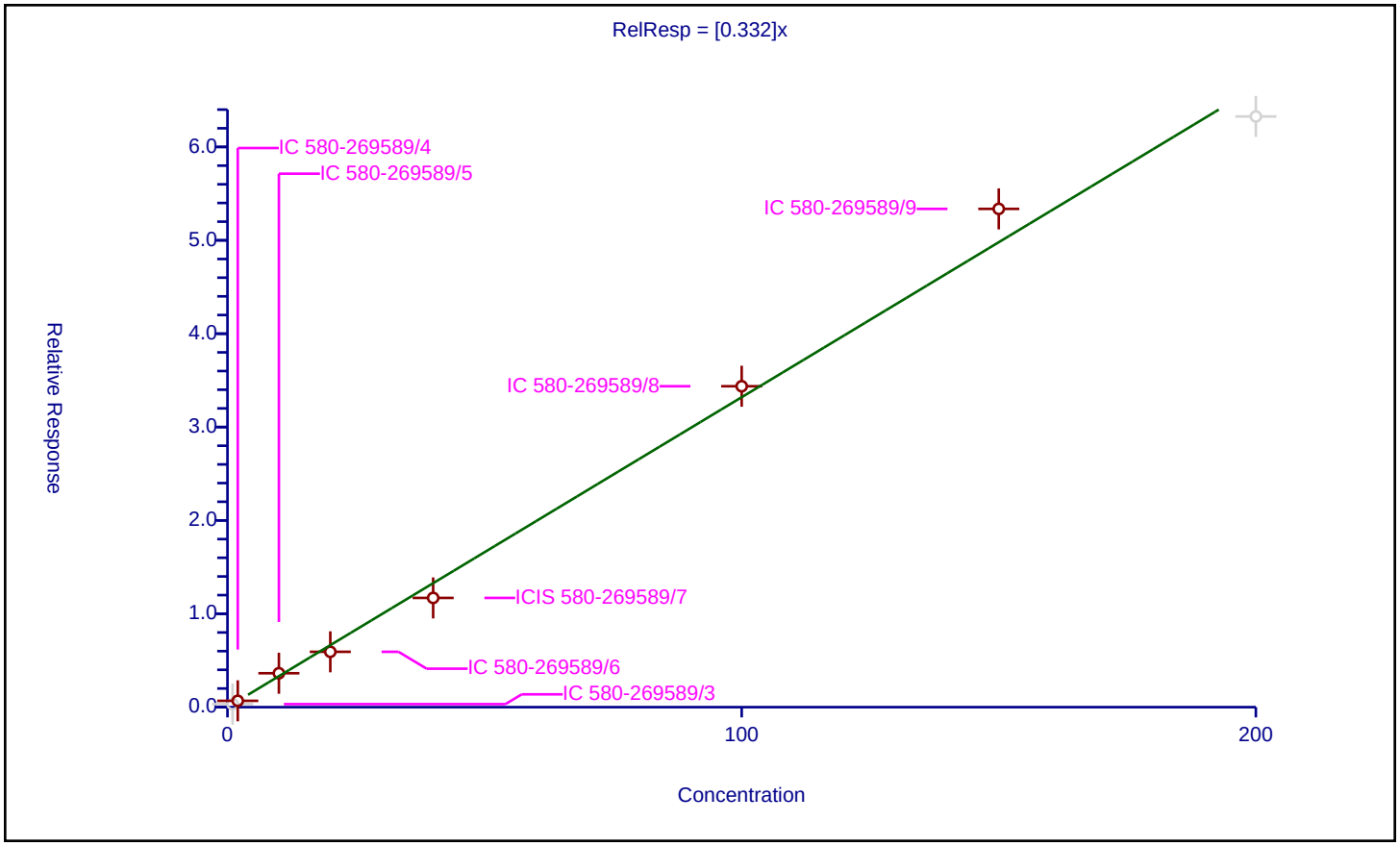
Curve Coefficients

Intercept:	0
Slope:	0.332

Error Coefficients

Standard Error:	864000
Relative Standard Error:	9.1
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	1.0	0.325609	48.75	1385953.0	0.325609	N
2	IC 580-269589/4	2.0	0.679961	48.75	1359845.0	0.33998	Y
3	IC 580-269589/5	10.0	3.633532	48.75	1422948.0	0.363353	Y
4	IC 580-269589/6	20.0	5.930246	48.75	1358597.0	0.296512	Y
5	ICIS 580-269589/7	40.0	11.701023	48.75	1364764.0	0.292526	Y
6	IC 580-269589/8	100.0	34.371758	48.75	1405755.0	0.343718	Y
7	IC 580-269589/9	150.0	53.368387	48.75	1473218.0	0.355789	Y
8	IC 580-269589/10	200.0	63.26658	48.75	1444559.0	0.316333	N



Calibration / Trifluorotoluene (Surr)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

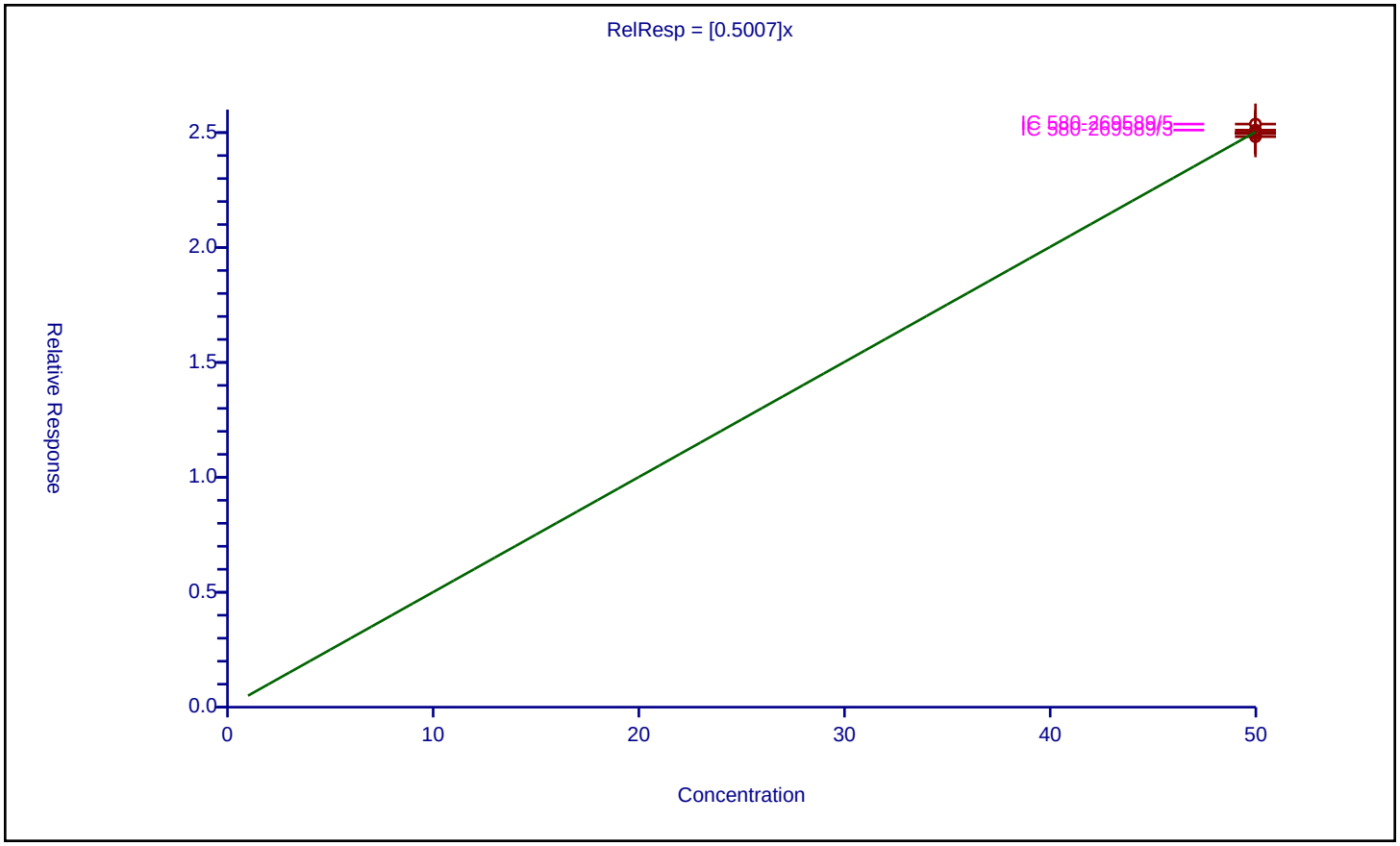
Curve Coefficients

Intercept:	0
Slope:	0.5007

Error Coefficients

Standard Error:	770000
Relative Standard Error:	0.6
Correlation Coefficient:	0
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	49.98	25.108403	48.75	1385953.0	0.502369	Y
2	IC 580-269589/4	49.98	24.999949	48.75	1359845.0	0.500199	Y
3	IC 580-269589/5	49.98	25.370455	48.75	1422948.0	0.507612	Y
4	IC 580-269589/6	49.98	24.95567	48.75	1358597.0	0.499313	Y
5	ICIS 580-269589/7	49.98	24.971389	48.75	1364764.0	0.499628	Y
6	IC 580-269589/8	49.98	25.01023	48.75	1405755.0	0.500405	Y
7	IC 580-269589/9	49.98	24.959682	48.75	1473218.0	0.499393	Y
8	IC 580-269589/10	49.98	24.821595	48.75	1444559.0	0.496631	Y



Calibration / 2-Chloroethyl vinyl ether

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

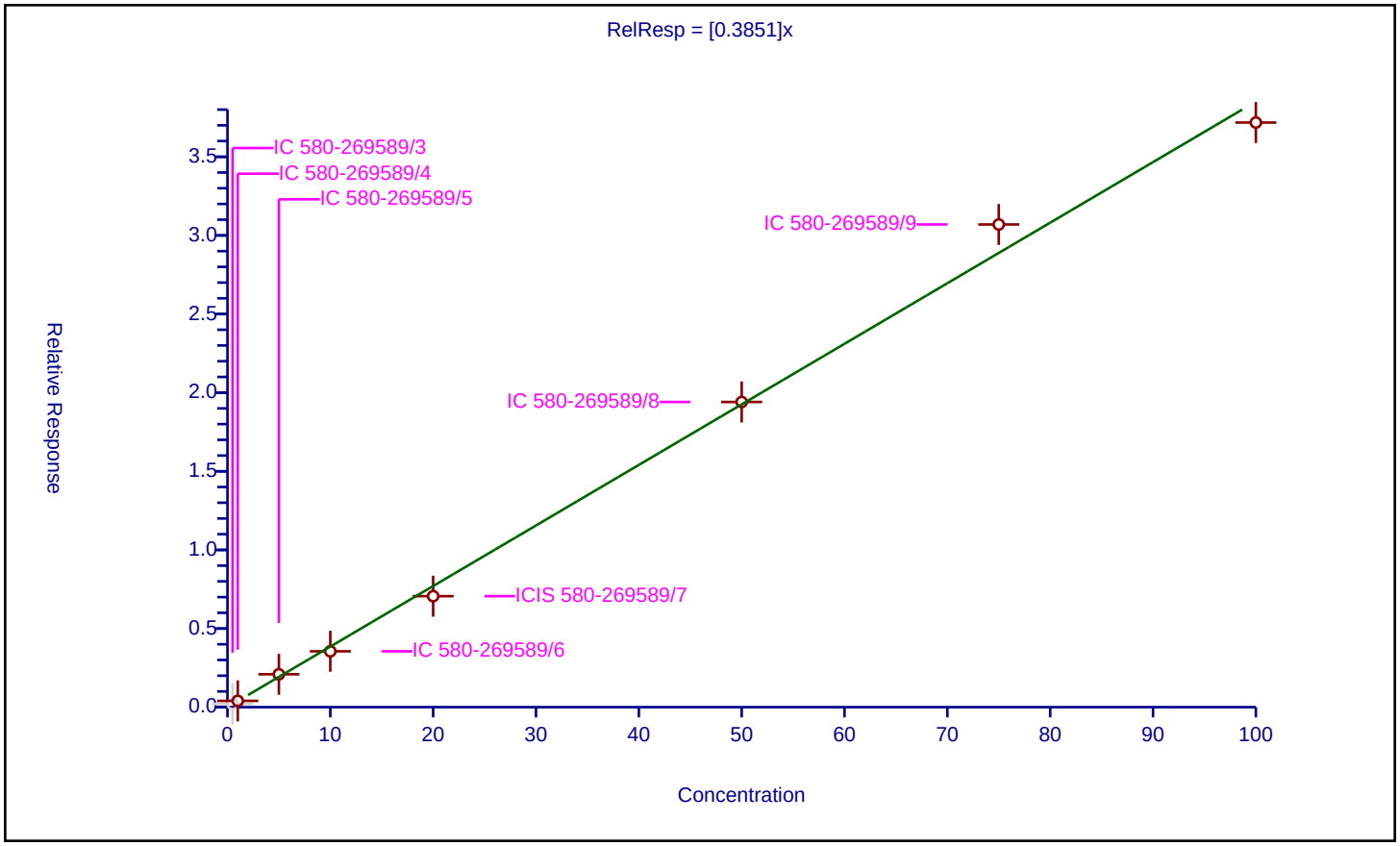
Curve Coefficients

Intercept:	0
Slope:	0.3851

Error Coefficients

Standard Error:	278000
Relative Standard Error:	6.7
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.202714	48.75	577890.0	0.405428	N
2	IC 580-269589/4	1.0	0.400161	48.75	545171.0	0.400161	Y
3	IC 580-269589/5	5.0	2.091106	48.75	608190.0	0.418221	Y
4	IC 580-269589/6	10.0	3.553844	48.75	548784.0	0.355384	Y
5	ICIS 580-269589/7	20.0	7.058049	48.75	548520.0	0.352902	Y
6	IC 580-269589/8	50.0	19.407261	48.75	605359.0	0.388145	Y
7	IC 580-269589/9	75.0	30.69477	48.75	643994.0	0.409264	Y
8	IC 580-269589/10	100.0	37.177406	48.75	631607.0	0.371774	Y



Calibration / Methylcyclohexane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

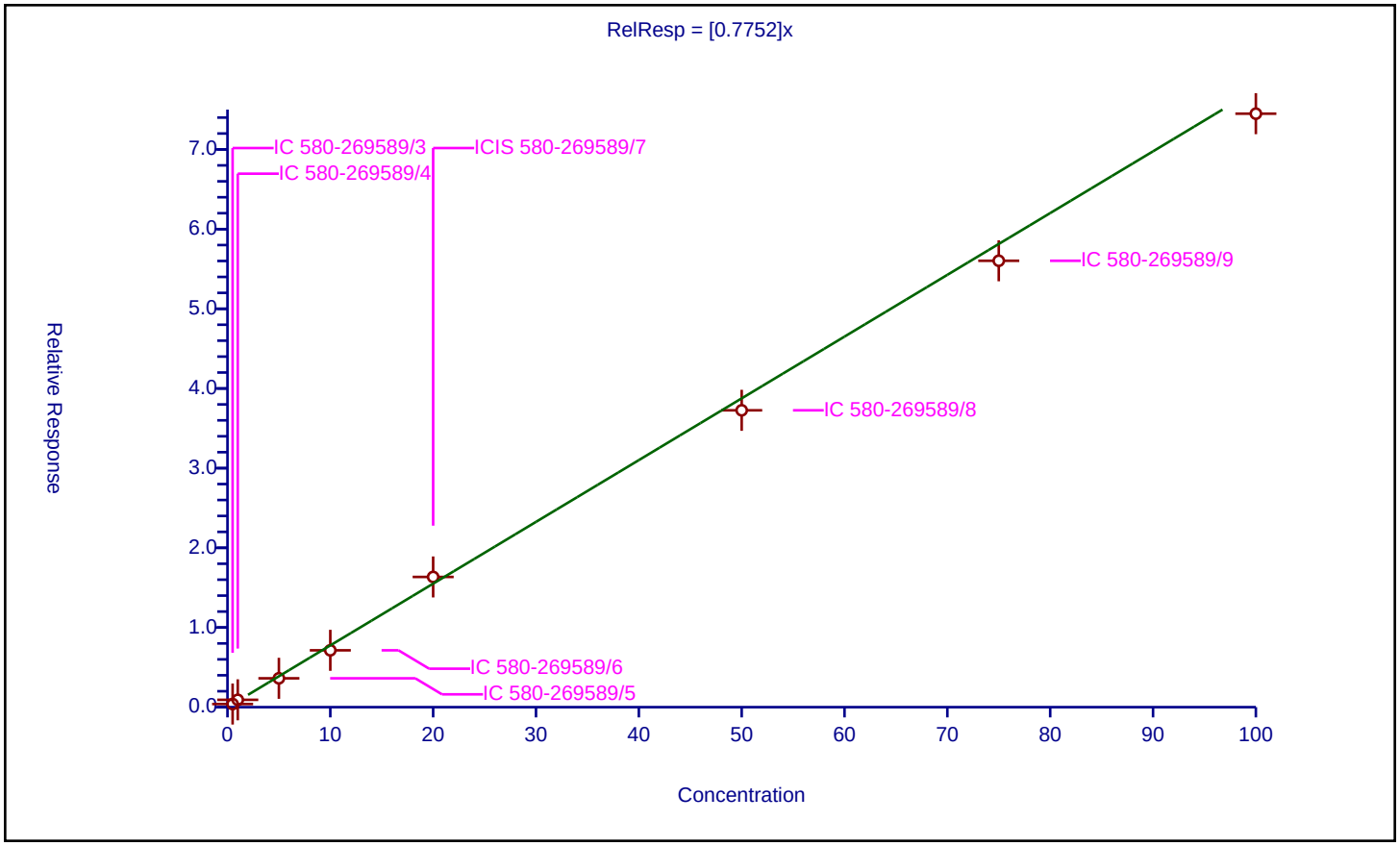
Curve Coefficients

Intercept:	0
Slope:	0.7752

Error Coefficients

Standard Error:	498000
Relative Standard Error:	8.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.393617	48.75	577890.0	0.787235	Y
2	IC 580-269589/4	1.0	0.921846	48.75	545171.0	0.921846	Y
3	IC 580-269589/5	5.0	3.621362	48.75	608190.0	0.724272	Y
4	IC 580-269589/6	10.0	7.135936	48.75	548784.0	0.713594	Y
5	ICIS 580-269589/7	20.0	16.344386	48.75	548520.0	0.817219	Y
6	IC 580-269589/8	50.0	37.258749	48.75	605359.0	0.745175	Y
7	IC 580-269589/9	75.0	56.026232	48.75	643994.0	0.747016	Y
8	IC 580-269589/10	100.0	74.491583	48.75	631607.0	0.744916	Y



Calibration / cis-1,3-Dichloropropene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

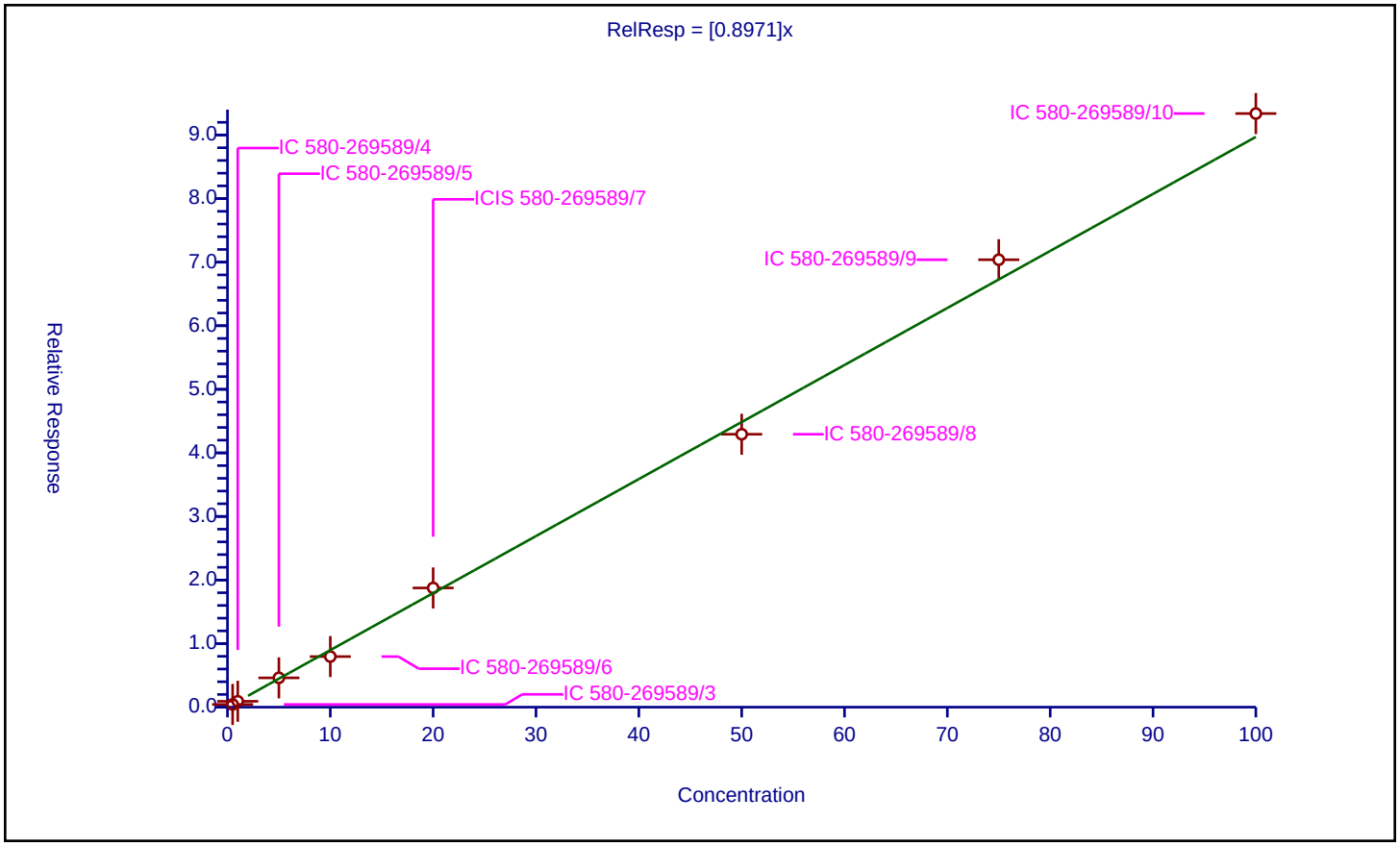
Curve Coefficients

Intercept:	0
Slope:	0.8971

Error Coefficients

Standard Error:	708000
Relative Standard Error:	5.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.431268	48.75	712257.0	0.862536	Y
2	IC 580-269589/4	1.0	0.926795	48.75	697537.0	0.926795	Y
3	IC 580-269589/5	5.0	4.612546	48.75	712171.0	0.922509	Y
4	IC 580-269589/6	10.0	7.959684	48.75	673677.0	0.795968	Y
5	ICIS 580-269589/7	20.0	18.754609	48.75	664680.0	0.93773	Y
6	IC 580-269589/8	50.0	42.932742	48.75	720868.0	0.858655	Y
7	IC 580-269589/9	75.0	70.386008	48.75	735675.0	0.93848	Y
8	IC 580-269589/10	100.0	93.379511	48.75	718634.0	0.933795	Y



Calibration / 4-Methyl-2-pentanone (MIBK)

Curve Type:	Linear
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

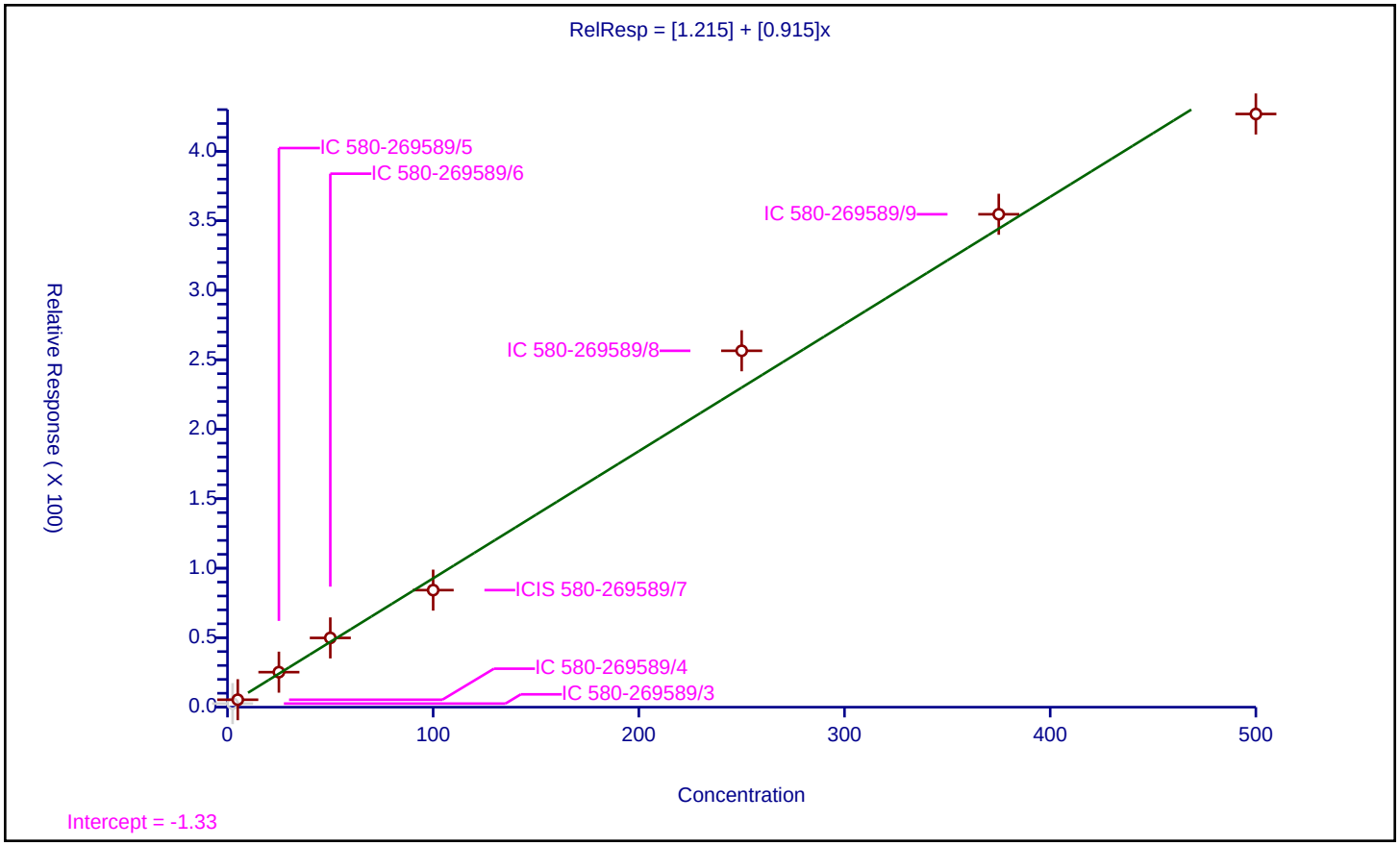
Curve Coefficients

Intercept:	1.215
Slope:	0.915

Error Coefficients

Standard Error:	3580000
Relative Standard Error:	9.3
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	2.5	2.581795	48.75	577890.0	1.032718	N
2	IC 580-269589/4	5.0	5.35742	48.75	545171.0	1.071484	Y
3	IC 580-269589/5	25.0	25.197319	48.75	608190.0	1.007893	Y
4	IC 580-269589/6	50.0	49.836514	48.75	548784.0	0.99673	Y
5	ICIS 580-269589/7	100.0	84.21622	48.75	548520.0	0.842162	Y
6	IC 580-269589/8	250.0	256.460406	48.75	605359.0	1.025842	Y
7	IC 580-269589/9	375.0	354.687714	48.75	643994.0	0.945834	Y
8	IC 580-269589/10	500.0	426.861878	48.75	631607.0	0.853724	Y



Calibration / trans-1,3-Dichloropropene

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

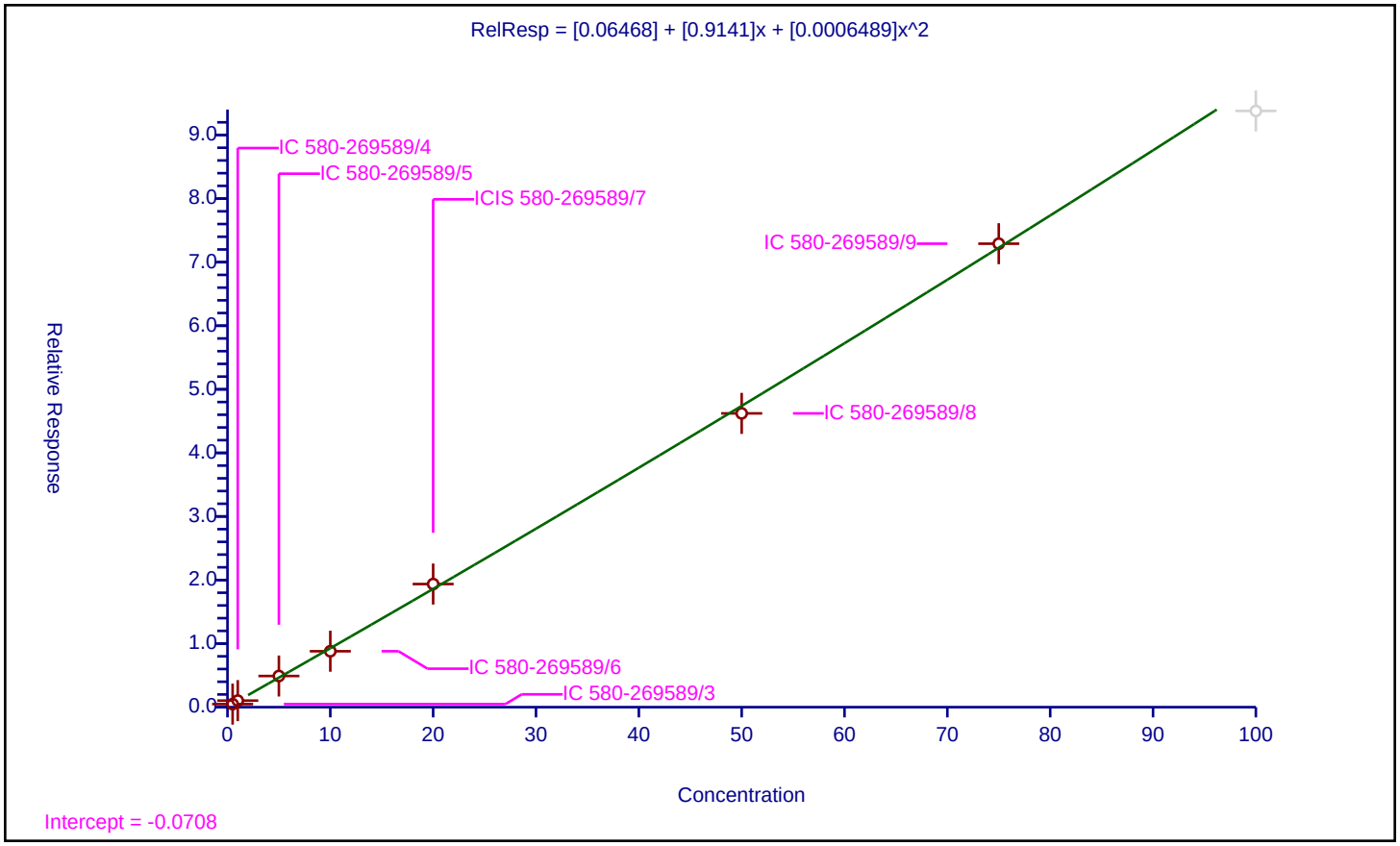
Curve Coefficients

Intercept:	0.06468
Slope:	0.9141
Second Order:	0.0006489

Error Coefficients

Standard Error:	574000
Relative Standard Error:	6.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.483122	48.75	577890.0	0.966244	Y
2	IC 580-269589/4	1.0	1.031566	48.75	545171.0	1.031566	Y
3	IC 580-269589/5	5.0	4.902093	48.75	608190.0	0.980419	Y
4	IC 580-269589/6	10.0	8.795865	48.75	548784.0	0.879587	Y
5	ICIS 580-269589/7	20.0	19.369175	48.75	548520.0	0.968459	Y
6	IC 580-269589/8	50.0	46.211913	48.75	605359.0	0.924238	Y
7	IC 580-269589/9	75.0	72.905774	48.75	643994.0	0.972077	Y
8	IC 580-269589/10	100.0	93.789144	48.75	631607.0	0.937891	N



Calibration / 1,1,2-Trichloroethane

Curve Type:	Linear
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

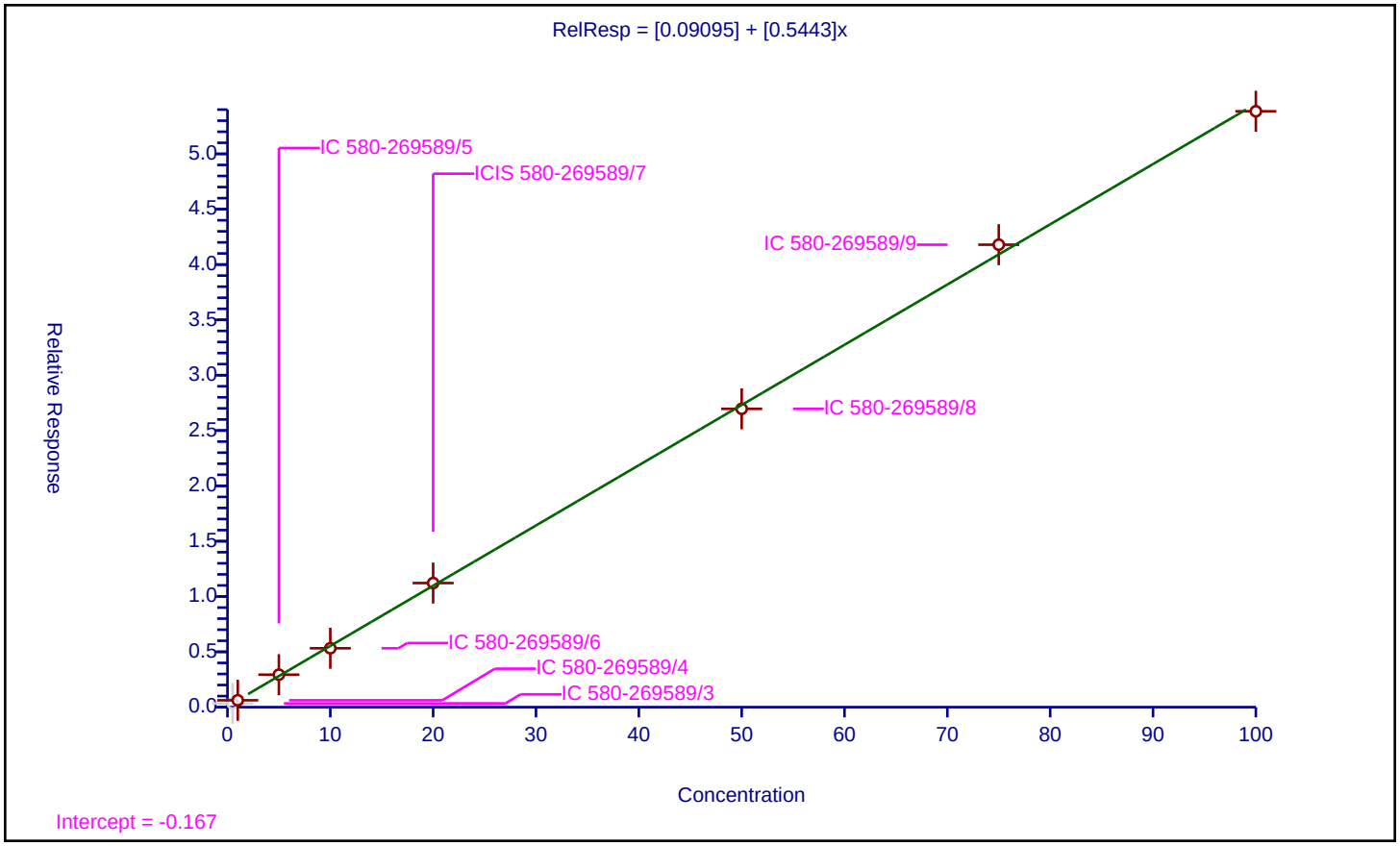
Curve Coefficients

Intercept:	0.09095
Slope:	0.5443

Error Coefficients

Standard Error:	430000
Relative Standard Error:	3.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.341484	48.75	577890.0	0.682967	N
2	IC 580-269589/4	1.0	0.621748	48.75	545171.0	0.621748	Y
3	IC 580-269589/5	5.0	2.935468	48.75	608190.0	0.587094	Y
4	IC 580-269589/6	10.0	5.32206	48.75	548784.0	0.532206	Y
5	ICIS 580-269589/7	20.0	11.215735	48.75	548520.0	0.560787	Y
6	IC 580-269589/8	50.0	26.960882	48.75	605359.0	0.539218	Y
7	IC 580-269589/9	75.0	41.793219	48.75	643994.0	0.557243	Y
8	IC 580-269589/10	100.0	53.848085	48.75	631607.0	0.538481	Y



Calibration / Toluene-d8 (Surr)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

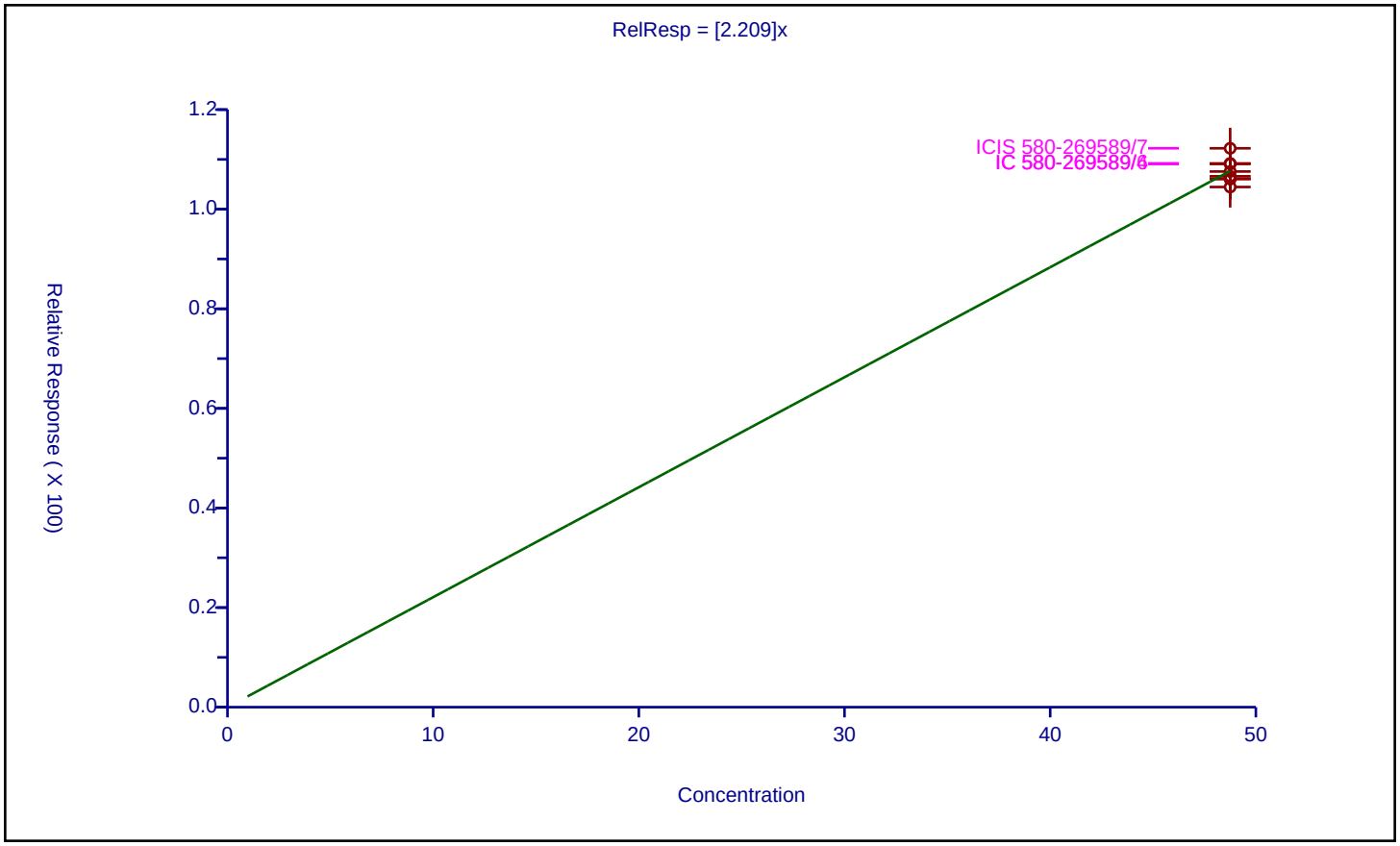
Curve Coefficients

Intercept:	0
Slope:	2.209

Error Coefficients

Standard Error:	1390000
Relative Standard Error:	2.3
Correlation Coefficient:	0
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	48.75	106.614273	48.75	577890.0	2.186959	Y
2	IC 580-269589/4	48.75	109.090008	48.75	545171.0	2.237744	Y
3	IC 580-269589/5	48.75	107.570944	48.75	608190.0	2.206583	Y
4	IC 580-269589/6	48.75	109.193234	48.75	548784.0	2.239861	Y
5	ICIS 580-269589/7	48.75	112.226229	48.75	548520.0	2.302076	Y
6	IC 580-269589/8	48.75	106.123874	48.75	605359.0	2.1769	Y
7	IC 580-269589/9	48.75	106.056613	48.75	643994.0	2.17552	Y
8	IC 580-269589/10	48.75	104.455057	48.75	631607.0	2.142668	Y



Calibration / Ethyl methacrylate

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

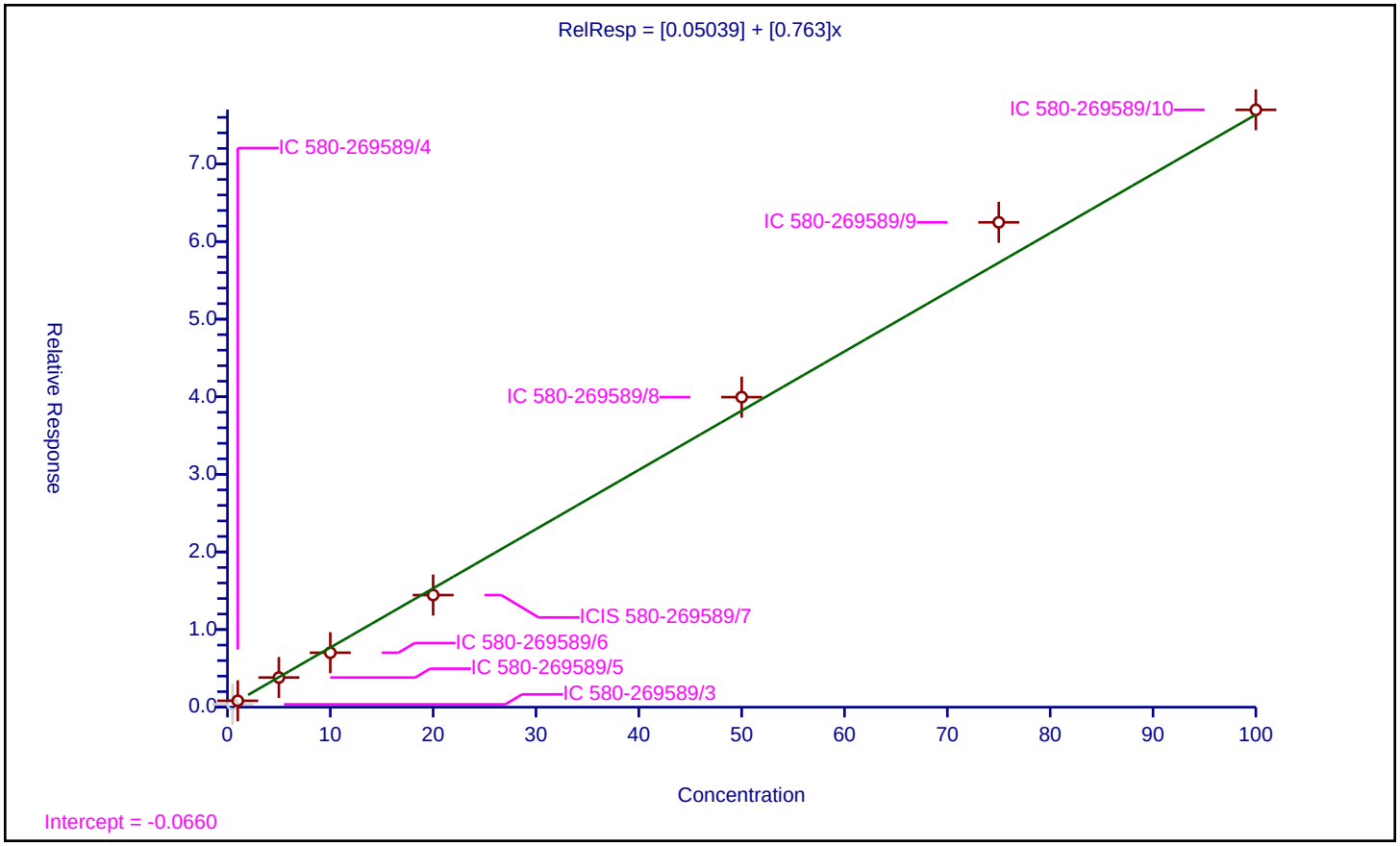
Curve Coefficients

Intercept:	0.05039
Slope:	0.763

Error Coefficients

Standard Error:	626000
Relative Standard Error:	6.6
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.363501	48.75	577890.0	0.727003	N
2	IC 580-269589/4	1.0	0.822499	48.75	545171.0	0.822499	Y
3	IC 580-269589/5	5.0	3.816782	48.75	608190.0	0.763356	Y
4	IC 580-269589/6	10.0	7.015923	48.75	548784.0	0.701592	Y
5	ICIS 580-269589/7	20.0	14.445116	48.75	548520.0	0.722256	Y
6	IC 580-269589/8	50.0	39.950327	48.75	605359.0	0.799007	Y
7	IC 580-269589/9	75.0	62.474918	48.75	643994.0	0.832999	Y
8	IC 580-269589/10	100.0	76.971507	48.75	631607.0	0.769715	Y



Calibration / Toluene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

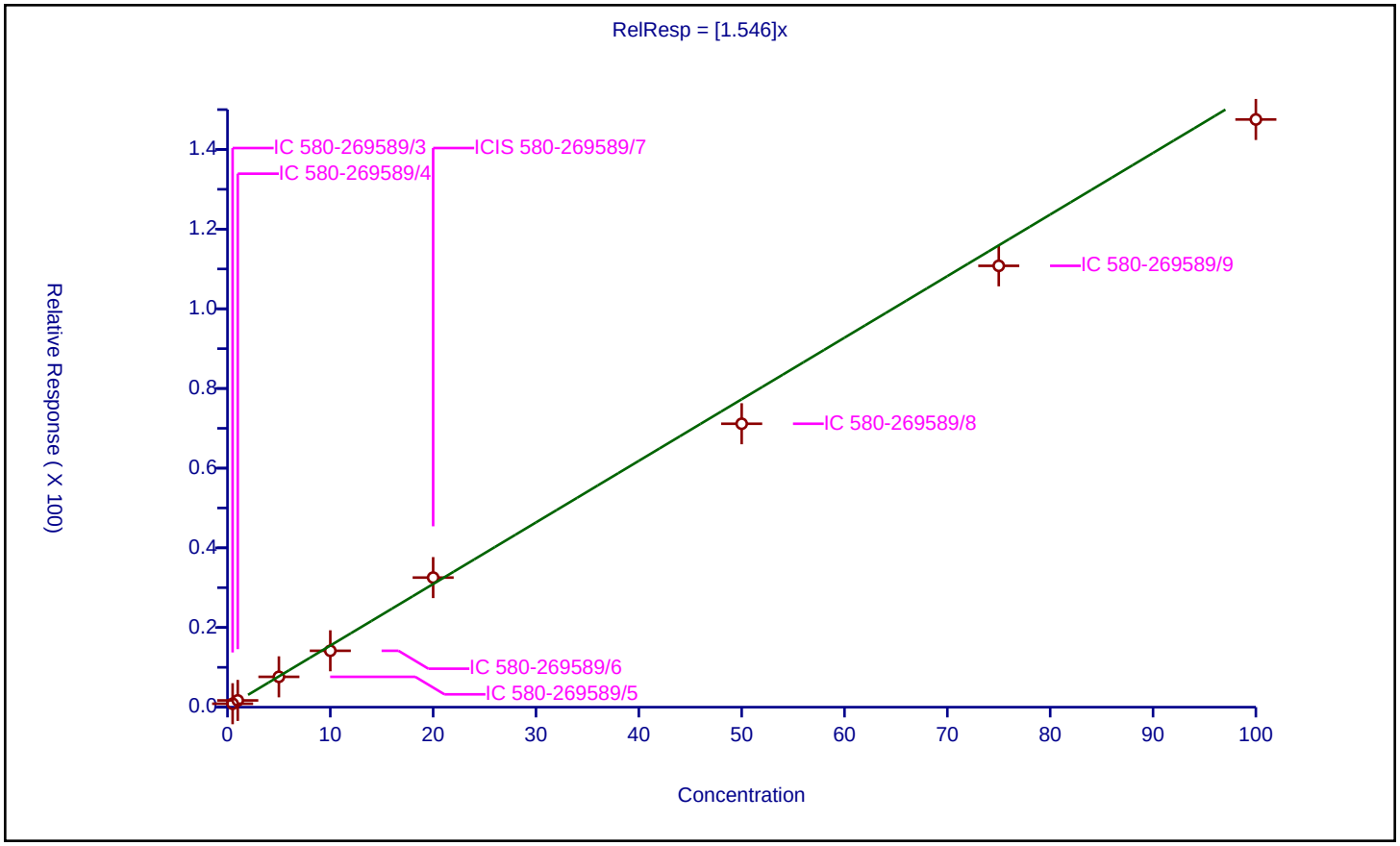
Curve Coefficients

Intercept:	0
Slope:	1.546

Error Coefficients

Standard Error:	981000
Relative Standard Error:	7.9
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.864591	48.75	577890.0	1.729183	Y
2	IC 580-269589/4	1.0	1.697041	48.75	545171.0	1.697041	Y
3	IC 580-269589/5	5.0	7.613285	48.75	608190.0	1.522657	Y
4	IC 580-269589/6	10.0	14.156301	48.75	548784.0	1.41563	Y
5	ICIS 580-269589/7	20.0	32.525241	48.75	548520.0	1.626262	Y
6	IC 580-269589/8	50.0	71.142937	48.75	605359.0	1.422859	Y
7	IC 580-269589/9	75.0	110.786997	48.75	643994.0	1.47716	Y
8	IC 580-269589/10	100.0	147.527937	48.75	631607.0	1.475279	Y



Calibration / 1,3-Dichloropropane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

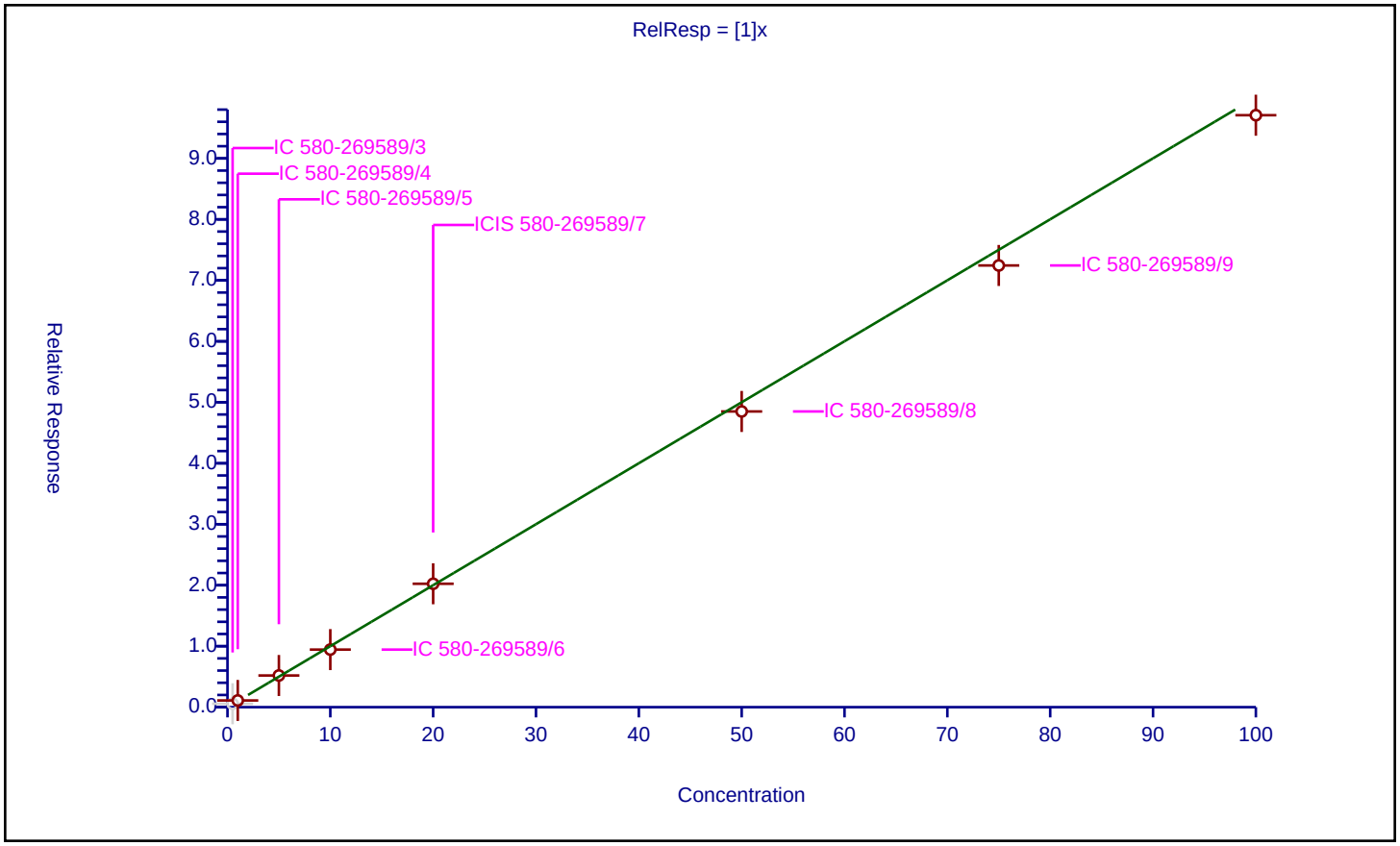
Curve Coefficients

Intercept:	0
Slope:	1

Error Coefficients

Standard Error:	699000
Relative Standard Error:	5.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.559972	48.75	577890.0	1.119945	N
2	IC 580-269589/4	1.0	1.098632	48.75	545171.0	1.098632	Y
3	IC 580-269589/5	5.0	5.196024	48.75	608190.0	1.039205	Y
4	IC 580-269589/6	10.0	9.442035	48.75	548784.0	0.944203	Y
5	ICIS 580-269589/7	20.0	20.238822	48.75	548520.0	1.011941	Y
6	IC 580-269589/8	50.0	48.496489	48.75	605359.0	0.96993	Y
7	IC 580-269589/9	75.0	72.440677	48.75	643994.0	0.965876	Y
8	IC 580-269589/10	100.0	97.081431	48.75	631607.0	0.970814	Y



Calibration / 2-Hexanone

Curve Type:	Linear
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

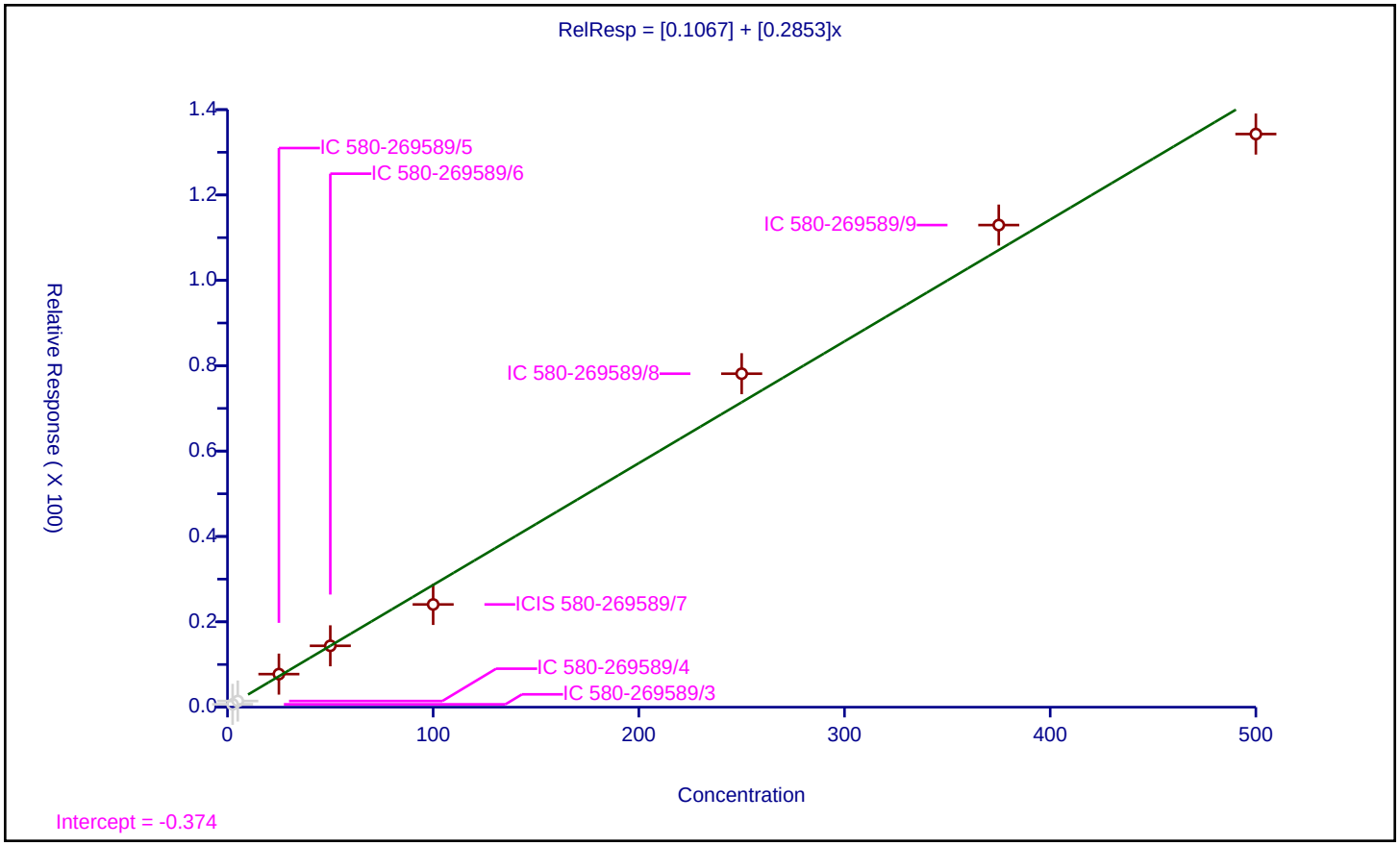
Curve Coefficients

Intercept:	0.1067
Slope:	0.2853

Error Coefficients

Standard Error:	1260000
Relative Standard Error:	10.7
Correlation Coefficient:	0.987
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	2.5	0.670314	48.75	577890.0	0.268125	N
2	IC 580-269589/4	5.0	1.438881	48.75	545171.0	0.287776	N
3	IC 580-269589/5	25.0	7.744901	48.75	608190.0	0.309796	Y
4	IC 580-269589/6	50.0	14.377494	48.75	548784.0	0.28755	Y
5	ICIS 580-269589/7	100.0	24.061803	48.75	548520.0	0.240618	Y
6	IC 580-269589/8	250.0	78.128173	48.75	605359.0	0.312513	Y
7	IC 580-269589/9	375.0	112.952077	48.75	643994.0	0.301206	Y
8	IC 580-269589/10	500.0	134.272576	48.75	631607.0	0.268545	Y



Calibration / Chlorodibromomethane

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

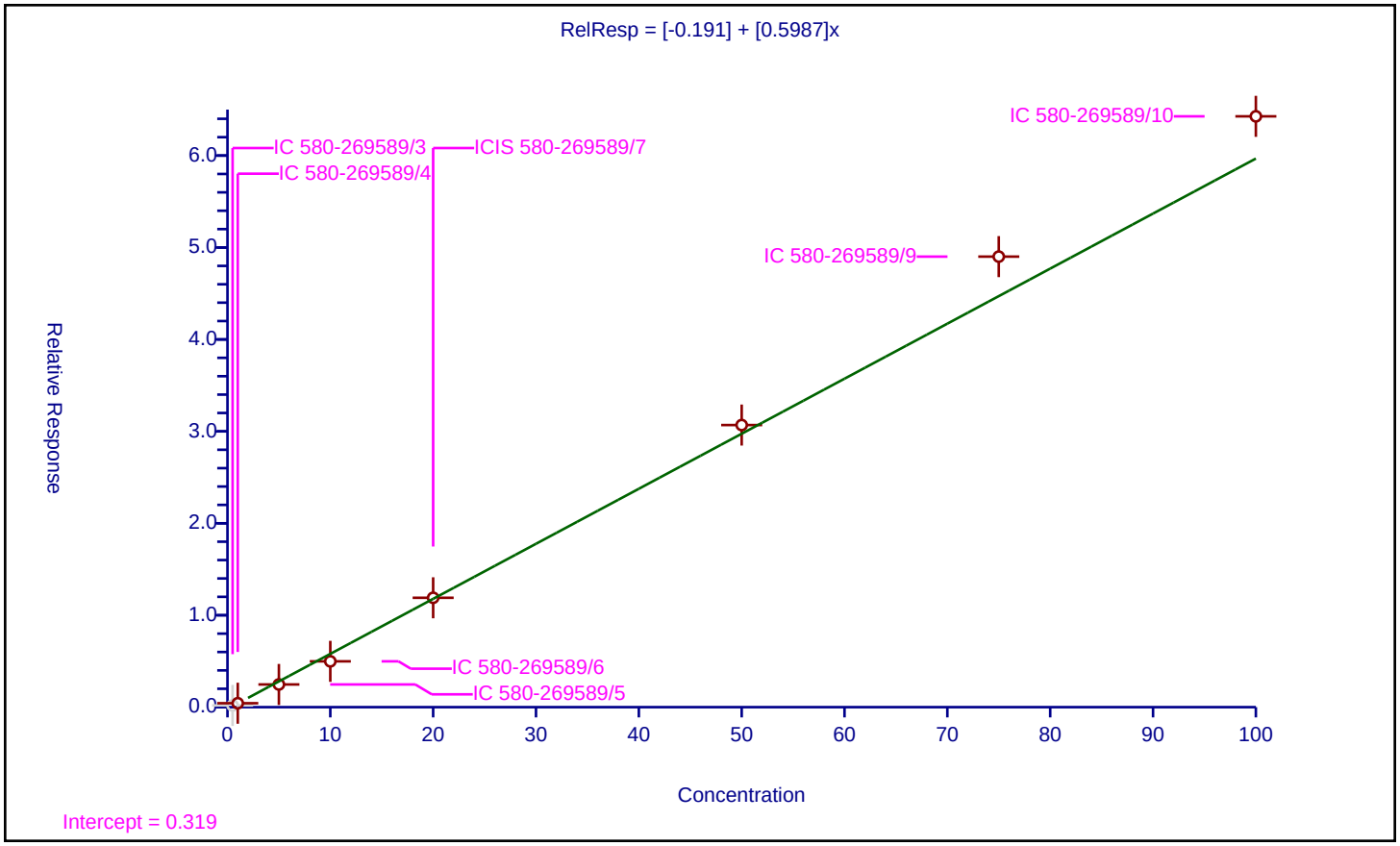
Curve Coefficients

Intercept:	-0.191
Slope:	0.5987

Error Coefficients

Standard Error:	506000
Relative Standard Error:	9.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.188035	48.75	577890.0	0.376071	N
2	IC 580-269589/4	1.0	0.427166	48.75	545171.0	0.427166	Y
3	IC 580-269589/5	5.0	2.469923	48.75	608190.0	0.493985	Y
4	IC 580-269589/6	10.0	4.985739	48.75	548784.0	0.498574	Y
5	ICIS 580-269589/7	20.0	11.898921	48.75	548520.0	0.594946	Y
6	IC 580-269589/8	50.0	30.687683	48.75	605359.0	0.613754	Y
7	IC 580-269589/9	75.0	49.009346	48.75	643994.0	0.653458	Y
8	IC 580-269589/10	100.0	64.267858	48.75	631607.0	0.642679	Y



Calibration / n-Butyl acetate

Curve Type:	Linear
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

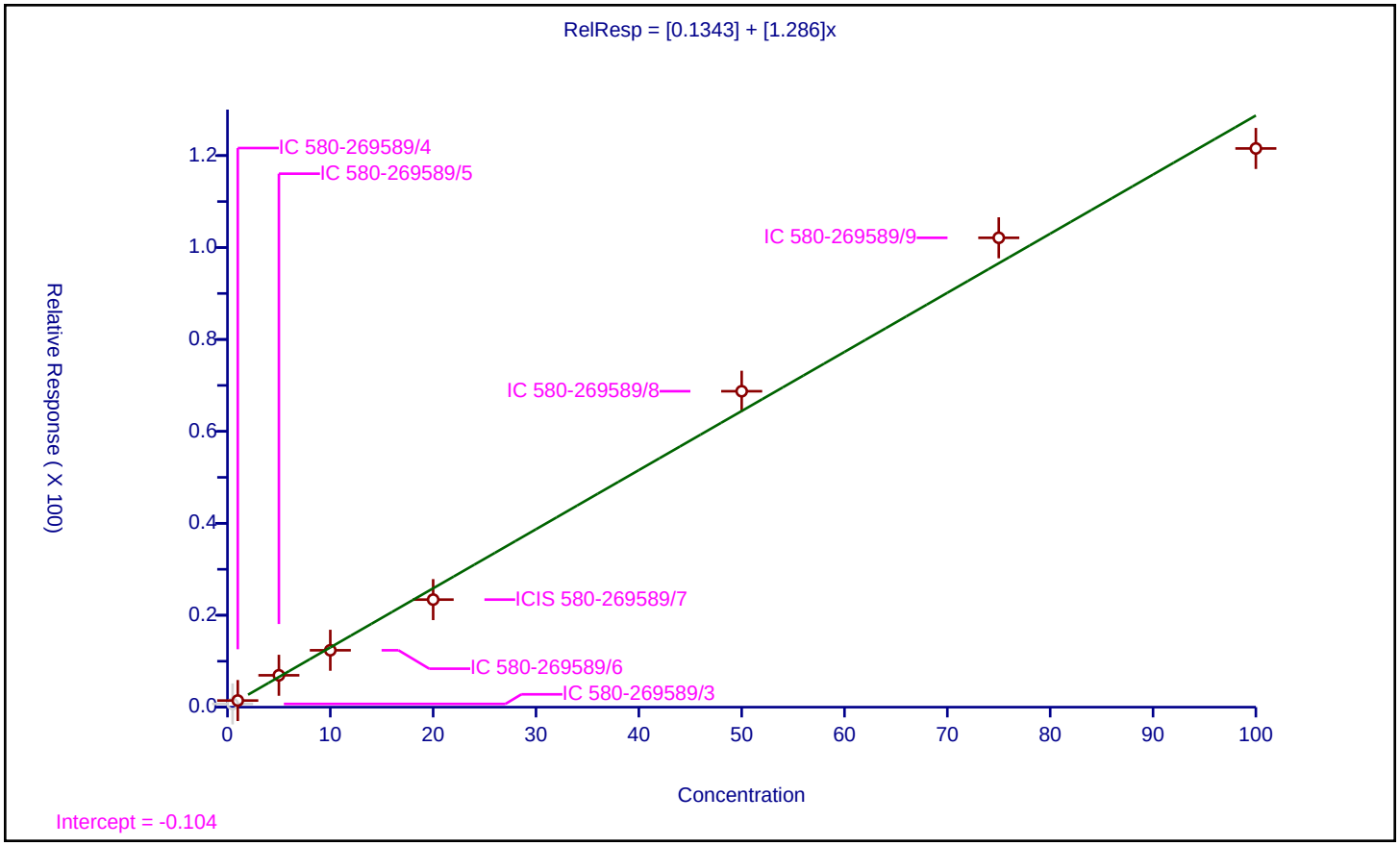
Curve Coefficients

Intercept:	0.1343
Slope:	1.286

Error Coefficients

Standard Error:	1010000
Relative Standard Error:	7.2
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.7076	48.75	577890.0	1.4152	N
2	IC 580-269589/4	1.0	1.441295	48.75	545171.0	1.441295	Y
3	IC 580-269589/5	5.0	6.93685	48.75	608190.0	1.38737	Y
4	IC 580-269589/6	10.0	12.378313	48.75	548784.0	1.237831	Y
5	ICIS 580-269589/7	20.0	23.401813	48.75	548520.0	1.170091	Y
6	IC 580-269589/8	50.0	68.733217	48.75	605359.0	1.374664	Y
7	IC 580-269589/9	75.0	102.112293	48.75	643994.0	1.361497	Y
8	IC 580-269589/10	100.0	121.548936	48.75	631607.0	1.215489	Y



Calibration / Ethylene Dibromide

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

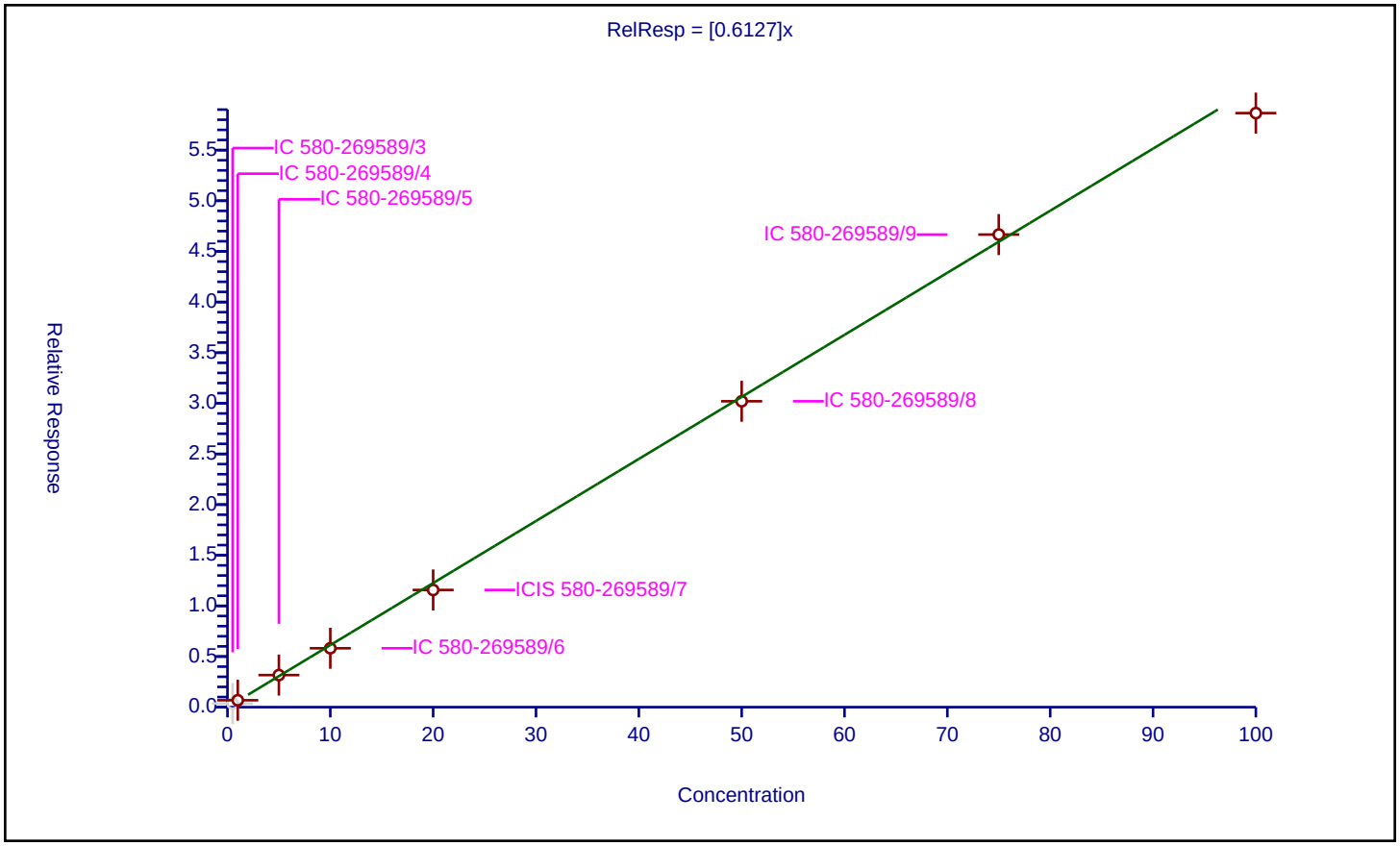
Curve Coefficients

Intercept:	0
Slope:	0.6127

Error Coefficients

Standard Error:	432000
Relative Standard Error:	6.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.358693	48.75	577890.0	0.717386	N
2	IC 580-269589/4	1.0	0.682822	48.75	545171.0	0.682822	Y
3	IC 580-269589/5	5.0	3.166718	48.75	608190.0	0.633344	Y
4	IC 580-269589/6	10.0	5.81446	48.75	548784.0	0.581446	Y
5	ICIS 580-269589/7	20.0	11.570704	48.75	548520.0	0.578535	Y
6	IC 580-269589/8	50.0	30.202485	48.75	605359.0	0.60405	Y
7	IC 580-269589/9	75.0	46.662587	48.75	643994.0	0.622168	Y
8	IC 580-269589/10	100.0	58.653488	48.75	631607.0	0.586535	Y



Calibration / Tetrachloroethene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

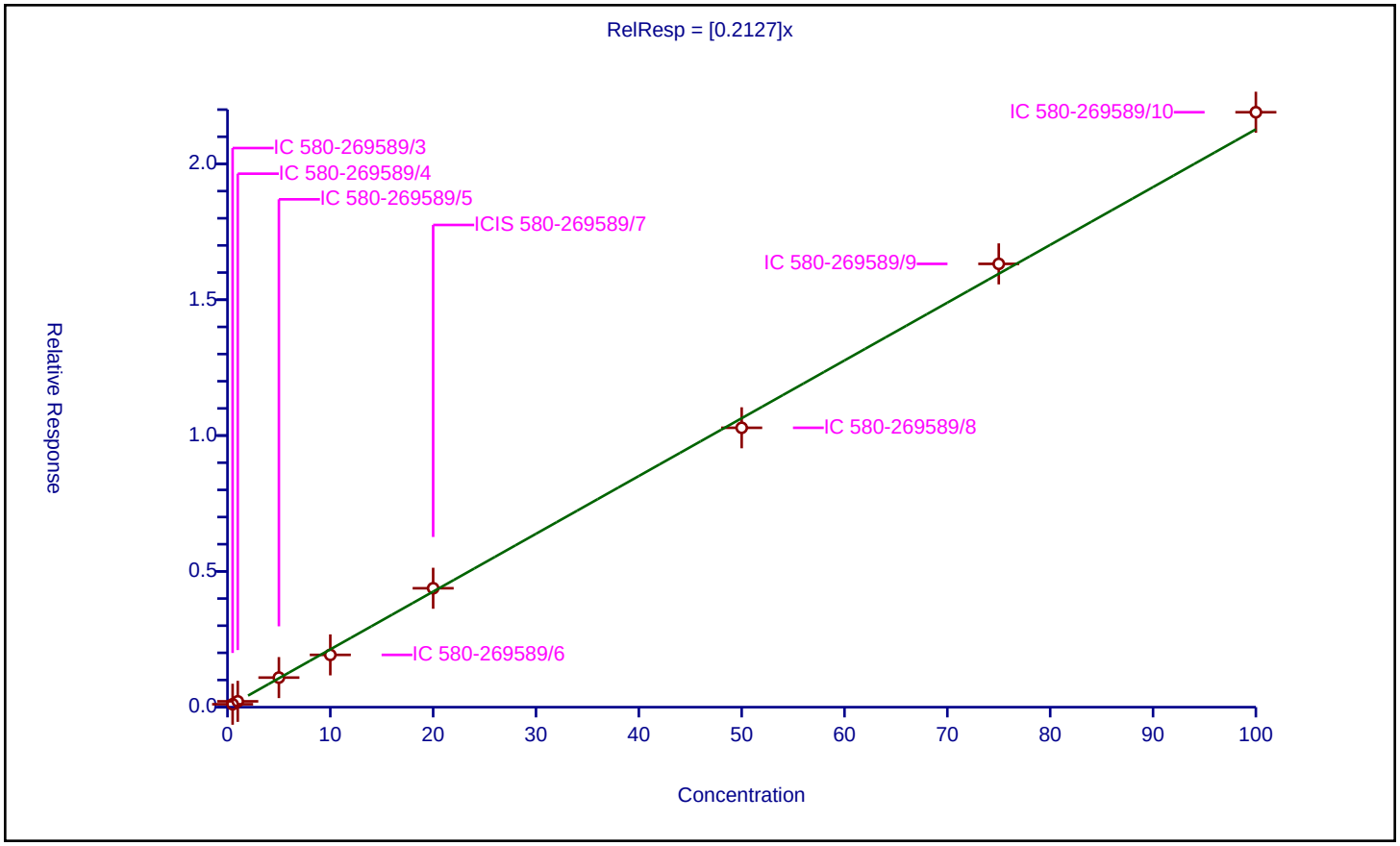
Curve Coefficients

Intercept:	0
Slope:	0.2127

Error Coefficients

Standard Error:	332000
Relative Standard Error:	4.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.107915	48.75	1385953.0	0.21583	Y
2	IC 580-269589/4	1.0	0.21456	48.75	1359845.0	0.21456	Y
3	IC 580-269589/5	5.0	1.089155	48.75	1422948.0	0.217831	Y
4	IC 580-269589/6	10.0	1.925209	48.75	1358597.0	0.192521	Y
5	ICIS 580-269589/7	20.0	4.377971	48.75	1364764.0	0.218899	Y
6	IC 580-269589/8	50.0	10.28565	48.75	1405755.0	0.205713	Y
7	IC 580-269589/9	75.0	16.320627	48.75	1473218.0	0.217608	Y
8	IC 580-269589/10	100.0	21.903262	48.75	1444559.0	0.219033	Y



Calibration / 1,1,1,2-Tetrachloroethane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

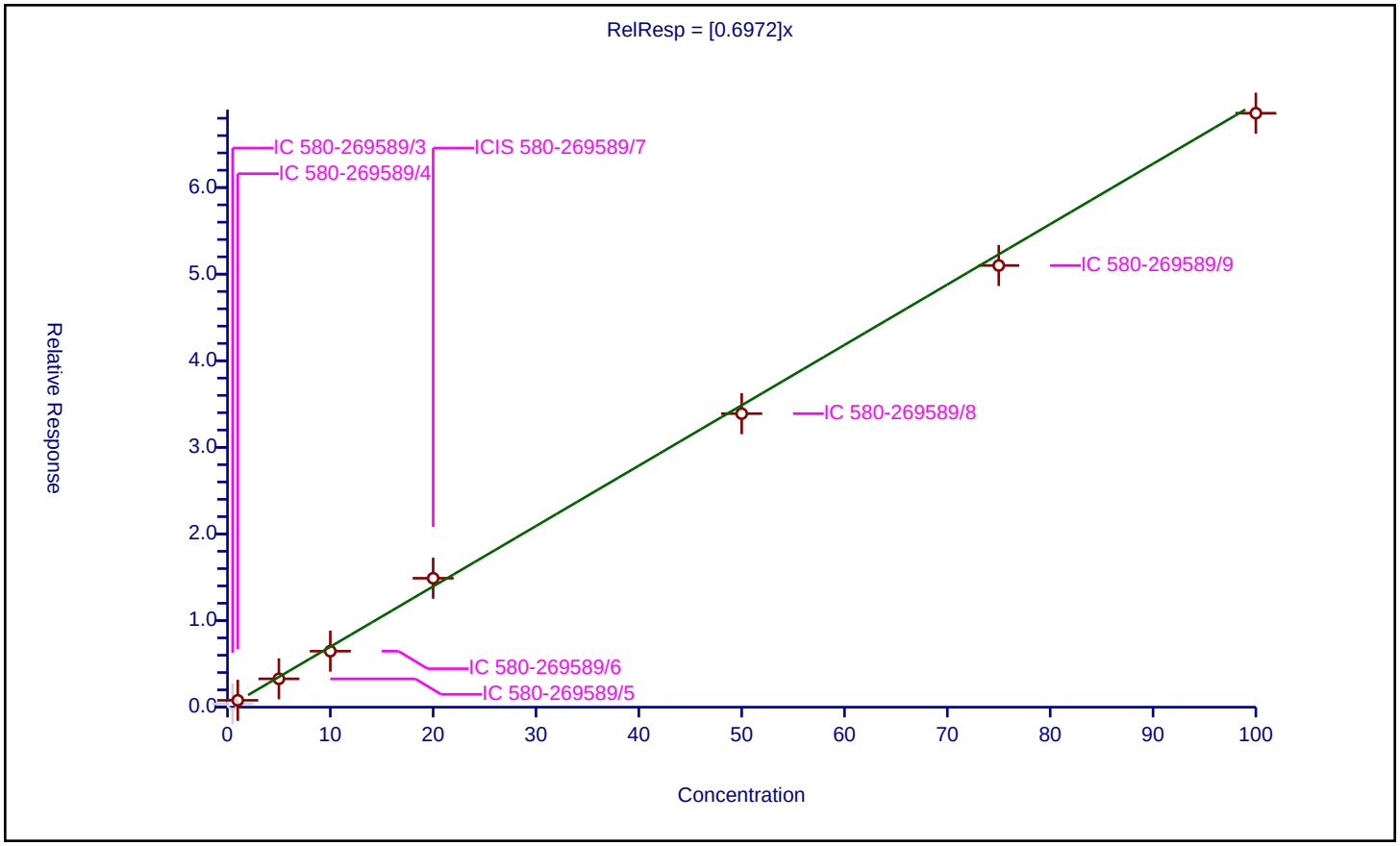
Curve Coefficients

Intercept:	0
Slope:	0.6972

Error Coefficients

Standard Error:	493000
Relative Standard Error:	7.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.367804	48.75	577890.0	0.735607	N
2	IC 580-269589/4	1.0	0.791112	48.75	545171.0	0.791112	Y
3	IC 580-269589/5	5.0	3.273085	48.75	608190.0	0.654617	Y
4	IC 580-269589/6	10.0	6.462939	48.75	548784.0	0.646294	Y
5	ICIS 580-269589/7	20.0	14.887805	48.75	548520.0	0.74439	Y
6	IC 580-269589/8	50.0	33.892886	48.75	605359.0	0.677858	Y
7	IC 580-269589/9	75.0	51.000242	48.75	643994.0	0.680003	Y
8	IC 580-269589/10	100.0	68.583451	48.75	631607.0	0.685835	Y



Calibration / Chlorobenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

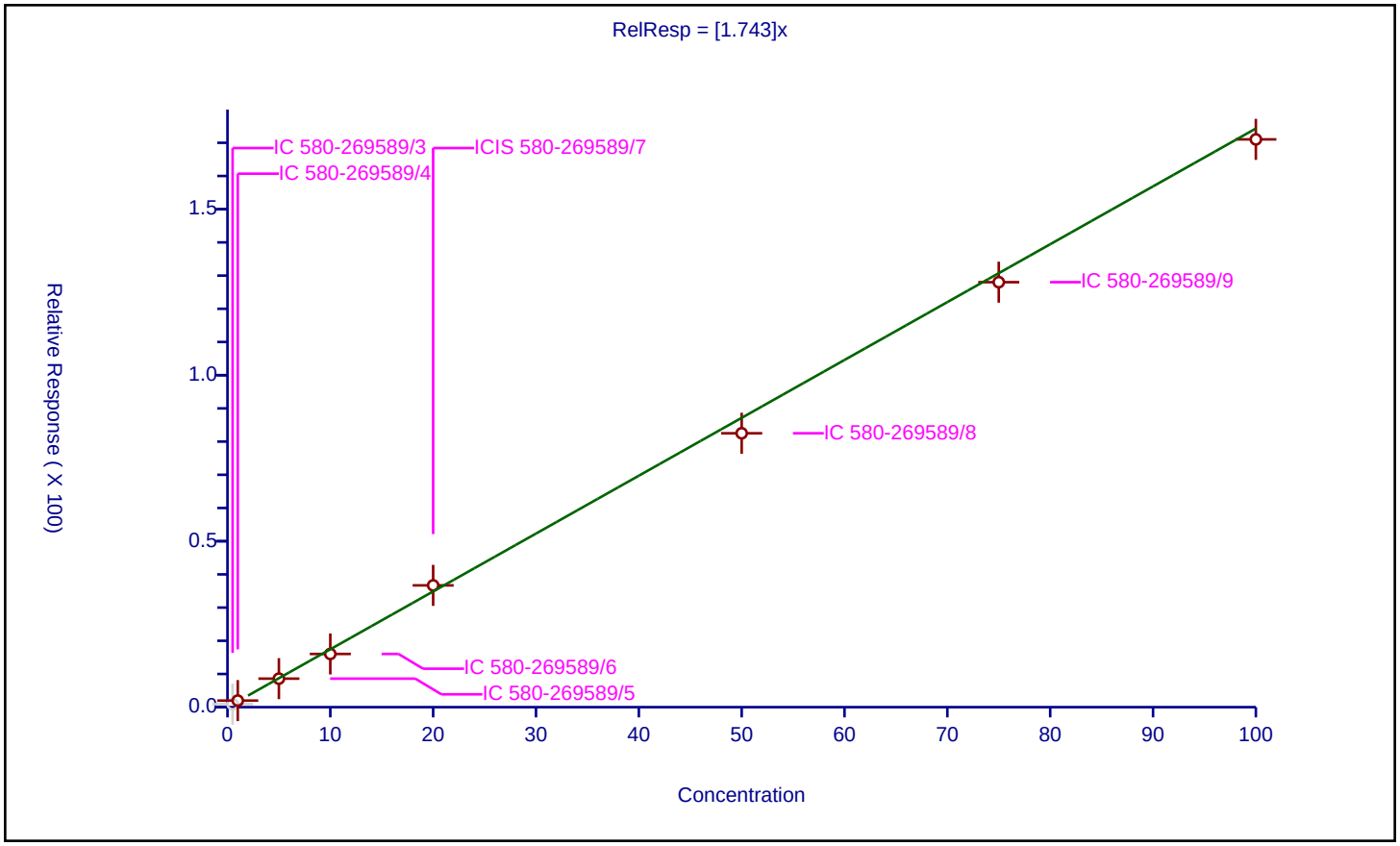
Curve Coefficients

Intercept:	0
Slope:	1.743

Error Coefficients

Standard Error:	1230000
Relative Standard Error:	7.2
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.902722	48.75	577890.0	1.805443	N
2	IC 580-269589/4	1.0	1.978629	48.75	545171.0	1.978629	Y
3	IC 580-269589/5	5.0	8.593591	48.75	608190.0	1.718718	Y
4	IC 580-269589/6	10.0	16.027563	48.75	548784.0	1.602756	Y
5	ICIS 580-269589/7	20.0	36.683282	48.75	548520.0	1.834164	Y
6	IC 580-269589/8	50.0	82.498495	48.75	605359.0	1.64997	Y
7	IC 580-269589/9	75.0	128.020358	48.75	643994.0	1.706938	Y
8	IC 580-269589/10	100.0	171.032648	48.75	631607.0	1.710326	Y



Calibration / Ethylbenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

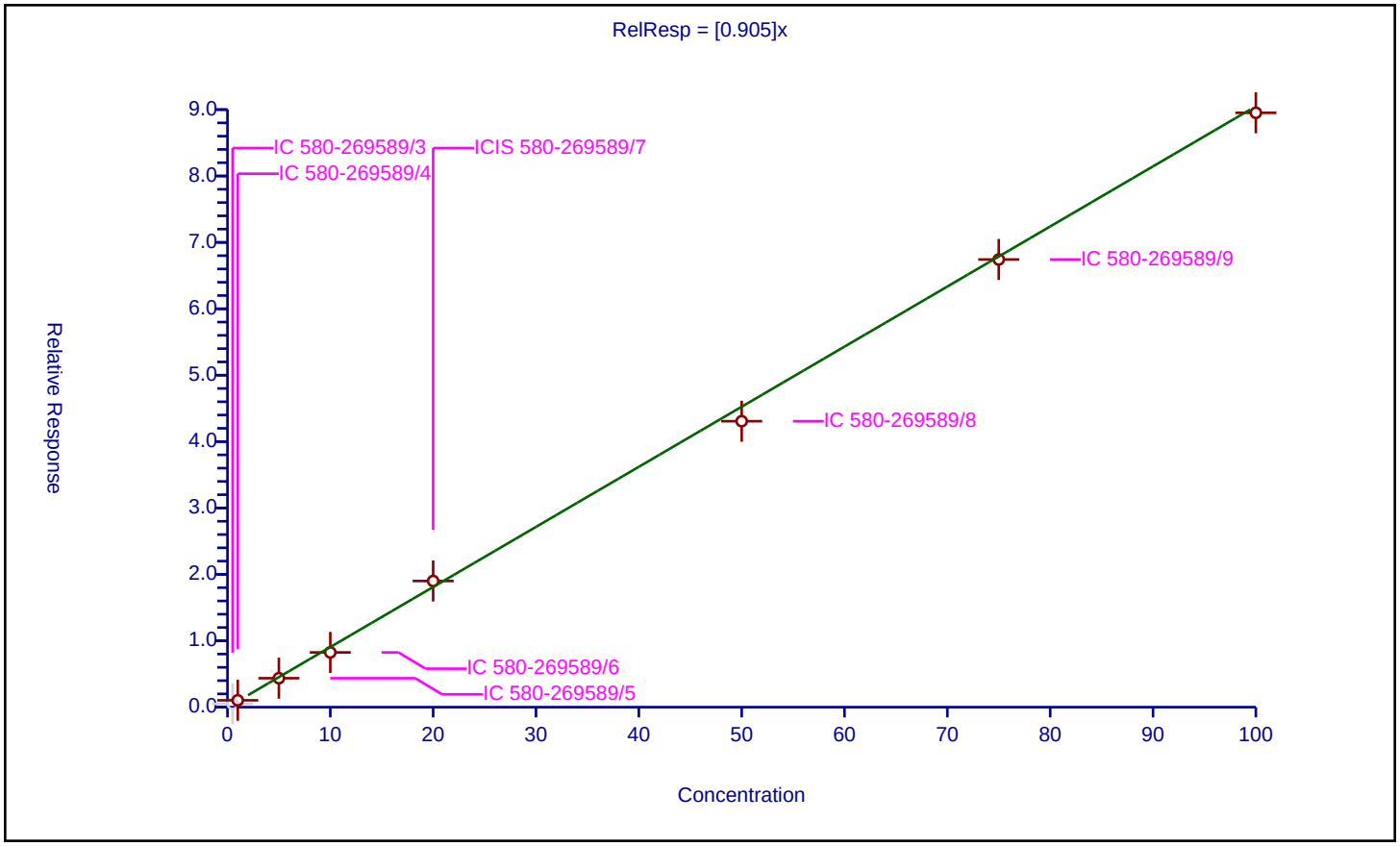
Curve Coefficients

Intercept:	0
Slope:	0.905

Error Coefficients

Standard Error:	643000
Relative Standard Error:	7.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.50109	48.75	577890.0	1.00218	N
2	IC 580-269589/4	1.0	1.032371	48.75	545171.0	1.032371	Y
3	IC 580-269589/5	5.0	4.361361	48.75	608190.0	0.872272	Y
4	IC 580-269589/6	10.0	8.247323	48.75	548784.0	0.824732	Y
5	ICIS 580-269589/7	20.0	19.003097	48.75	548520.0	0.950155	Y
6	IC 580-269589/8	50.0	43.069443	48.75	605359.0	0.861389	Y
7	IC 580-269589/9	75.0	67.426042	48.75	643994.0	0.899014	Y
8	IC 580-269589/10	100.0	89.520325	48.75	631607.0	0.895203	Y



Calibration / m-Xylene & p-Xylene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

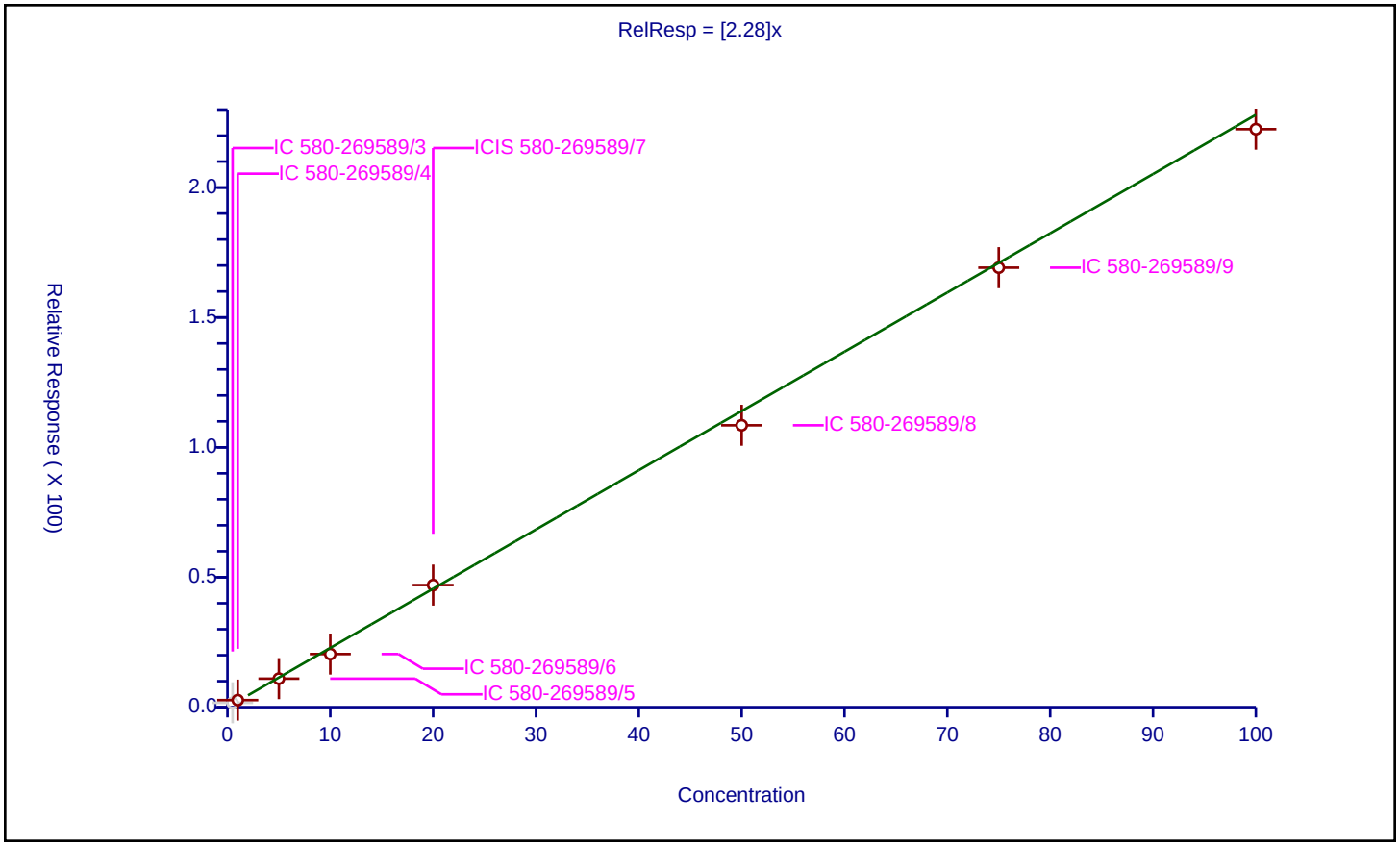
Curve Coefficients

Intercept:	0
Slope:	2.28

Error Coefficients

Standard Error:	1610000
Relative Standard Error:	9.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.989

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	1.685654	48.75	577890.0	3.371308	N
2	IC 580-269589/4	1.0	2.718771	48.75	545171.0	2.718771	Y
3	IC 580-269589/5	5.0	10.980553	48.75	608190.0	2.196111	Y
4	IC 580-269589/6	10.0	20.443972	48.75	548784.0	2.044397	Y
5	ICIS 580-269589/7	20.0	46.997019	48.75	548520.0	2.349851	Y
6	IC 580-269589/8	50.0	108.494618	48.75	605359.0	2.169892	Y
7	IC 580-269589/9	75.0	169.165893	48.75	643994.0	2.255545	Y
8	IC 580-269589/10	100.0	222.472744	48.75	631607.0	2.224727	Y



Calibration / Bromoform

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

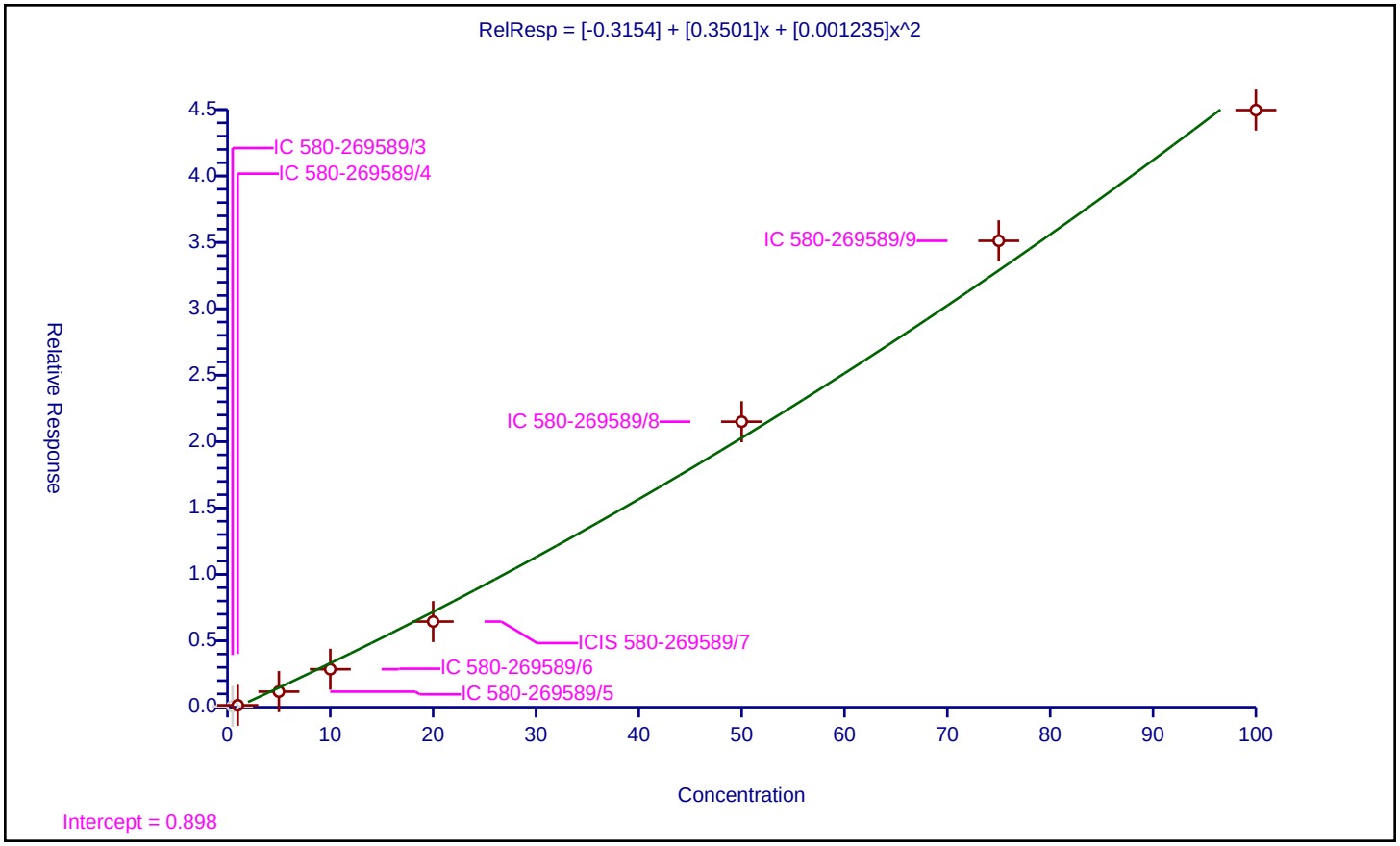
Curve Coefficients

Intercept:	-0.3154
Slope:	0.3501
Second Order:	0.001235

Error Coefficients

Standard Error:	398000
Relative Standard Error:	19.3
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.065209	48.75	577890.0	0.130418	N
2	IC 580-269589/4	1.0	0.143432	48.75	545171.0	0.143432	Y
3	IC 580-269589/5	5.0	1.171719	48.75	608190.0	0.234344	Y
4	IC 580-269589/6	10.0	2.856151	48.75	548784.0	0.285615	Y
5	ICIS 580-269589/7	20.0	6.447119	48.75	548520.0	0.322356	Y
6	IC 580-269589/8	50.0	21.497033	48.75	605359.0	0.429941	Y
7	IC 580-269589/9	75.0	35.119857	48.75	643994.0	0.468265	Y
8	IC 580-269589/10	100.0	44.965125	48.75	631607.0	0.449651	Y



Calibration / Styrene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

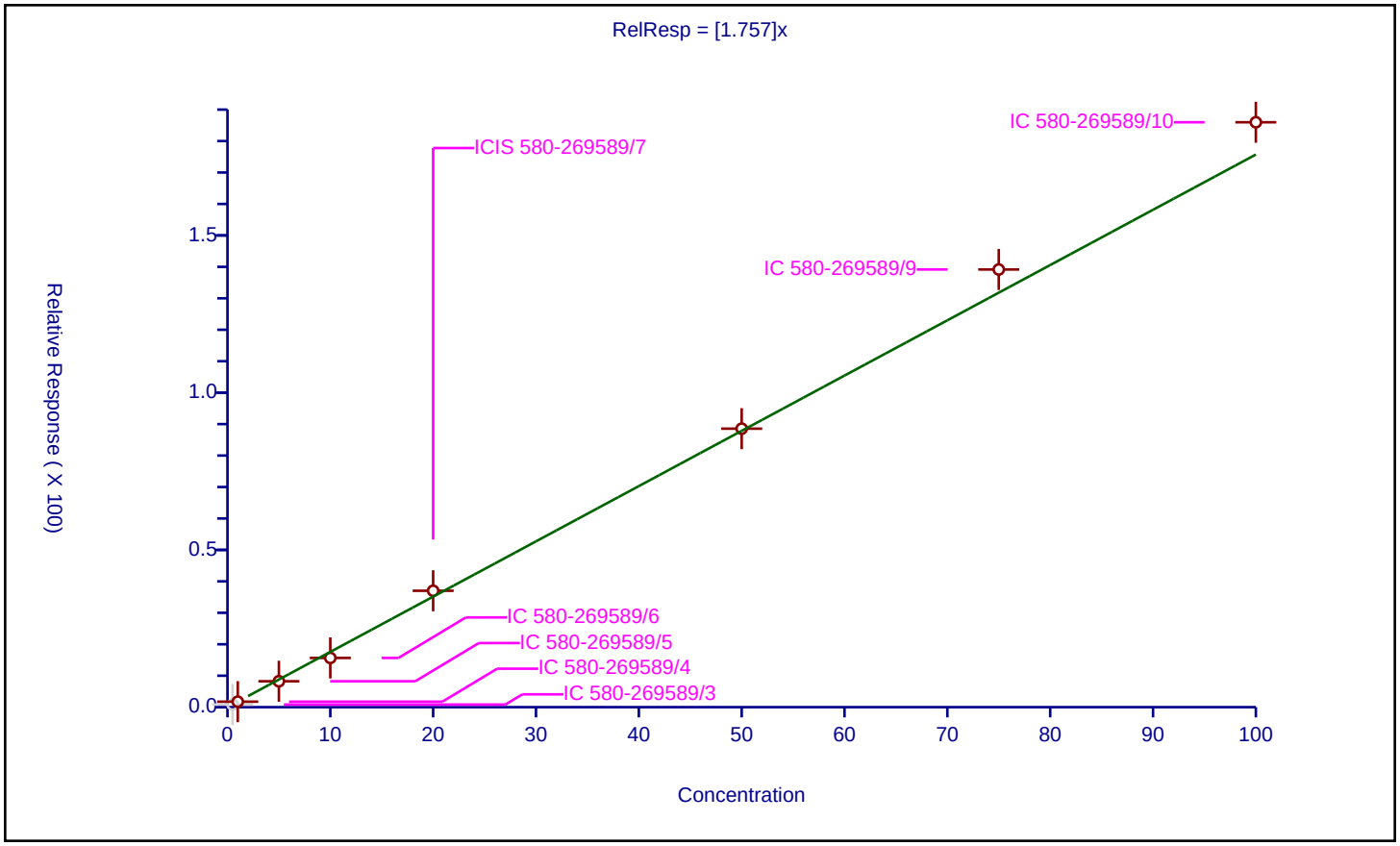
Curve Coefficients

Intercept:	0
Slope:	1.757

Error Coefficients

Standard Error:	1330000
Relative Standard Error:	6.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.8365	48.75	577890.0	1.673	N
2	IC 580-269589/4	1.0	1.751409	48.75	545171.0	1.751409	Y
3	IC 580-269589/5	5.0	8.233772	48.75	608190.0	1.646754	Y
4	IC 580-269589/6	10.0	15.651889	48.75	548784.0	1.565189	Y
5	ICIS 580-269589/7	20.0	37.013454	48.75	548520.0	1.850673	Y
6	IC 580-269589/8	50.0	88.550781	48.75	605359.0	1.771016	Y
7	IC 580-269589/9	75.0	139.160518	48.75	643994.0	1.855474	Y
8	IC 580-269589/10	100.0	185.976179	48.75	631607.0	1.859762	Y



Calibration / o-Xylene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

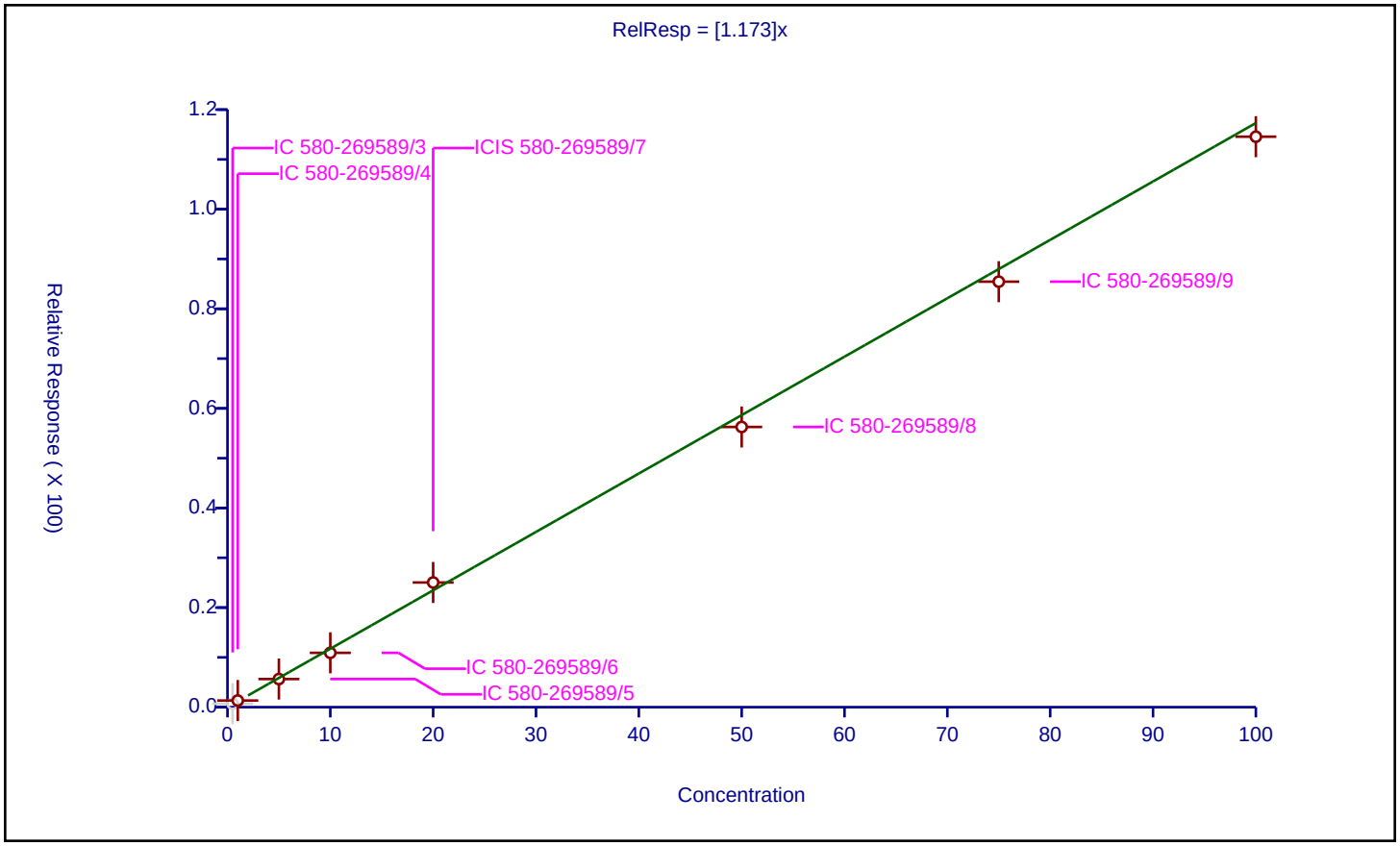
Curve Coefficients

Intercept:	0
Slope:	1.173

Error Coefficients

Standard Error:	823000
Relative Standard Error:	7.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.692669	48.75	577890.0	1.385337	N
2	IC 580-269589/4	1.0	1.328982	48.75	545171.0	1.328982	Y
3	IC 580-269589/5	5.0	5.643535	48.75	608190.0	1.128707	Y
4	IC 580-269589/6	10.0	10.912217	48.75	548784.0	1.091222	Y
5	ICIS 580-269589/7	20.0	25.040678	48.75	548520.0	1.252034	Y
6	IC 580-269589/8	50.0	56.268912	48.75	605359.0	1.125378	Y
7	IC 580-269589/9	75.0	85.449327	48.75	643994.0	1.139324	Y
8	IC 580-269589/10	100.0	114.558683	48.75	631607.0	1.145587	Y



Calibration / 1,1,2,2-Tetrachloroethane

Curve Type:	Quadratic
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

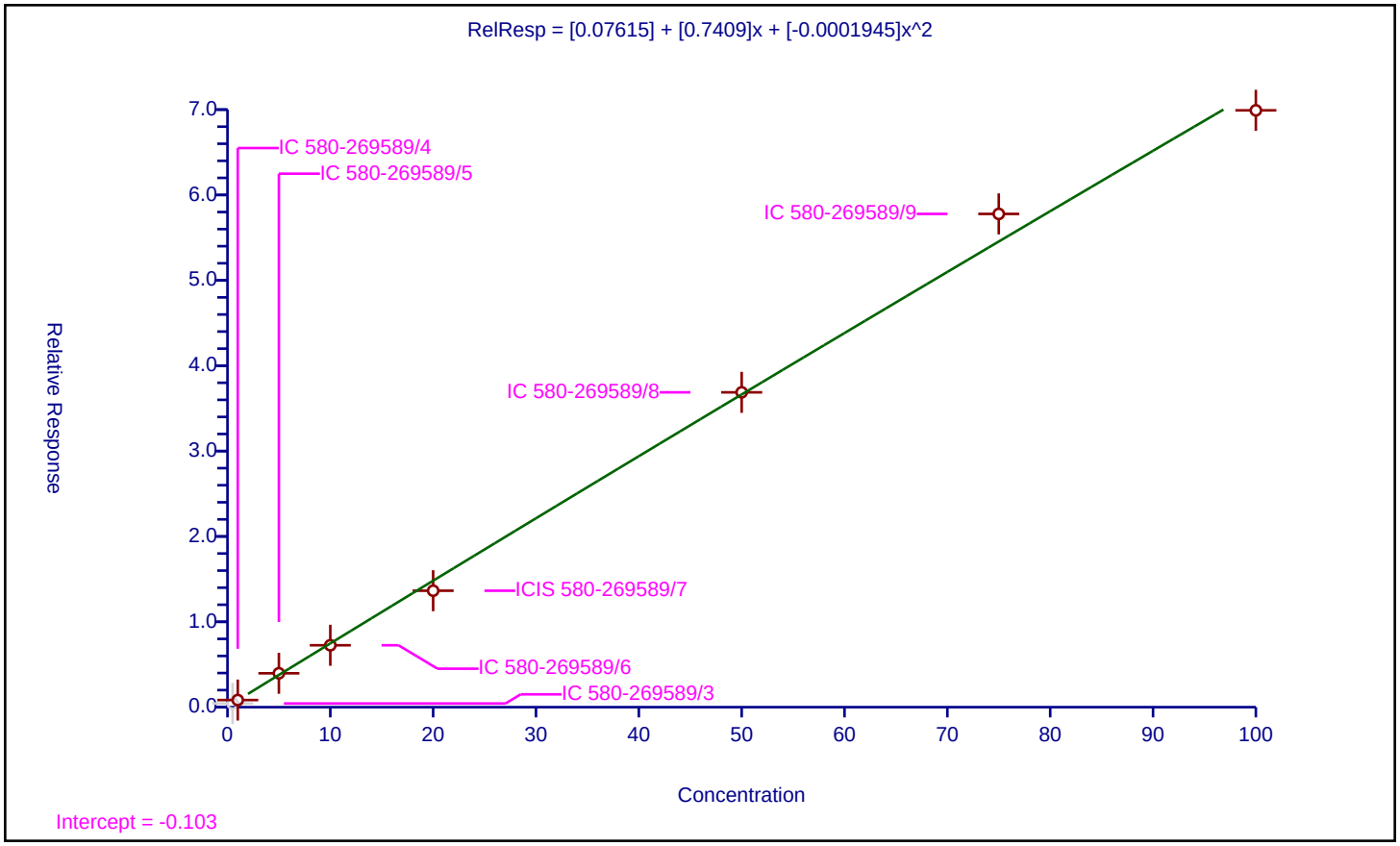
Curve Coefficients

Intercept:	0.07615
Slope:	0.7409
Second Order:	-0.0001945

Error Coefficients

Standard Error:	736000
Relative Standard Error:	6.2
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.42723	48.75	712257.0	0.85446	N
2	IC 580-269589/4	1.0	0.833214	48.75	697537.0	0.833214	Y
3	IC 580-269589/5	5.0	3.969296	48.75	712171.0	0.793859	Y
4	IC 580-269589/6	10.0	7.249865	48.75	673677.0	0.724987	Y
5	ICIS 580-269589/7	20.0	13.643003	48.75	664680.0	0.68215	Y
6	IC 580-269589/8	50.0	36.878791	48.75	720868.0	0.737576	Y
7	IC 580-269589/9	75.0	57.780355	48.75	735675.0	0.770405	Y
8	IC 580-269589/10	100.0	69.914205	48.75	718634.0	0.699142	Y



Calibration / trans-1,4-Dichloro-2-butene

Curve Type:	Quadratic
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

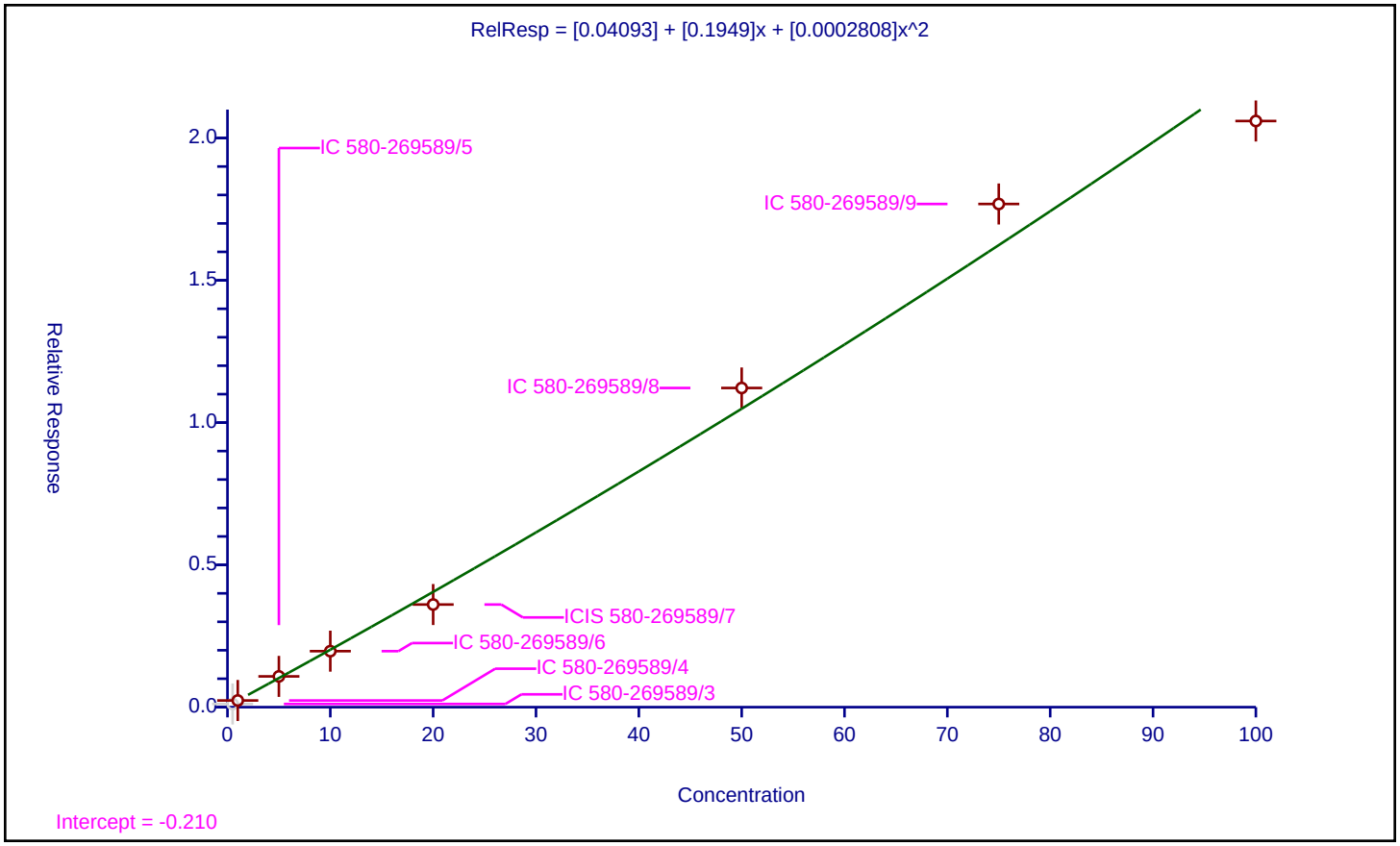
Curve Coefficients

Intercept:	0.04093
Slope:	0.1949
Second Order:	0.0002808

Error Coefficients

Standard Error:	220000
Relative Standard Error:	8.9
Correlation Coefficient:	0.983
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.112591	48.75	712257.0	0.225182	N
2	IC 580-269589/4	1.0	0.234966	48.75	697537.0	0.234966	Y
3	IC 580-269589/5	5.0	1.081689	48.75	712171.0	0.216338	Y
4	IC 580-269589/6	10.0	1.968085	48.75	673677.0	0.196809	Y
5	ICIS 580-269589/7	20.0	3.607183	48.75	664680.0	0.180359	Y
6	IC 580-269589/8	50.0	11.217123	48.75	720868.0	0.224342	Y
7	IC 580-269589/9	75.0	17.682929	48.75	735675.0	0.235772	Y
8	IC 580-269589/10	100.0	20.599123	48.75	718634.0	0.205991	Y



Calibration / 1,2,3-Trichloropropane

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

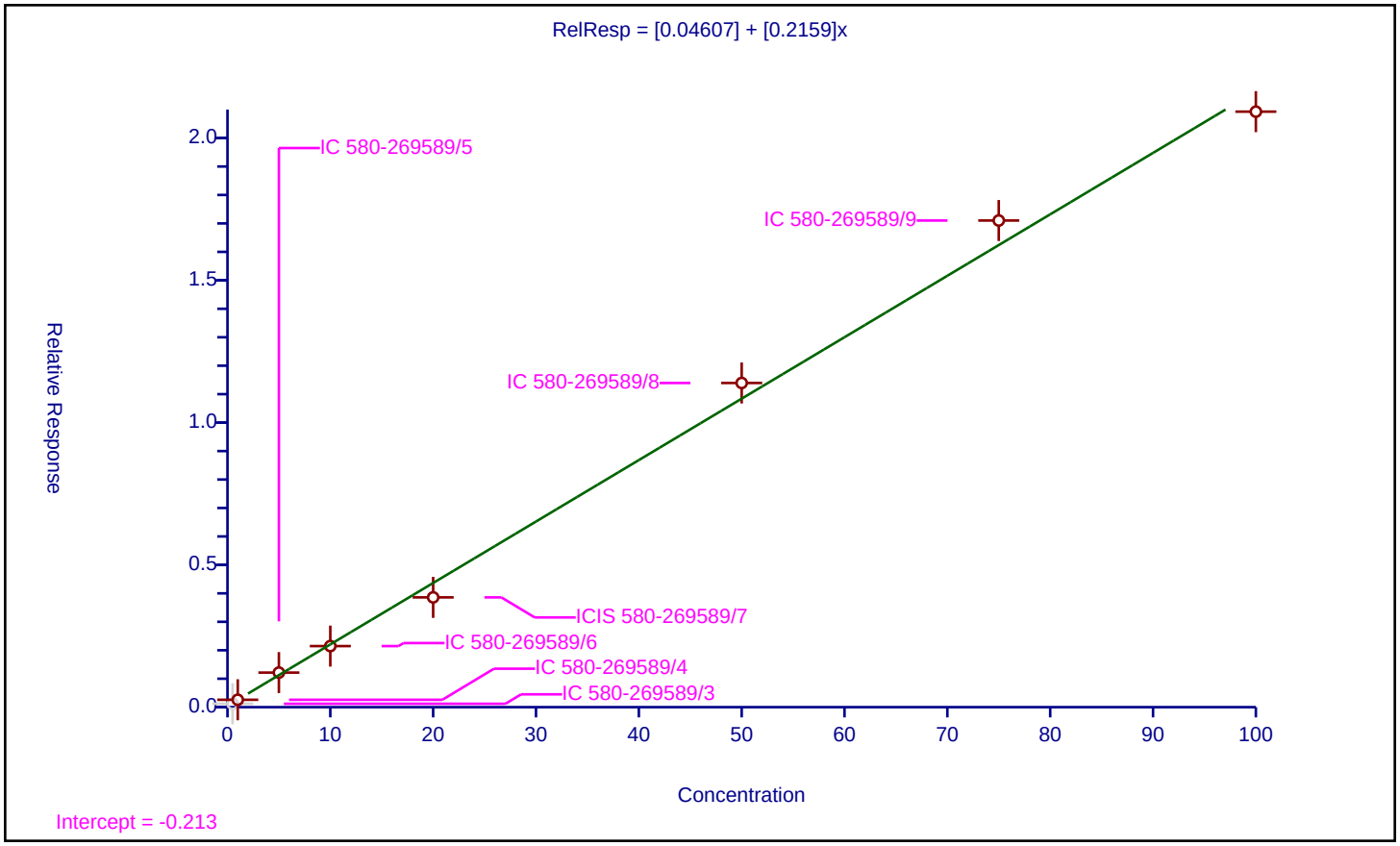
Curve Coefficients

Intercept:	0.04607
Slope:	0.2159

Error Coefficients

Standard Error:	197000
Relative Standard Error:	7.5
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.119093	48.75	712257.0	0.238186	N
2	IC 580-269589/4	1.0	0.259986	48.75	697537.0	0.259986	Y
3	IC 580-269589/5	5.0	1.214556	48.75	712171.0	0.242911	Y
4	IC 580-269589/6	10.0	2.146173	48.75	673677.0	0.214617	Y
5	ICIS 580-269589/7	20.0	3.858385	48.75	664680.0	0.192919	Y
6	IC 580-269589/8	50.0	11.392817	48.75	720868.0	0.227856	Y
7	IC 580-269589/9	75.0	17.102243	48.75	735675.0	0.22803	Y
8	IC 580-269589/10	100.0	20.9282	48.75	718634.0	0.209282	Y



Calibration / Isopropylbenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

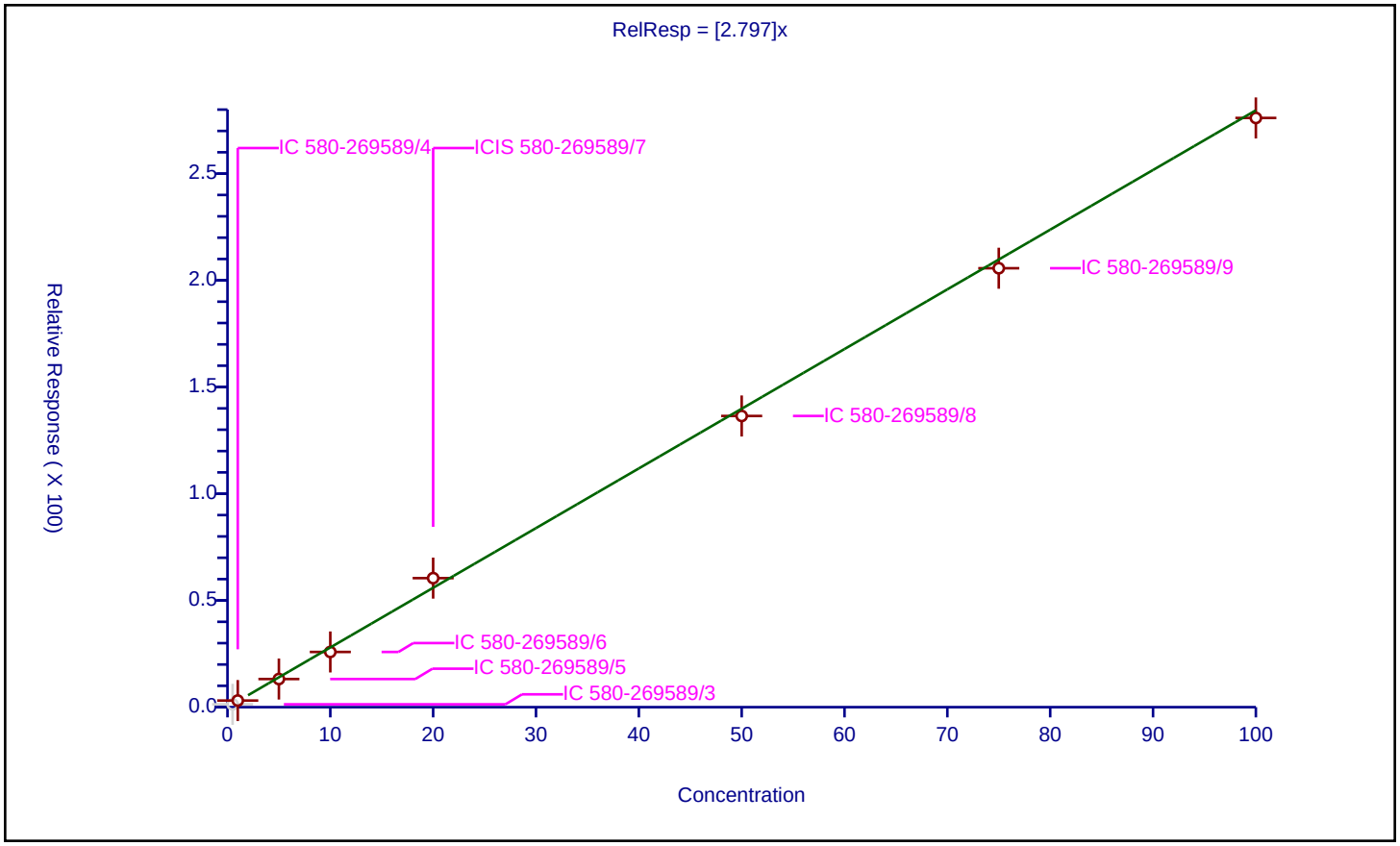
Curve Coefficients

Intercept:	0
Slope:	2.797

Error Coefficients

Standard Error:	1980000
Relative Standard Error:	6.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	1.33624	48.75	577890.0	2.672481	N
2	IC 580-269589/4	1.0	3.097113	48.75	545171.0	3.097113	Y
3	IC 580-269589/5	5.0	13.188767	48.75	608190.0	2.637753	Y
4	IC 580-269589/6	10.0	25.870677	48.75	548784.0	2.587068	Y
5	ICIS 580-269589/7	20.0	60.464149	48.75	548520.0	3.023207	Y
6	IC 580-269589/8	50.0	136.444981	48.75	605359.0	2.7289	Y
7	IC 580-269589/9	75.0	205.670142	48.75	643994.0	2.742269	Y
8	IC 580-269589/10	100.0	276.091901	48.75	631607.0	2.760919	Y



Calibration / 4-Bromofluorobenzene (Surr)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

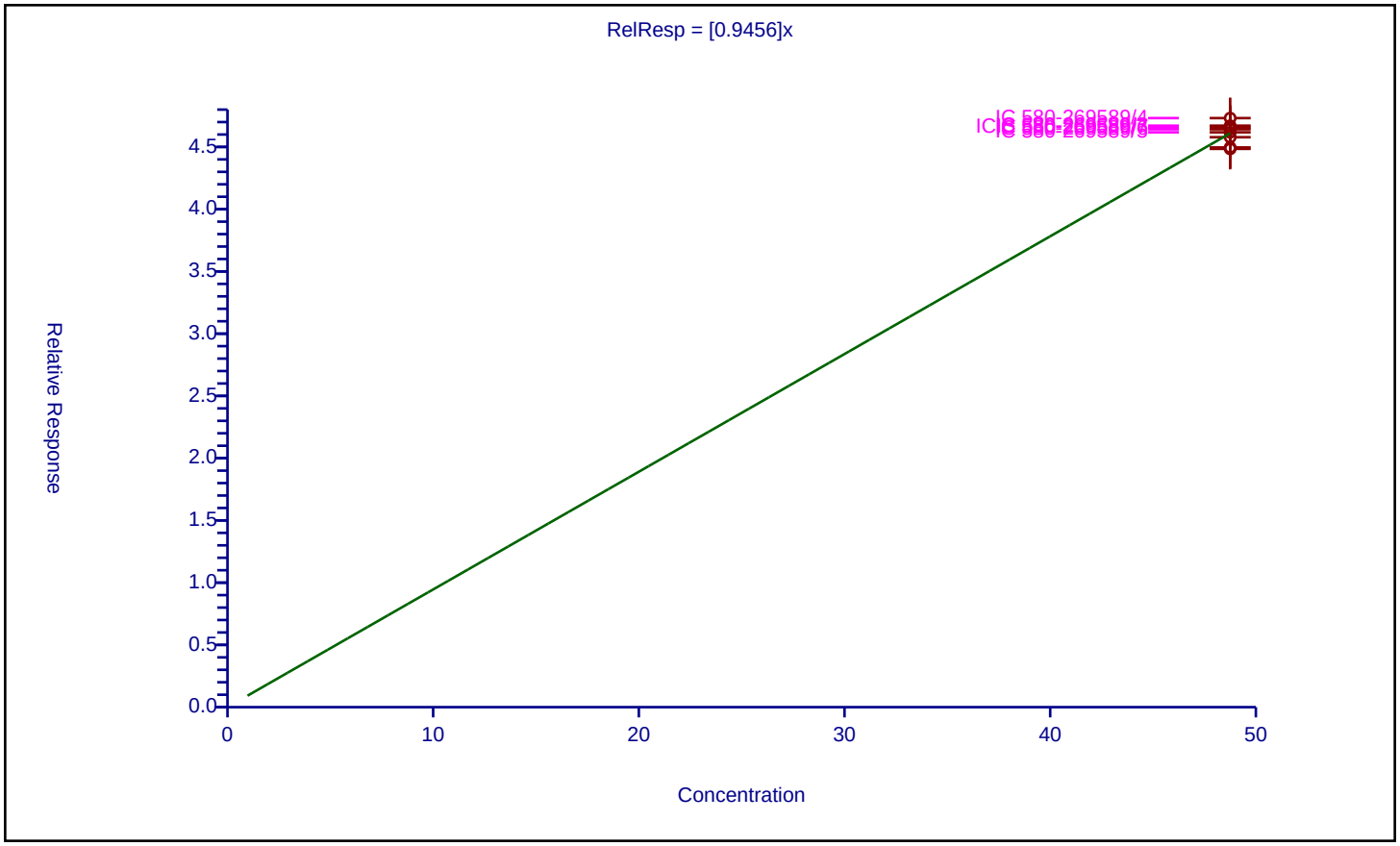
Curve Coefficients

Intercept:	0
Slope:	0.9456

Error Coefficients

Standard Error:	595000
Relative Standard Error:	1.9
Correlation Coefficient:	0
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	48.75	46.709871	48.75	577890.0	0.958151	Y
2	IC 580-269589/4	48.75	47.31711	48.75	545171.0	0.970607	Y
3	IC 580-269589/5	48.75	46.175874	48.75	608190.0	0.947197	Y
4	IC 580-269589/6	48.75	46.419472	48.75	548784.0	0.952194	Y
5	ICIS 580-269589/7	48.75	46.567928	48.75	548520.0	0.95524	Y
6	IC 580-269589/8	48.75	45.780671	48.75	605359.0	0.939091	Y
7	IC 580-269589/9	48.75	44.8458	48.75	643994.0	0.919914	Y
8	IC 580-269589/10	48.75	44.958796	48.75	631607.0	0.922232	Y



Calibration / Bromobenzene

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

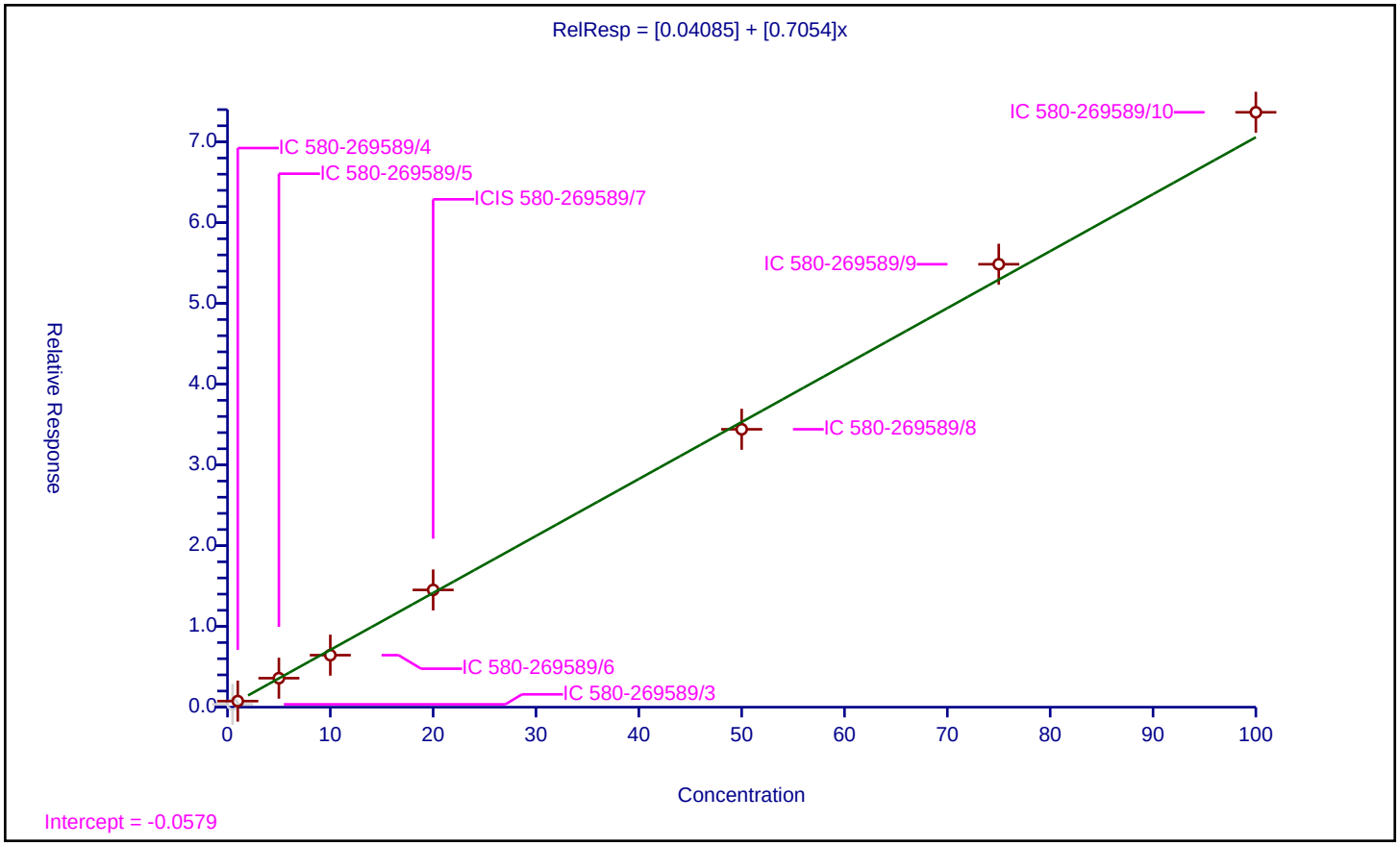
Curve Coefficients

Intercept:	0.04085
Slope:	0.7054

Error Coefficients

Standard Error:	659000
Relative Standard Error:	5.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.354063	48.75	712257.0	0.708126	N
2	IC 580-269589/4	1.0	0.750745	48.75	697537.0	0.750745	Y
3	IC 580-269589/5	5.0	3.587946	48.75	712171.0	0.717589	Y
4	IC 580-269589/6	10.0	6.44098	48.75	673677.0	0.644098	Y
5	ICIS 580-269589/7	20.0	14.516011	48.75	664680.0	0.725801	Y
6	IC 580-269589/8	50.0	34.4119	48.75	720868.0	0.688238	Y
7	IC 580-269589/9	75.0	54.853069	48.75	735675.0	0.731374	Y
8	IC 580-269589/10	100.0	73.669053	48.75	718634.0	0.736691	Y



Calibration / N-Propylbenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

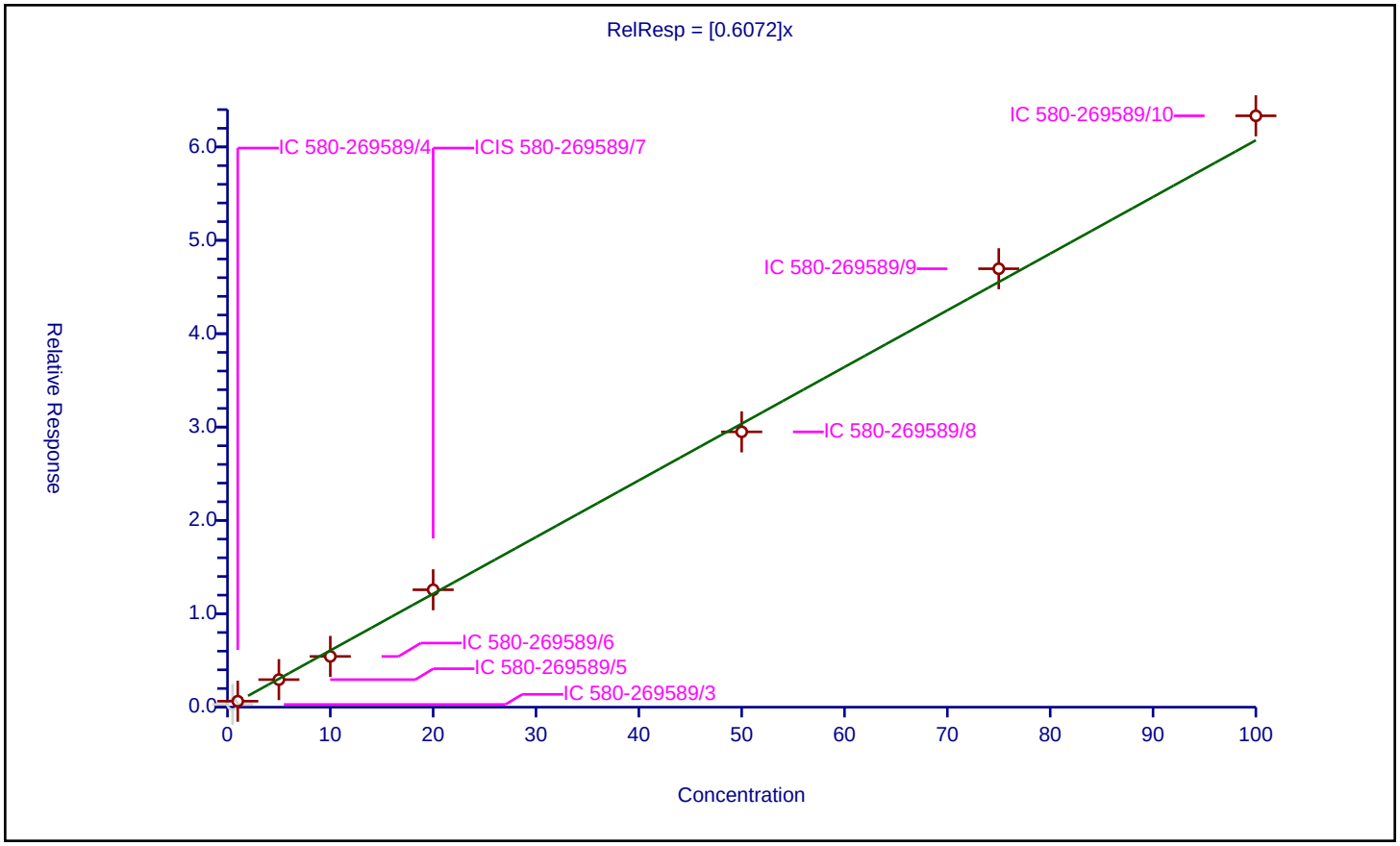
Curve Coefficients

Intercept:	0
Slope:	0.6072

Error Coefficients

Standard Error:	517000
Relative Standard Error:	5.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.291094	48.75	712257.0	0.582188	N
2	IC 580-269589/4	1.0	0.638574	48.75	697537.0	0.638574	Y
3	IC 580-269589/5	5.0	2.951063	48.75	712171.0	0.590213	Y
4	IC 580-269589/6	10.0	5.434541	48.75	673677.0	0.543454	Y
5	ICIS 580-269589/7	20.0	12.573581	48.75	664680.0	0.628679	Y
6	IC 580-269589/8	50.0	29.488601	48.75	720868.0	0.589772	Y
7	IC 580-269589/9	75.0	46.956387	48.75	735675.0	0.626085	Y
8	IC 580-269589/10	100.0	63.336523	48.75	718634.0	0.633365	Y



Calibration / 2-Chlorotoluene

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

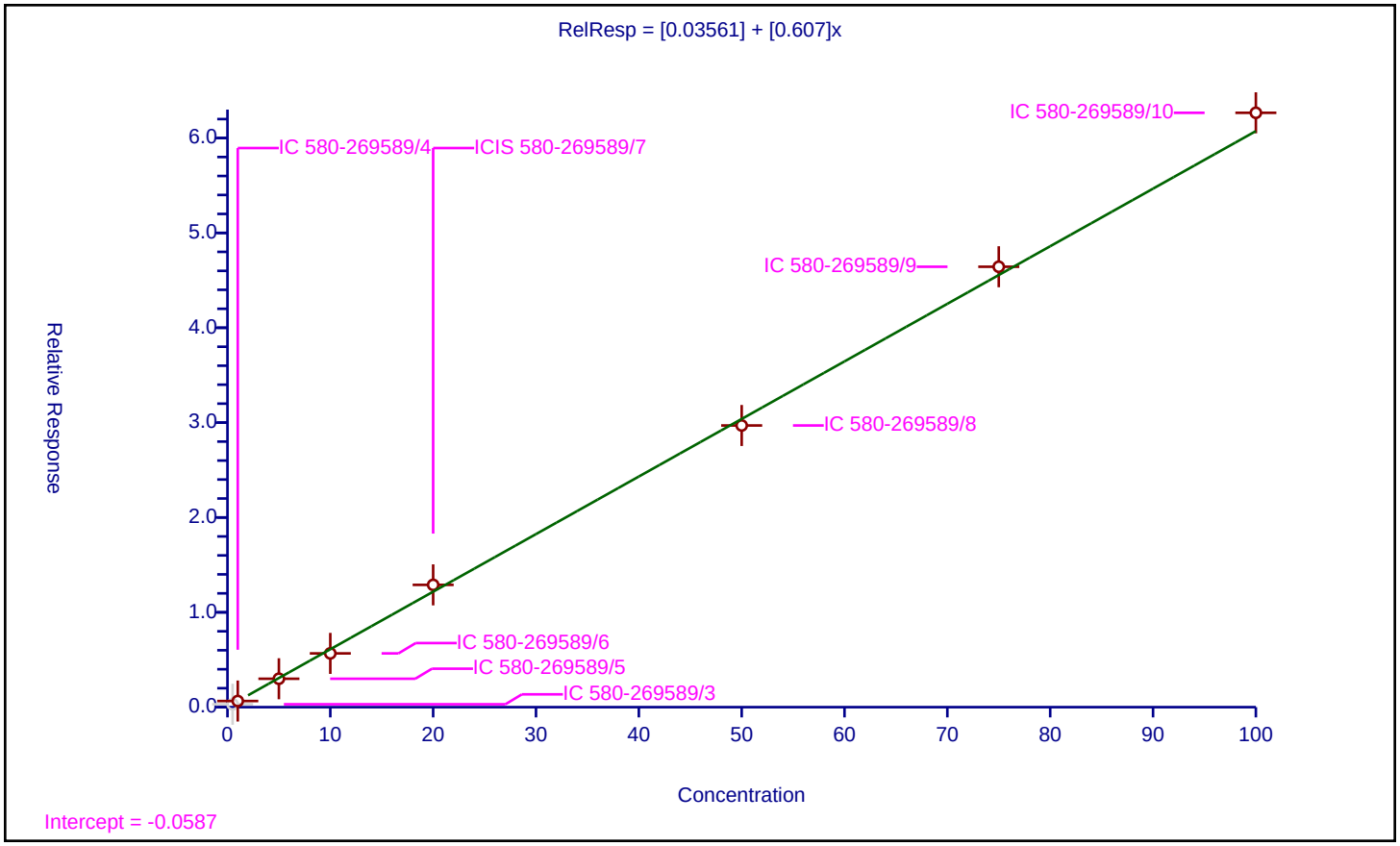
Curve Coefficients

Intercept:	0.03561
Slope:	0.607

Error Coefficients

Standard Error:	561000
Relative Standard Error:	4.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.308068	48.75	712257.0	0.616136	N
2	IC 580-269589/4	1.0	0.648079	48.75	697537.0	0.648079	Y
3	IC 580-269589/5	5.0	2.996173	48.75	712171.0	0.599235	Y
4	IC 580-269589/6	10.0	5.669217	48.75	673677.0	0.566922	Y
5	ICIS 580-269589/7	20.0	12.893138	48.75	664680.0	0.644657	Y
6	IC 580-269589/8	50.0	29.696486	48.75	720868.0	0.59393	Y
7	IC 580-269589/9	75.0	46.433352	48.75	735675.0	0.619111	Y
8	IC 580-269589/10	100.0	62.663308	48.75	718634.0	0.626633	Y



Calibration / 4-Chlorotoluene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

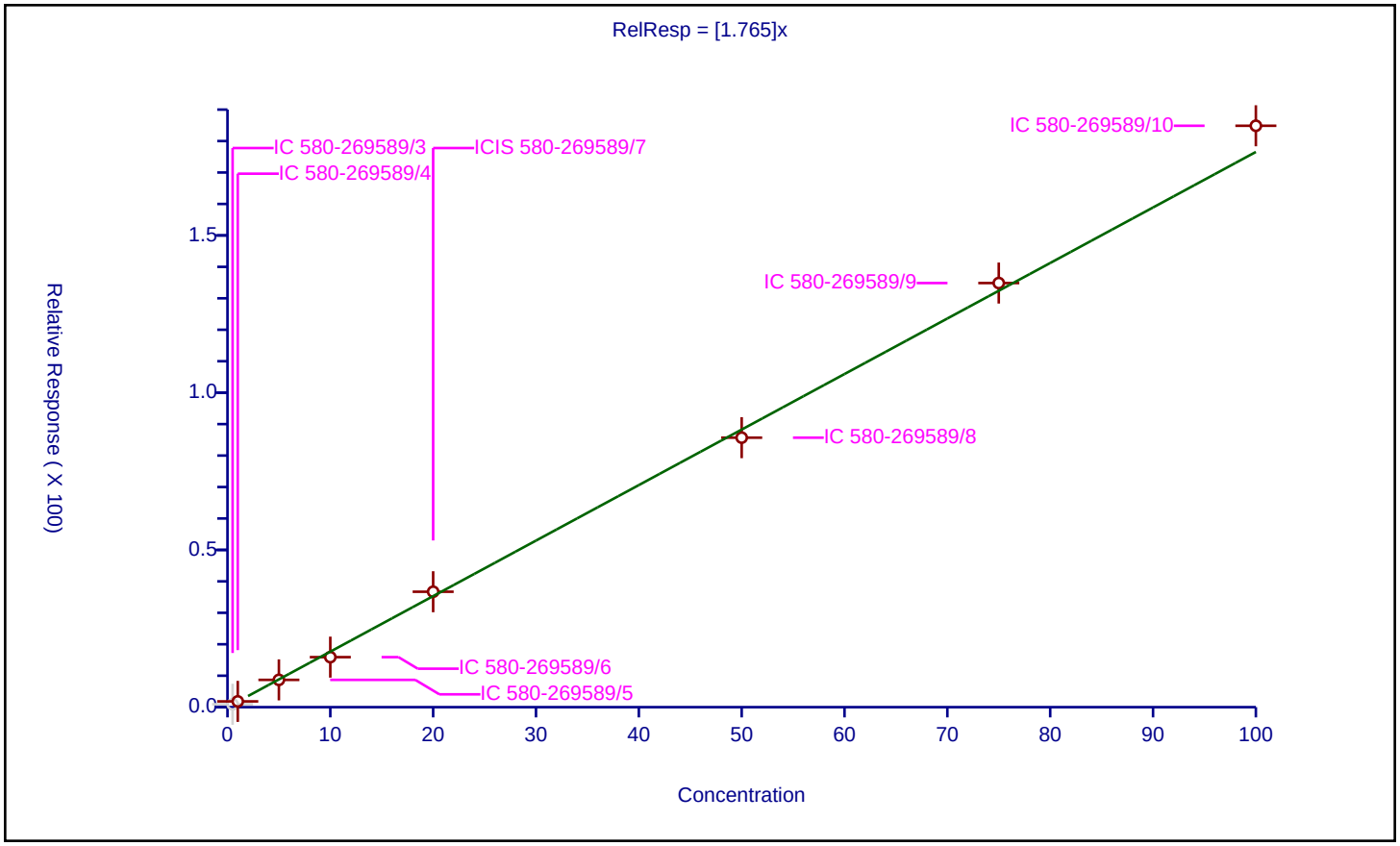
Curve Coefficients

Intercept:	0
Slope:	1.765

Error Coefficients

Standard Error:	1500000
Relative Standard Error:	5.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.925505	48.75	712257.0	1.85101	N
2	IC 580-269589/4	1.0	1.836118	48.75	697537.0	1.836118	Y
3	IC 580-269589/5	5.0	8.676306	48.75	712171.0	1.735261	Y
4	IC 580-269589/6	10.0	15.903449	48.75	673677.0	1.590345	Y
5	ICIS 580-269589/7	20.0	36.704346	48.75	664680.0	1.835217	Y
6	IC 580-269589/8	50.0	85.693848	48.75	720868.0	1.713877	Y
7	IC 580-269589/9	75.0	134.854093	48.75	735675.0	1.798055	Y
8	IC 580-269589/10	100.0	184.861416	48.75	718634.0	1.848614	Y



Calibration / 1,3,5-Trimethylbenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

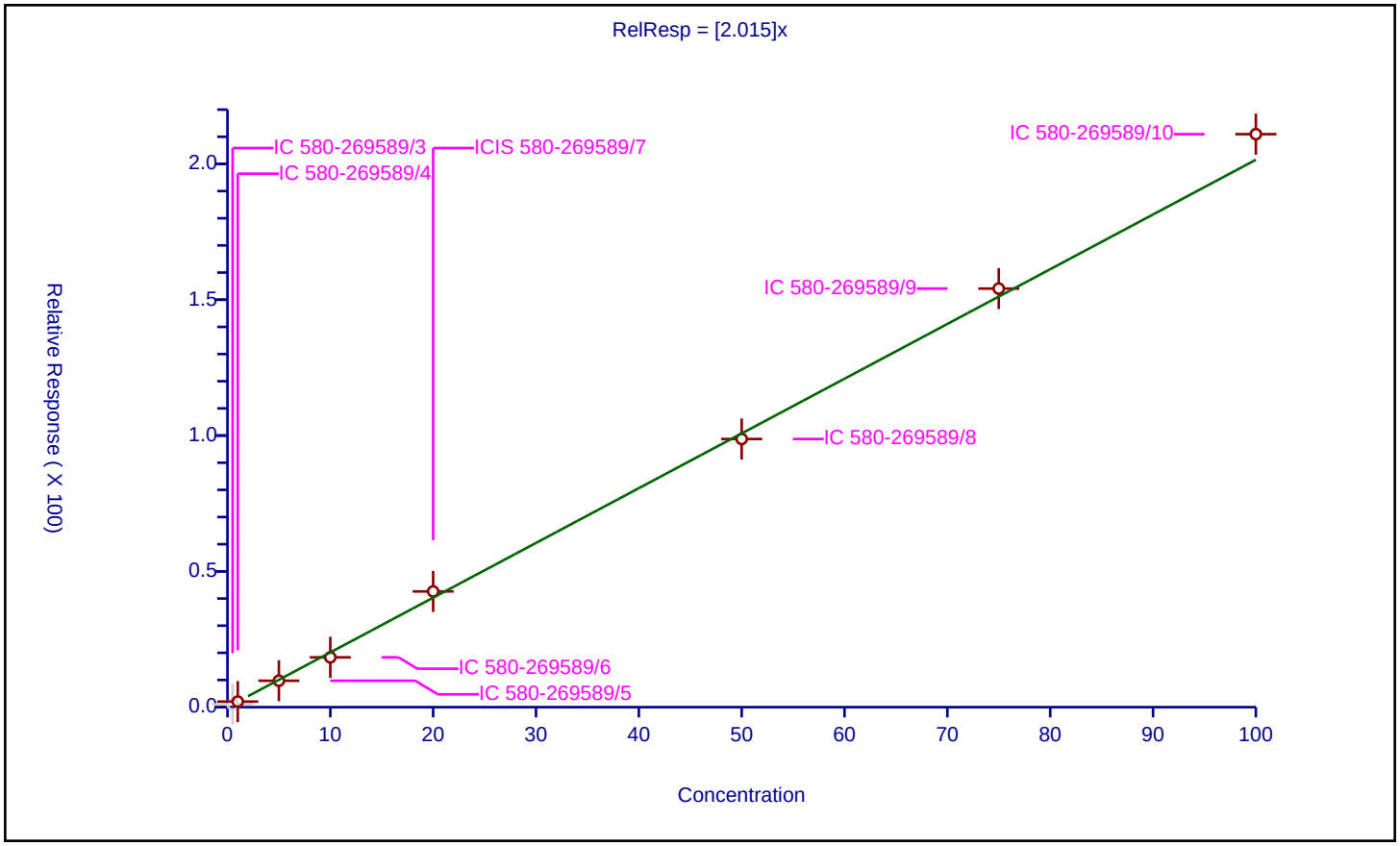
Curve Coefficients

Intercept:	0
Slope:	2.015

Error Coefficients

Standard Error:	1710000
Relative Standard Error:	5.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	1.018521	48.75	712257.0	2.037042	N
2	IC 580-269589/4	1.0	2.060111	48.75	697537.0	2.060111	Y
3	IC 580-269589/5	5.0	9.721578	48.75	712171.0	1.944316	Y
4	IC 580-269589/6	10.0	18.339006	48.75	673677.0	1.833901	Y
5	ICIS 580-269589/7	20.0	42.607036	48.75	664680.0	2.130352	Y
6	IC 580-269589/8	50.0	98.731417	48.75	720868.0	1.974628	Y
7	IC 580-269589/9	75.0	154.105133	48.75	735675.0	2.054735	Y
8	IC 580-269589/10	100.0	210.962529	48.75	718634.0	2.109625	Y



Calibration / tert-Butylbenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

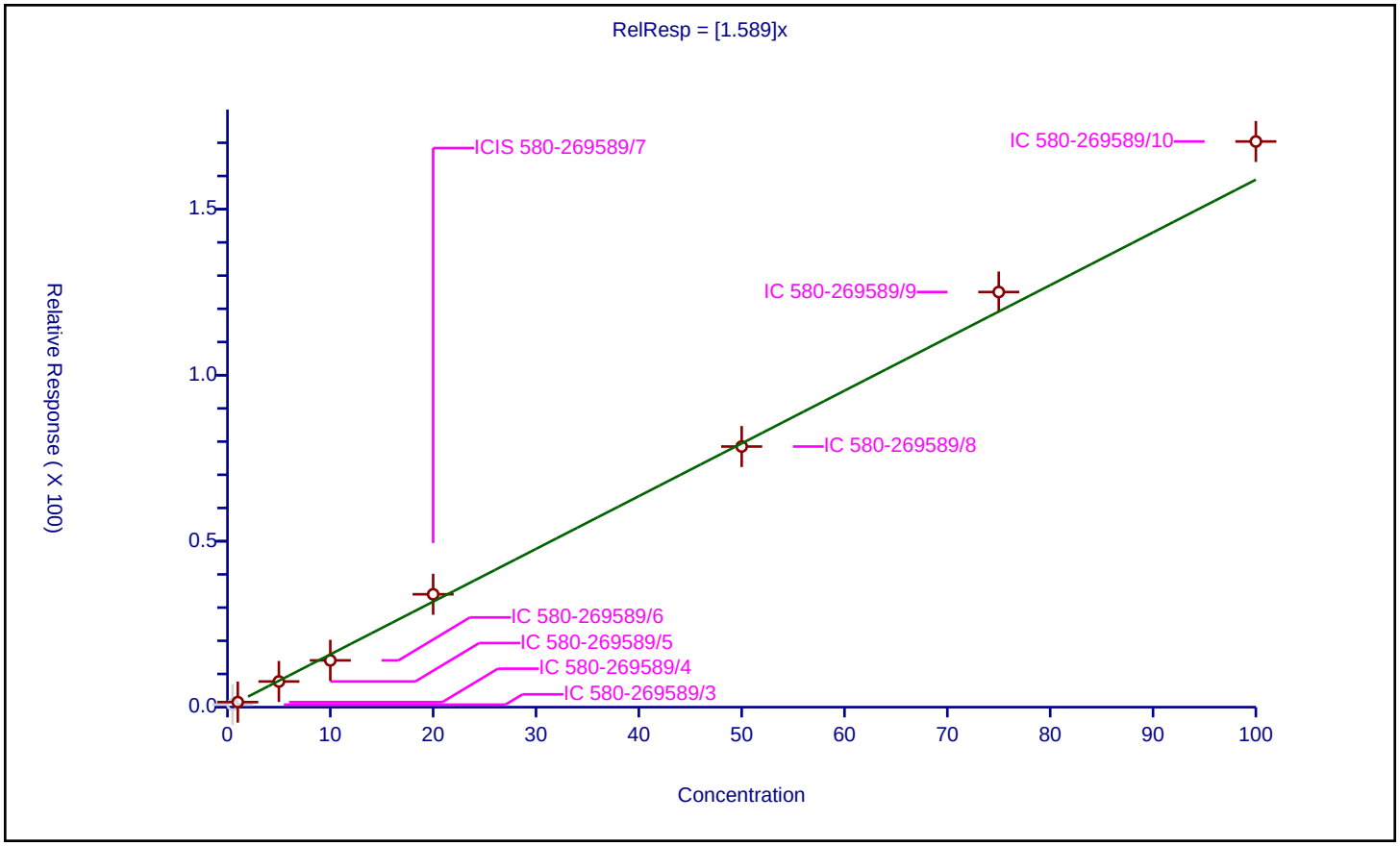
Curve Coefficients

Intercept:	0
Slope:	1.589

Error Coefficients

Standard Error:	1380000
Relative Standard Error:	6.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.767467	48.75	712257.0	1.534934	N
2	IC 580-269589/4	1.0	1.525322	48.75	697537.0	1.525322	Y
3	IC 580-269589/5	5.0	7.731044	48.75	712171.0	1.546209	Y
4	IC 580-269589/6	10.0	14.092538	48.75	673677.0	1.409254	Y
5	ICIS 580-269589/7	20.0	34.002516	48.75	664680.0	1.700126	Y
6	IC 580-269589/8	50.0	78.511813	48.75	720868.0	1.570236	Y
7	IC 580-269589/9	75.0	125.052141	48.75	735675.0	1.667362	Y
8	IC 580-269589/10	100.0	170.39761	48.75	718634.0	1.703976	Y



Calibration / 1,2,4-Trimethylbenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

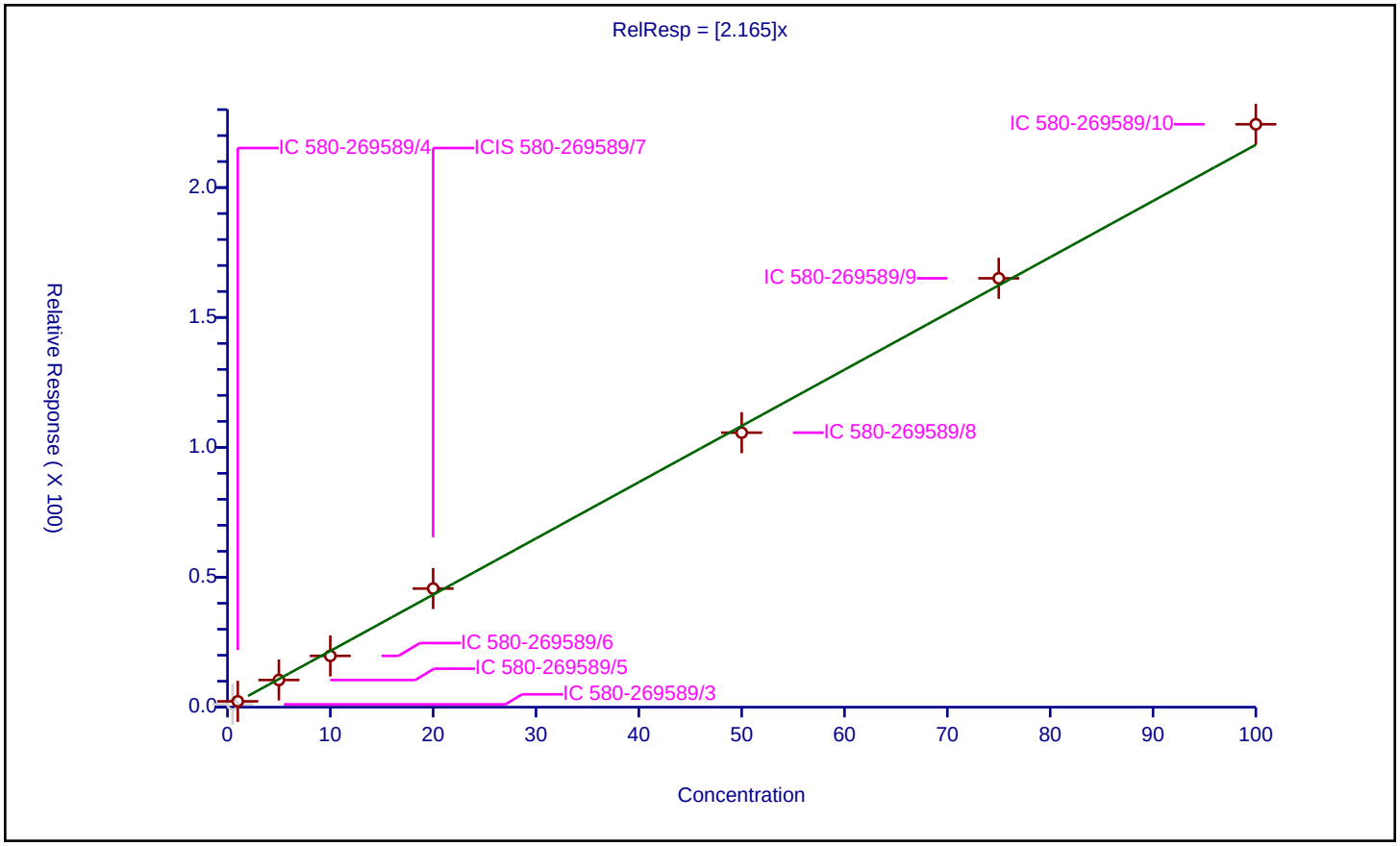
Curve Coefficients

Intercept:	0
Slope:	2.165

Error Coefficients

Standard Error:	1830000
Relative Standard Error:	5.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	1.08149	48.75	712257.0	2.16298	N
2	IC 580-269589/4	1.0	2.248391	48.75	697537.0	2.248391	Y
3	IC 580-269589/5	5.0	10.457376	48.75	712171.0	2.091475	Y
4	IC 580-269589/6	10.0	19.738454	48.75	673677.0	1.973845	Y
5	ICIS 580-269589/7	20.0	45.647127	48.75	664680.0	2.282356	Y
6	IC 580-269589/8	50.0	105.655455	48.75	720868.0	2.113109	Y
7	IC 580-269589/9	75.0	165.069319	48.75	735675.0	2.200924	Y
8	IC 580-269589/10	100.0	224.362175	48.75	718634.0	2.243622	Y



Calibration / sec-Butylbenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

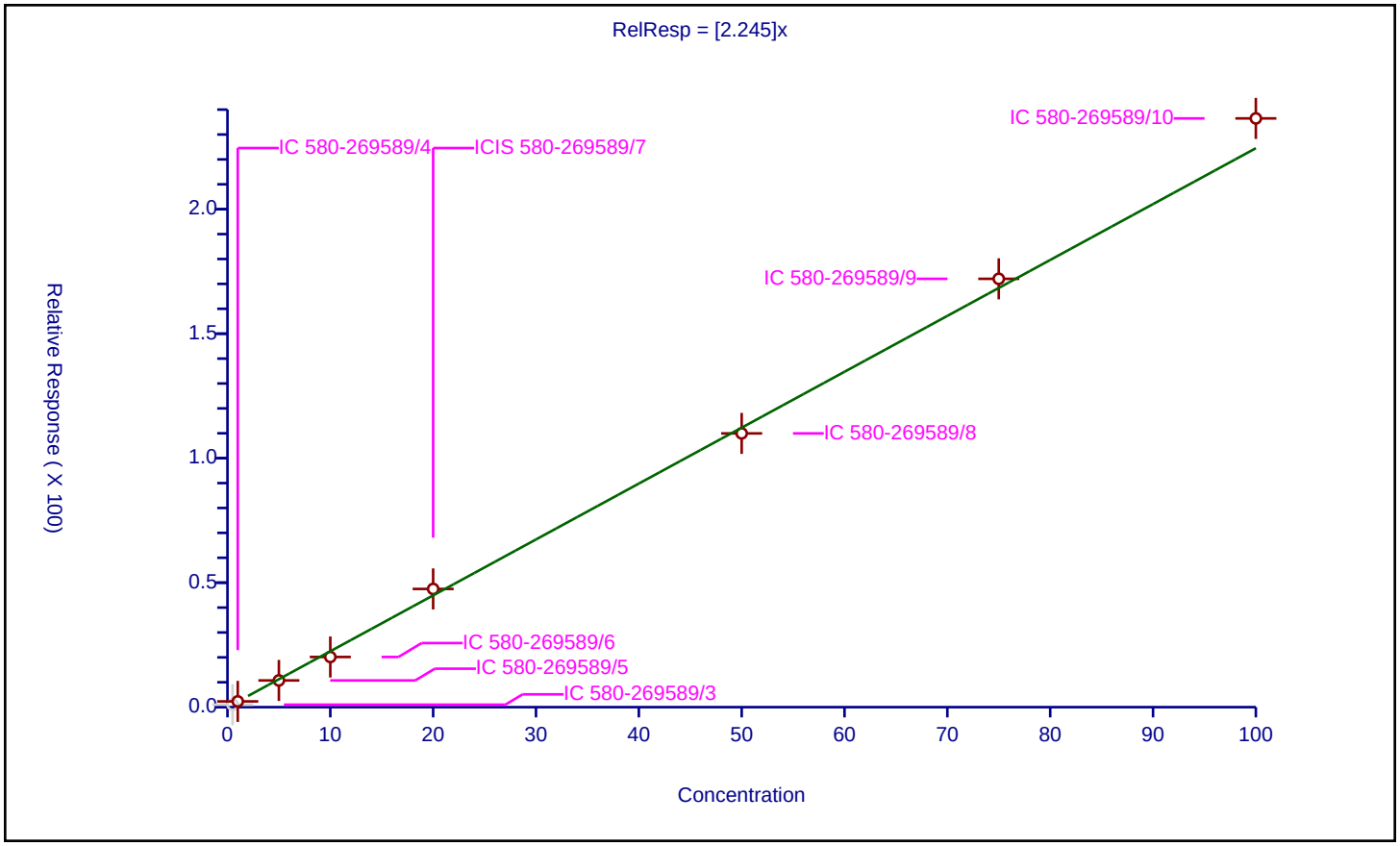
Curve Coefficients

Intercept:	0
Slope:	2.245

Error Coefficients

Standard Error:	1920000
Relative Standard Error:	5.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	1.008734	48.75	712257.0	2.017467	N
2	IC 580-269589/4	1.0	2.321775	48.75	697537.0	2.321775	Y
3	IC 580-269589/5	5.0	10.733583	48.75	712171.0	2.146717	Y
4	IC 580-269589/6	10.0	20.151363	48.75	673677.0	2.015136	Y
5	ICIS 580-269589/7	20.0	47.482403	48.75	664680.0	2.37412	Y
6	IC 580-269589/8	50.0	109.951042	48.75	720868.0	2.199021	Y
7	IC 580-269589/9	75.0	172.034371	48.75	735675.0	2.293792	Y
8	IC 580-269589/10	100.0	236.464235	48.75	718634.0	2.364642	Y



Calibration / Benzyl chloride

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

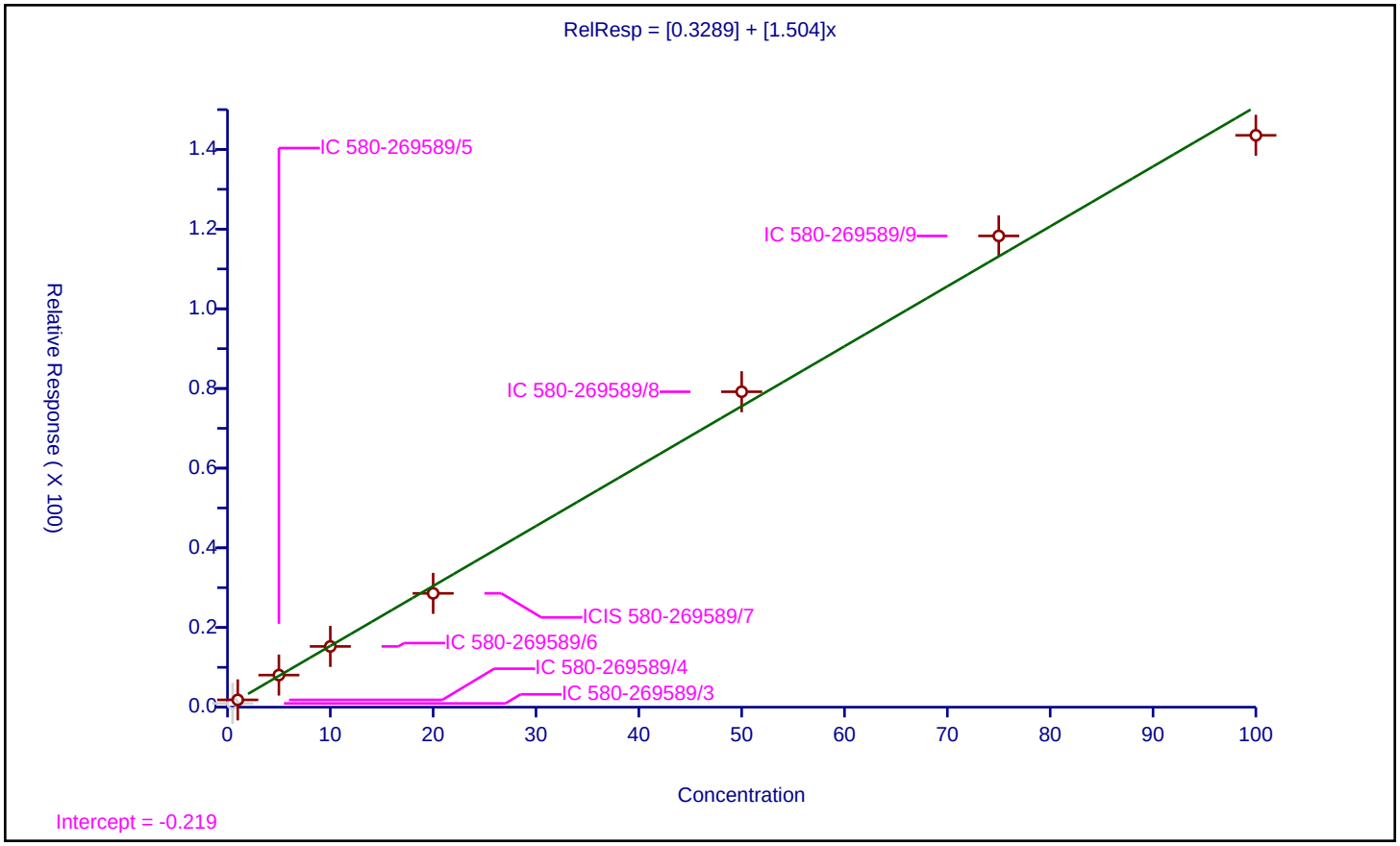
Curve Coefficients

Intercept:	0.3289
Slope:	1.504

Error Coefficients

Standard Error:	1360000
Relative Standard Error:	4.7
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.93762	48.75	712257.0	1.87524	N
2	IC 580-269589/4	1.0	1.829478	48.75	697537.0	1.829478	Y
3	IC 580-269589/5	5.0	8.051676	48.75	712171.0	1.610335	Y
4	IC 580-269589/6	10.0	15.245587	48.75	673677.0	1.524559	Y
5	ICIS 580-269589/7	20.0	28.566365	48.75	664680.0	1.428318	Y
6	IC 580-269589/8	50.0	79.175706	48.75	720868.0	1.583514	Y
7	IC 580-269589/9	75.0	118.292777	48.75	735675.0	1.577237	Y
8	IC 580-269589/10	100.0	143.550086	48.75	718634.0	1.435501	Y



Calibration / 1,3-Dichlorobenzene

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

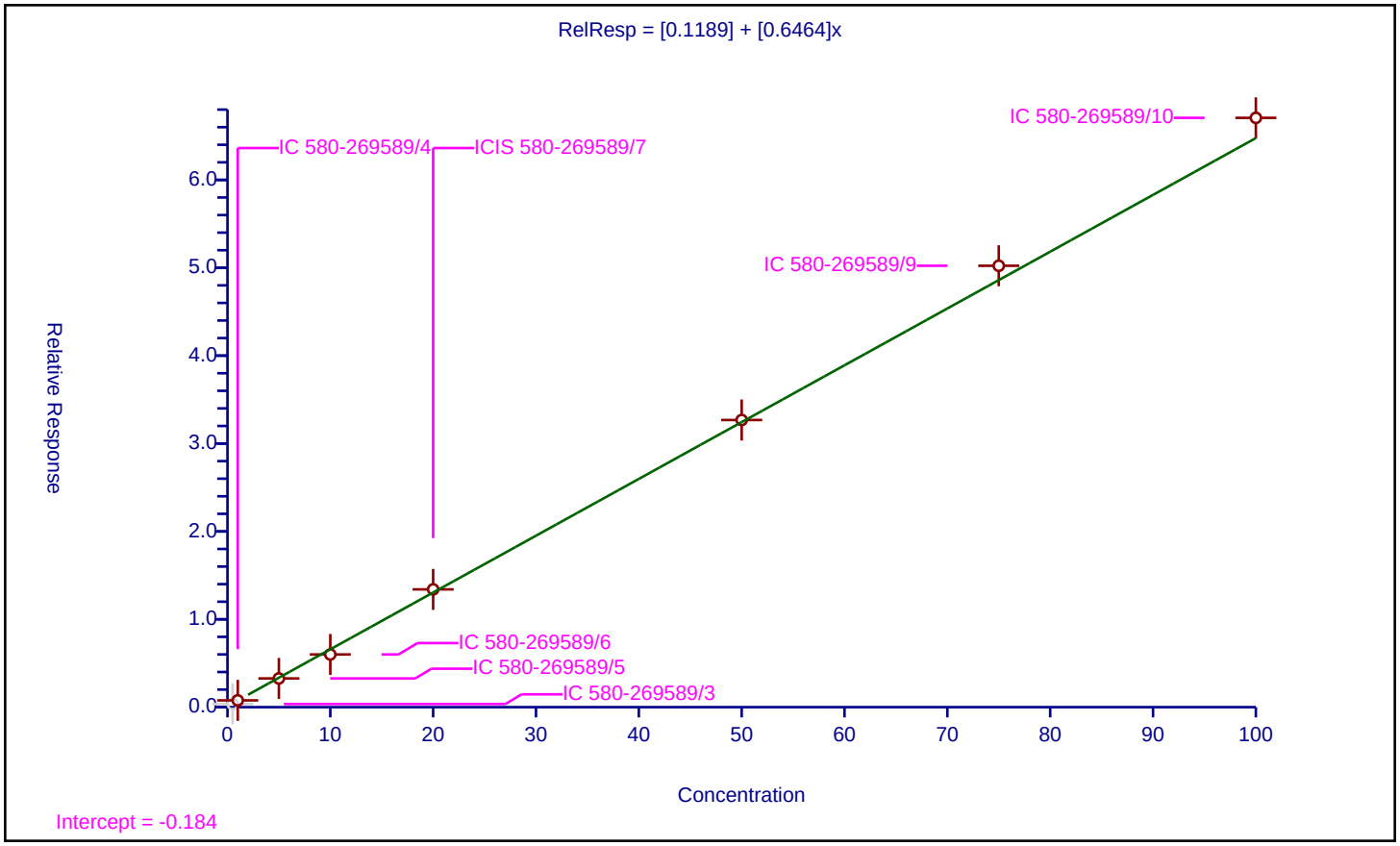
Curve Coefficients

Intercept:	0.1189
Slope:	0.6464

Error Coefficients

Standard Error:	1210000
Relative Standard Error:	4.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.35818	48.75	1385953.0	0.716361	N
2	IC 580-269589/4	1.0	0.772919	48.75	1359845.0	0.772919	Y
3	IC 580-269589/5	5.0	3.269418	48.75	1422948.0	0.653884	Y
4	IC 580-269589/6	10.0	5.99688	48.75	1358597.0	0.599688	Y
5	ICIS 580-269589/7	20.0	13.403567	48.75	1364764.0	0.670178	Y
6	IC 580-269589/8	50.0	32.677278	48.75	1405755.0	0.653546	Y
7	IC 580-269589/9	75.0	50.227704	48.75	1473218.0	0.669703	Y
8	IC 580-269589/10	100.0	67.061568	48.75	1444559.0	0.670616	Y



Calibration / 4-Isopropyltoluene

Curve Type:	Linear
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

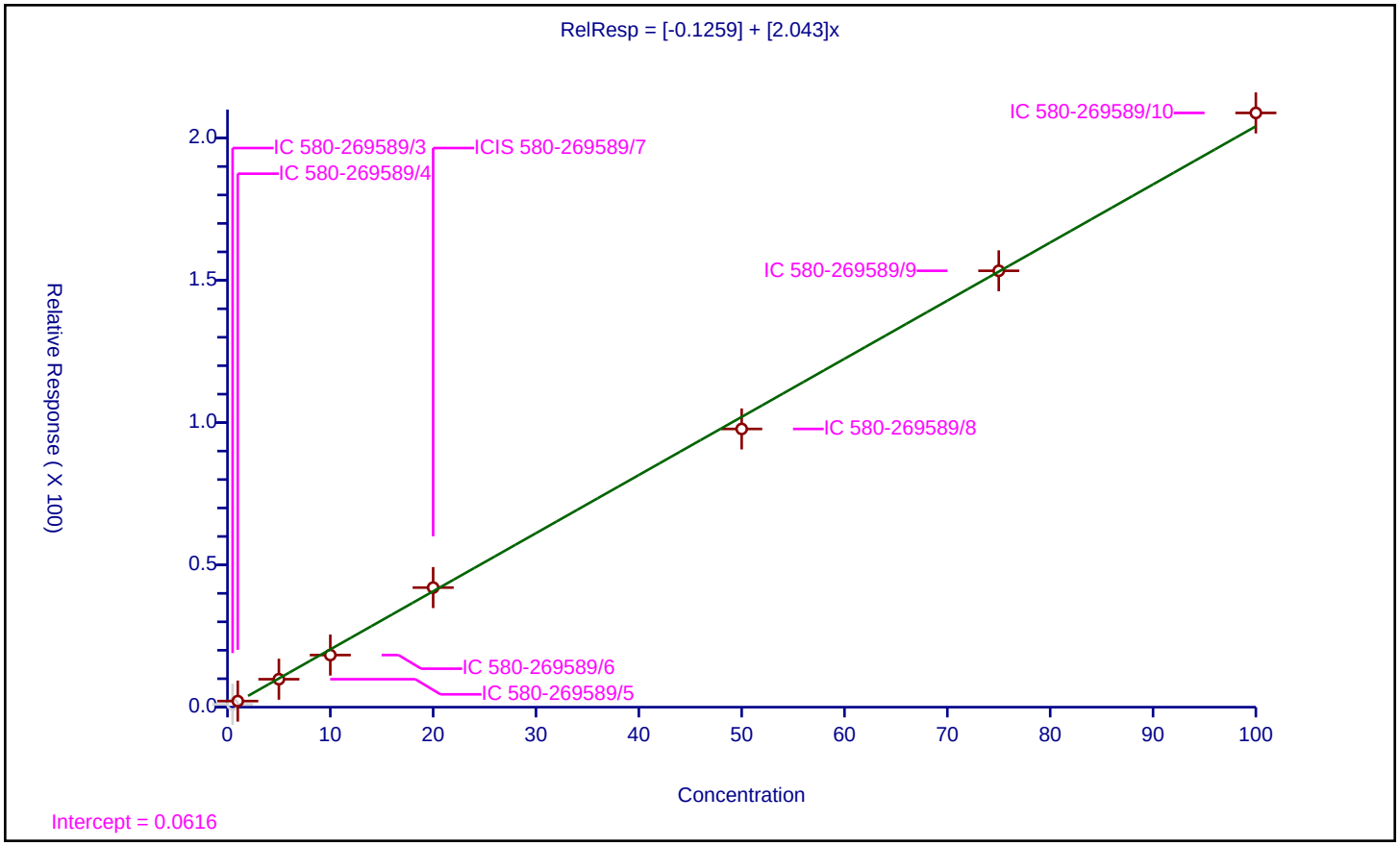
Curve Coefficients

Intercept:	-0.1259
Slope:	2.043

Error Coefficients

Standard Error:	1860000
Relative Standard Error:	7.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.998809	48.75	712257.0	1.997618	N
2	IC 580-269589/4	1.0	2.137478	48.75	697537.0	2.137478	Y
3	IC 580-269589/5	5.0	9.826859	48.75	712171.0	1.965372	Y
4	IC 580-269589/6	10.0	18.30883	48.75	673677.0	1.830883	Y
5	ICIS 580-269589/7	20.0	42.020068	48.75	664680.0	2.101003	Y
6	IC 580-269589/8	50.0	97.771927	48.75	720868.0	1.955439	Y
7	IC 580-269589/9	75.0	153.355403	48.75	735675.0	2.044739	Y
8	IC 580-269589/10	100.0	208.836042	48.75	718634.0	2.08836	Y



Calibration / 1,4-Dichlorobenzene

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

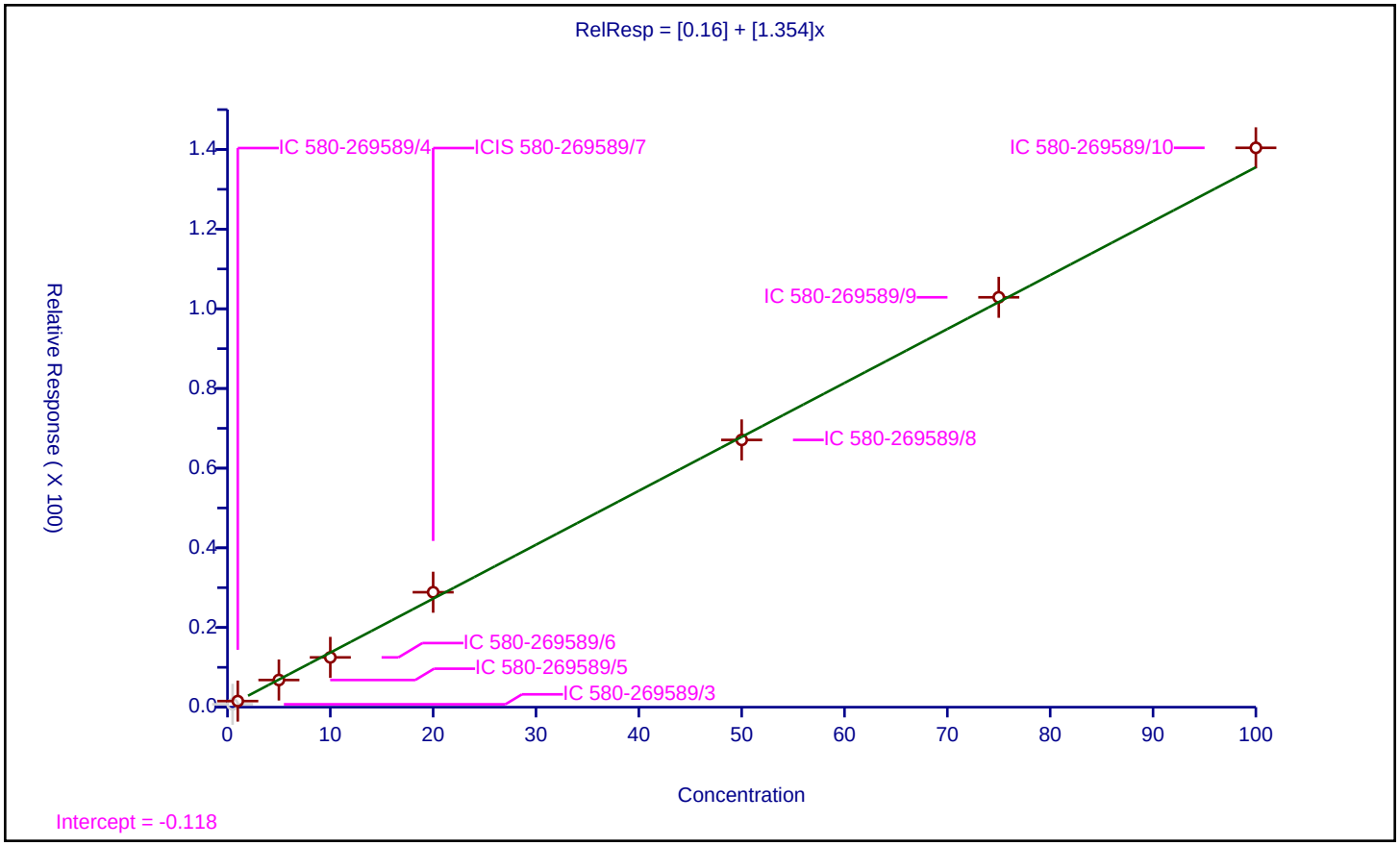
Curve Coefficients

Intercept:	0.16
Slope:	1.354

Error Coefficients

Standard Error:	1250000
Relative Standard Error:	5.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.721951	48.75	712257.0	1.443903	N
2	IC 580-269589/4	1.0	1.525672	48.75	697537.0	1.525672	Y
3	IC 580-269589/5	5.0	6.819528	48.75	712171.0	1.363906	Y
4	IC 580-269589/6	10.0	12.491773	48.75	673677.0	1.249177	Y
5	ICIS 580-269589/7	20.0	28.853945	48.75	664680.0	1.442697	Y
6	IC 580-269589/8	50.0	67.084506	48.75	720868.0	1.34169	Y
7	IC 580-269589/9	75.0	102.8817	48.75	735675.0	1.371756	Y
8	IC 580-269589/10	100.0	140.410113	48.75	718634.0	1.404101	Y



Calibration / 1,2,3-Trimethylbenzene

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

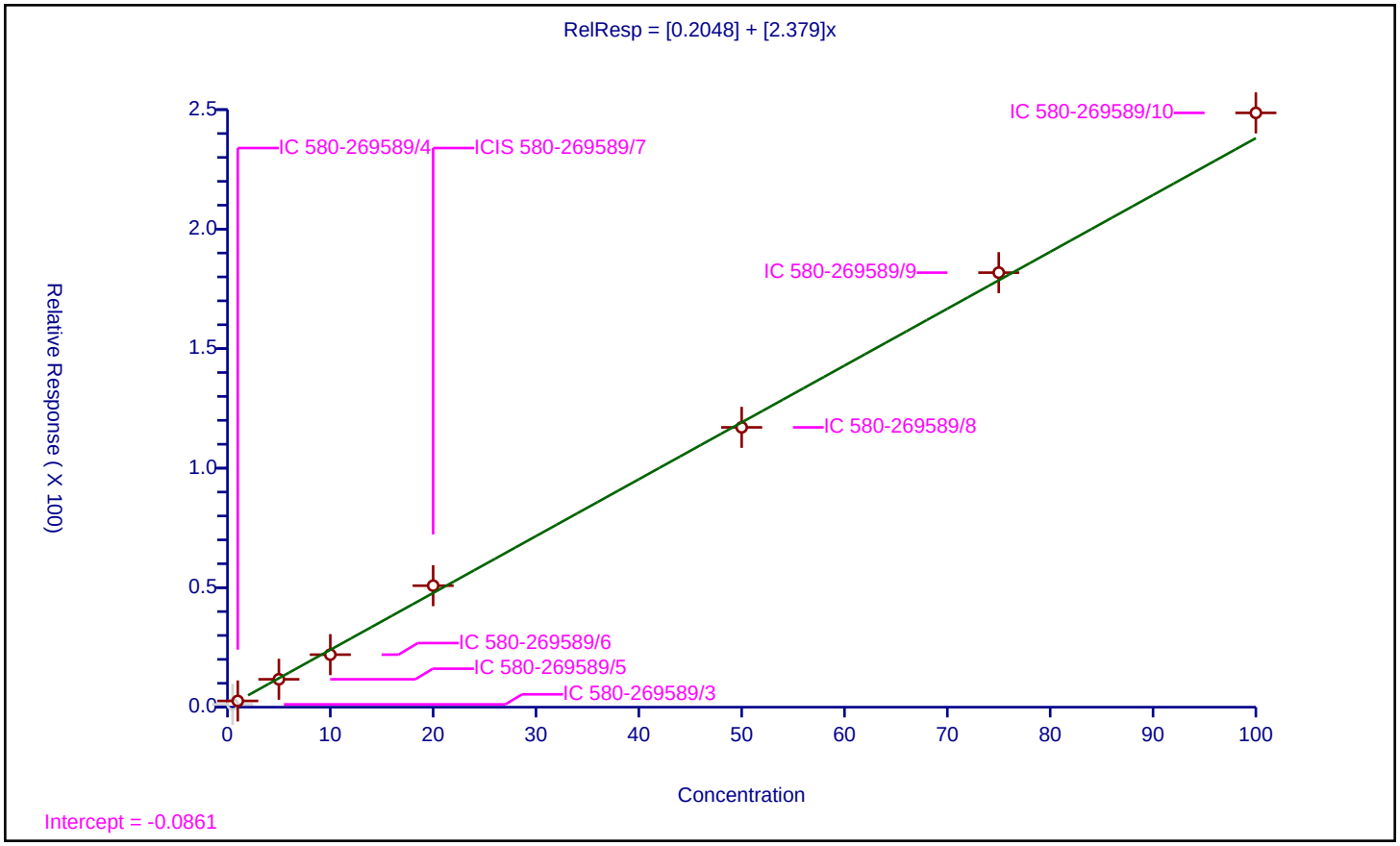
Curve Coefficients

Intercept:	0.2048
Slope:	2.379

Error Coefficients

Standard Error:	2220000
Relative Standard Error:	5.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	1.177449	48.75	712257.0	2.354898	N
2	IC 580-269589/4	1.0	2.612442	48.75	697537.0	2.612442	Y
3	IC 580-269589/5	5.0	11.662896	48.75	712171.0	2.332579	Y
4	IC 580-269589/6	10.0	21.971319	48.75	673677.0	2.197132	Y
5	ICIS 580-269589/7	20.0	50.830537	48.75	664680.0	2.541527	Y
6	IC 580-269589/8	50.0	117.061662	48.75	720868.0	2.341233	Y
7	IC 580-269589/9	75.0	181.788215	48.75	735675.0	2.423843	Y
8	IC 580-269589/10	100.0	248.627822	48.75	718634.0	2.486278	Y



Calibration / 1,2-Dichlorobenzene

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

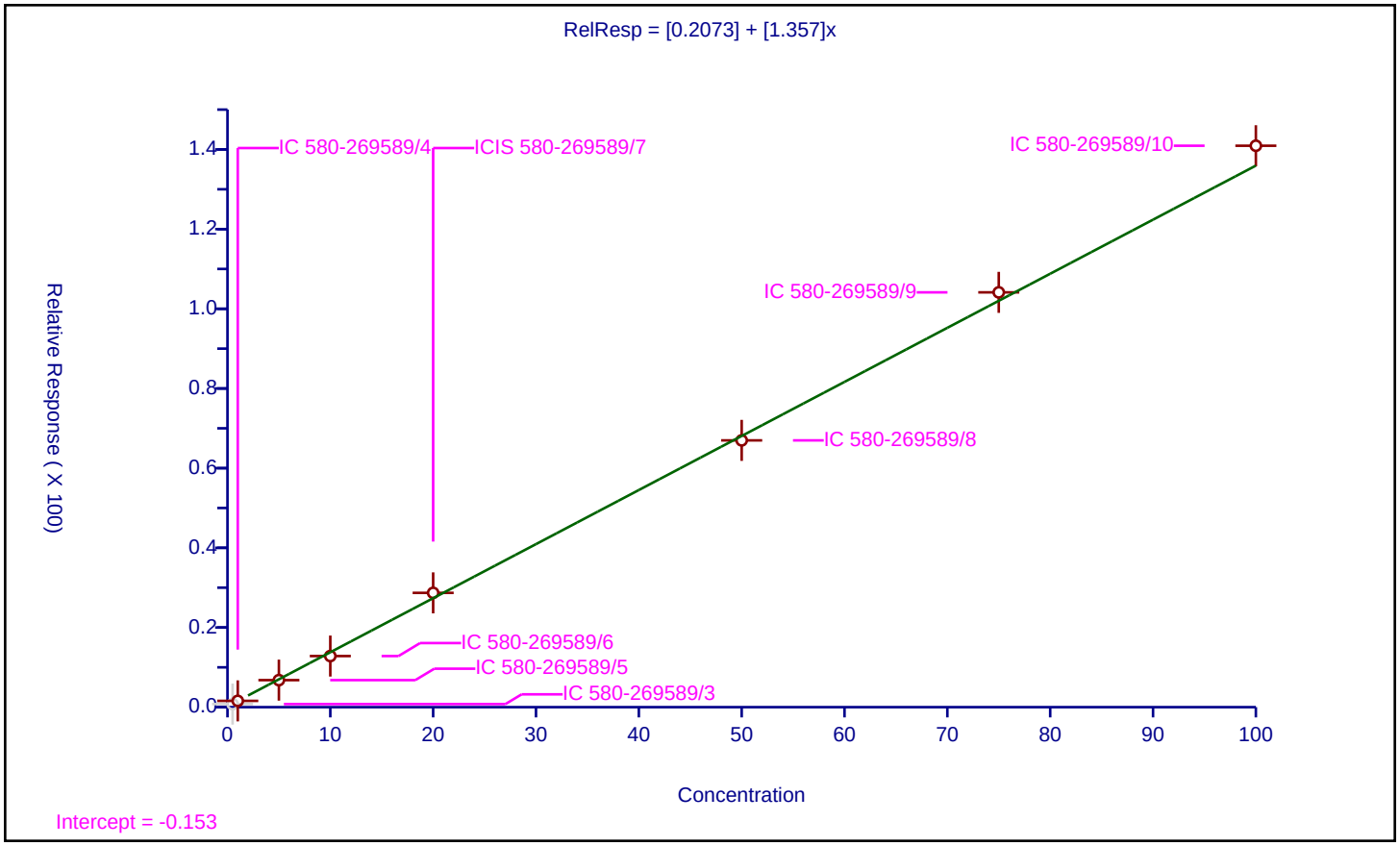
Curve Coefficients

Intercept:	0.2073
Slope:	1.357

Error Coefficients

Standard Error:	1260000
Relative Standard Error:	4.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.772463	48.75	712257.0	1.544927	N
2	IC 580-269589/4	1.0	1.578787	48.75	697537.0	1.578787	Y
3	IC 580-269589/5	5.0	6.784549	48.75	712171.0	1.35691	Y
4	IC 580-269589/6	10.0	12.831811	48.75	673677.0	1.283181	Y
5	ICIS 580-269589/7	20.0	28.691562	48.75	664680.0	1.434578	Y
6	IC 580-269589/8	50.0	66.969743	48.75	720868.0	1.339395	Y
7	IC 580-269589/9	75.0	104.122923	48.75	735675.0	1.388306	Y
8	IC 580-269589/10	100.0	140.927913	48.75	718634.0	1.409279	Y



Calibration / n-Butylbenzene

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

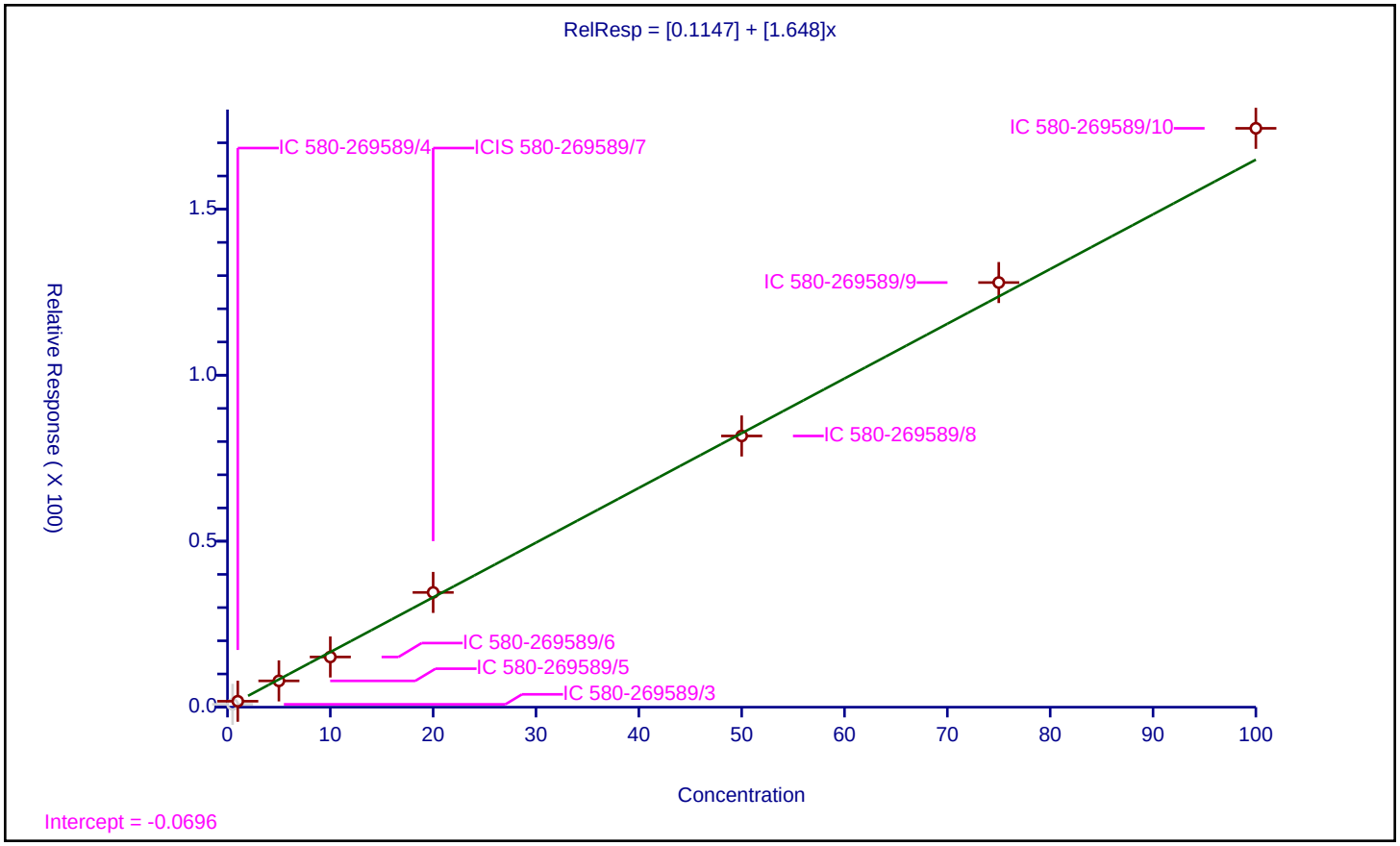
Curve Coefficients

Intercept:	0.1147
Slope:	1.648

Error Coefficients

Standard Error:	1550000
Relative Standard Error:	5.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.864658	48.75	712257.0	1.729316	N
2	IC 580-269589/4	1.0	1.789921	48.75	697537.0	1.789921	Y
3	IC 580-269589/5	5.0	7.918946	48.75	712171.0	1.583789	Y
4	IC 580-269589/6	10.0	15.117358	48.75	673677.0	1.511736	Y
5	ICIS 580-269589/7	20.0	34.563815	48.75	664680.0	1.728191	Y
6	IC 580-269589/8	50.0	81.68723	48.75	720868.0	1.633745	Y
7	IC 580-269589/9	75.0	127.907264	48.75	735675.0	1.70543	Y
8	IC 580-269589/10	100.0	174.367841	48.75	718634.0	1.743678	Y



Calibration / 1,2-Dibromo-3-Chloropropane

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

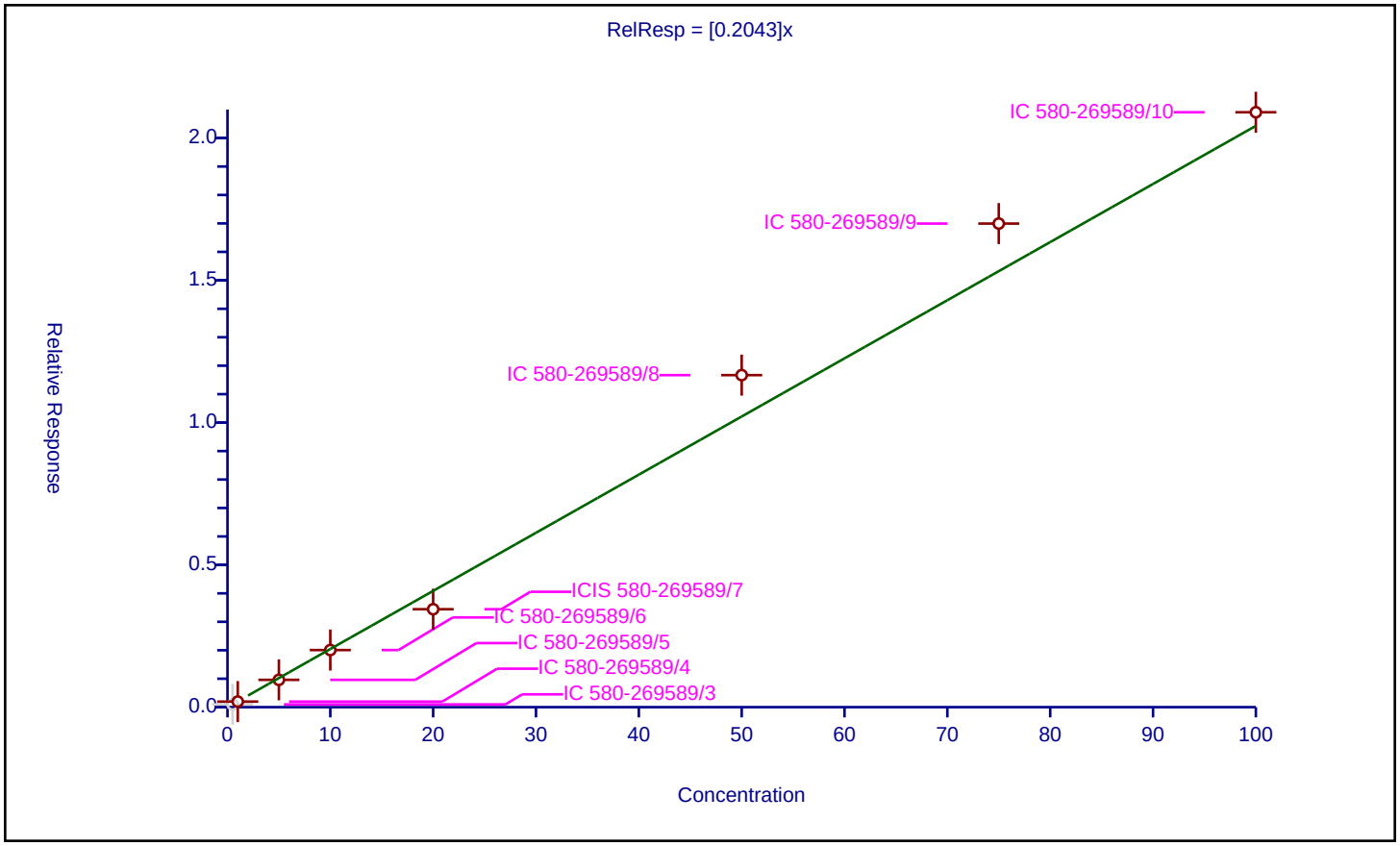
Curve Coefficients

Intercept:	0
Slope:	0.2043

Error Coefficients

Standard Error:	180000
Relative Standard Error:	10.2
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.988

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.096986	48.75	712257.0	0.193971	N
2	IC 580-269589/4	1.0	0.196248	48.75	697537.0	0.196248	Y
3	IC 580-269589/5	5.0	0.960049	48.75	712171.0	0.19201	Y
4	IC 580-269589/6	10.0	2.006583	48.75	673677.0	0.200658	Y
5	ICIS 580-269589/7	20.0	3.442307	48.75	664680.0	0.172115	Y
6	IC 580-269589/8	50.0	11.668464	48.75	720868.0	0.233369	Y
7	IC 580-269589/9	75.0	16.995091	48.75	735675.0	0.226601	Y
8	IC 580-269589/10	100.0	20.906425	48.75	718634.0	0.209064	Y



Calibration / 1,3,5-Trichlorobenzene

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

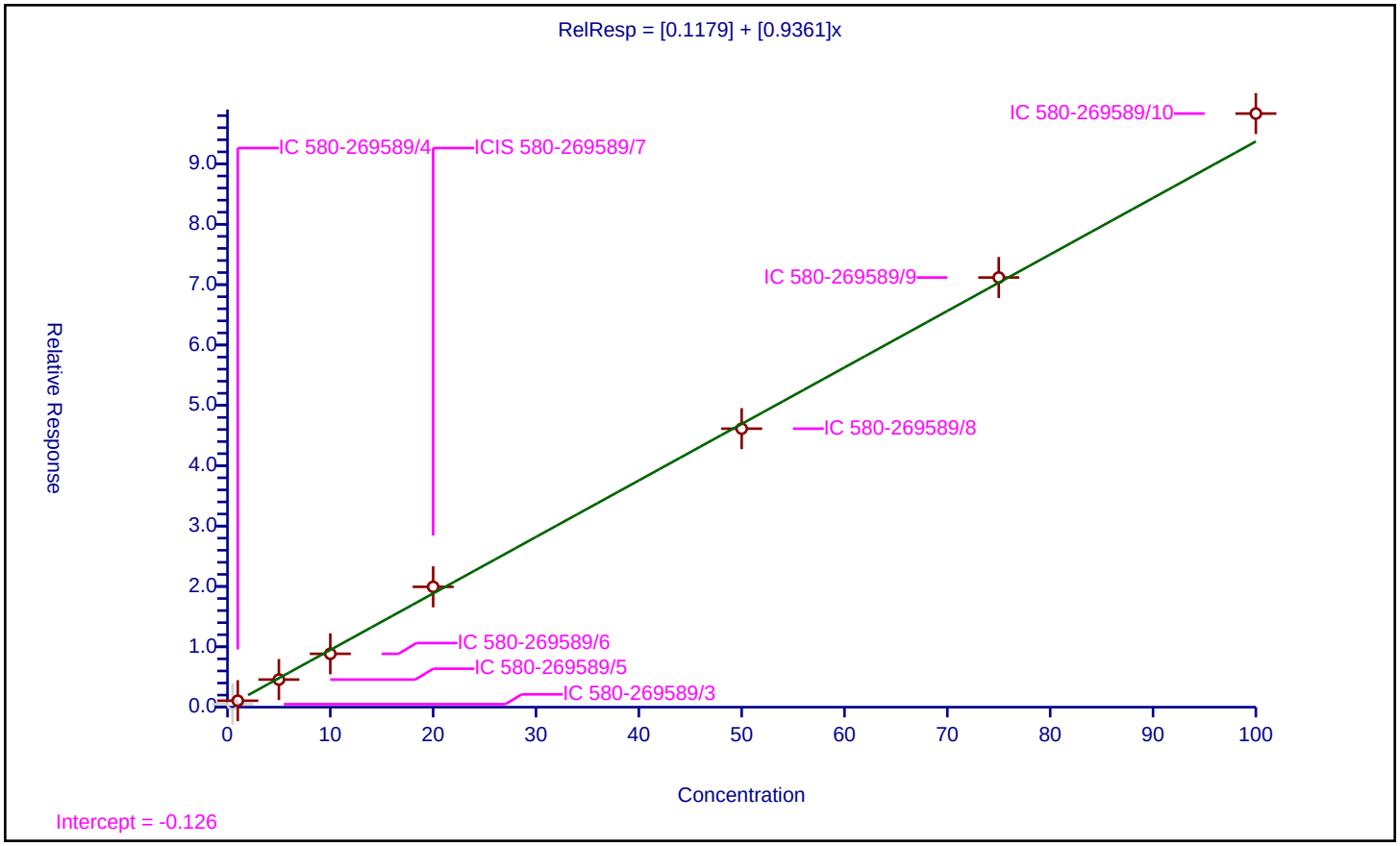
Curve Coefficients

Intercept:	0.1179
Slope:	0.9361

Error Coefficients

Standard Error:	873000
Relative Standard Error:	5.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.494648	48.75	712257.0	0.989295	N
2	IC 580-269589/4	1.0	1.066433	48.75	697537.0	1.066433	Y
3	IC 580-269589/5	5.0	4.571132	48.75	712171.0	0.914226	Y
4	IC 580-269589/6	10.0	8.839197	48.75	673677.0	0.88392	Y
5	ICIS 580-269589/7	20.0	19.937201	48.75	664680.0	0.99686	Y
6	IC 580-269589/8	50.0	46.138997	48.75	720868.0	0.92278	Y
7	IC 580-269589/9	75.0	71.181858	48.75	735675.0	0.949091	Y
8	IC 580-269589/10	100.0	98.343757	48.75	718634.0	0.983438	Y



Calibration / 1,2,4-Trichlorobenzene

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

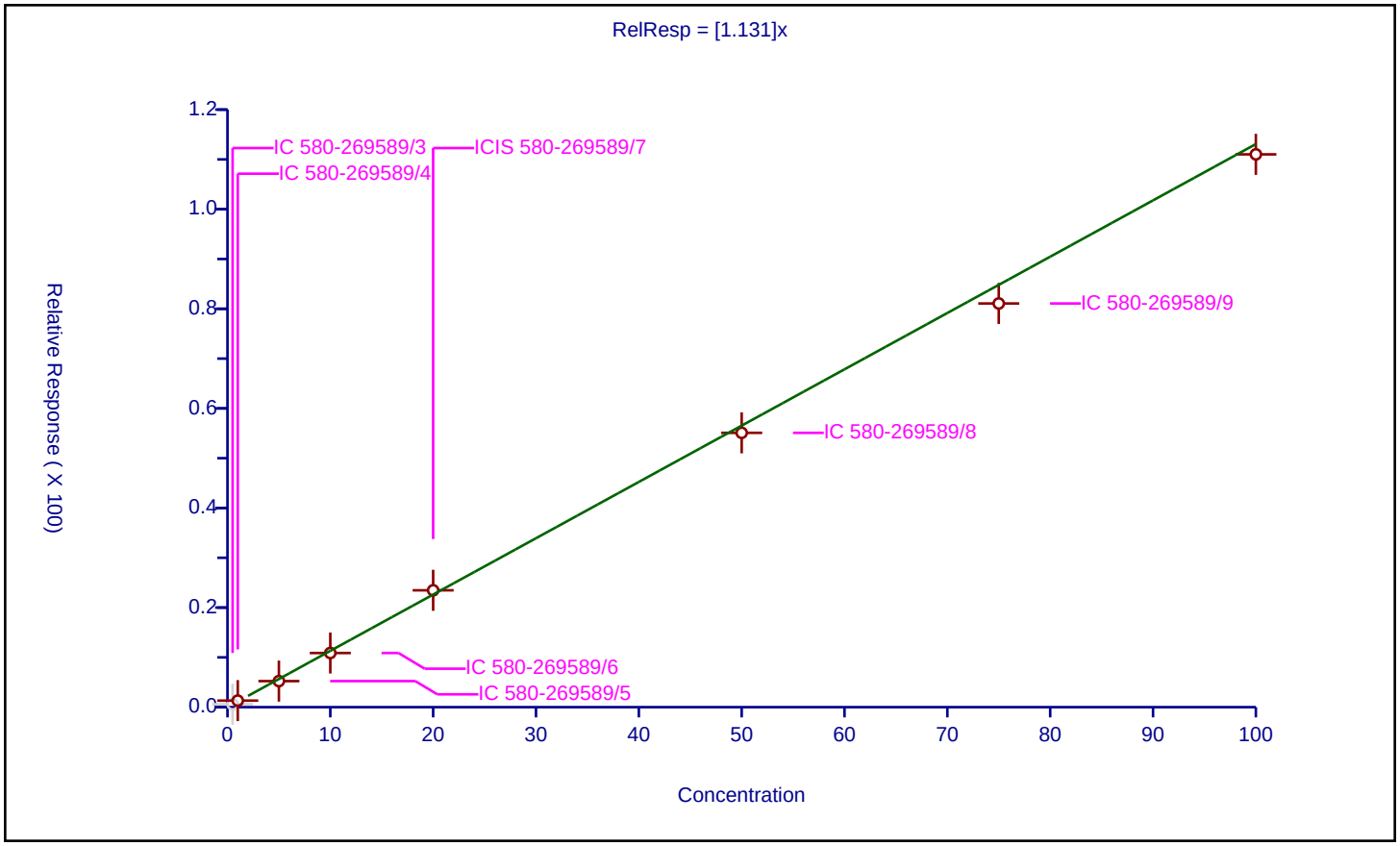
Curve Coefficients

Intercept:	0
Slope:	1.131

Error Coefficients

Standard Error:	793000
Relative Standard Error:	7.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.583171	48.75	577890.0	1.166342	N
2	IC 580-269589/4	1.0	1.314406	48.75	545171.0	1.314406	Y
3	IC 580-269589/5	5.0	5.234659	48.75	608190.0	1.046932	Y
4	IC 580-269589/6	10.0	10.877839	48.75	548784.0	1.087784	Y
5	ICIS 580-269589/7	20.0	23.469625	48.75	548520.0	1.173481	Y
6	IC 580-269589/8	50.0	55.09107	48.75	605359.0	1.101821	Y
7	IC 580-269589/9	75.0	81.065874	48.75	643994.0	1.080878	Y
8	IC 580-269589/10	100.0	111.016089	48.75	631607.0	1.110161	Y



Calibration / Naphthalene

Curve Type:	Linear
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

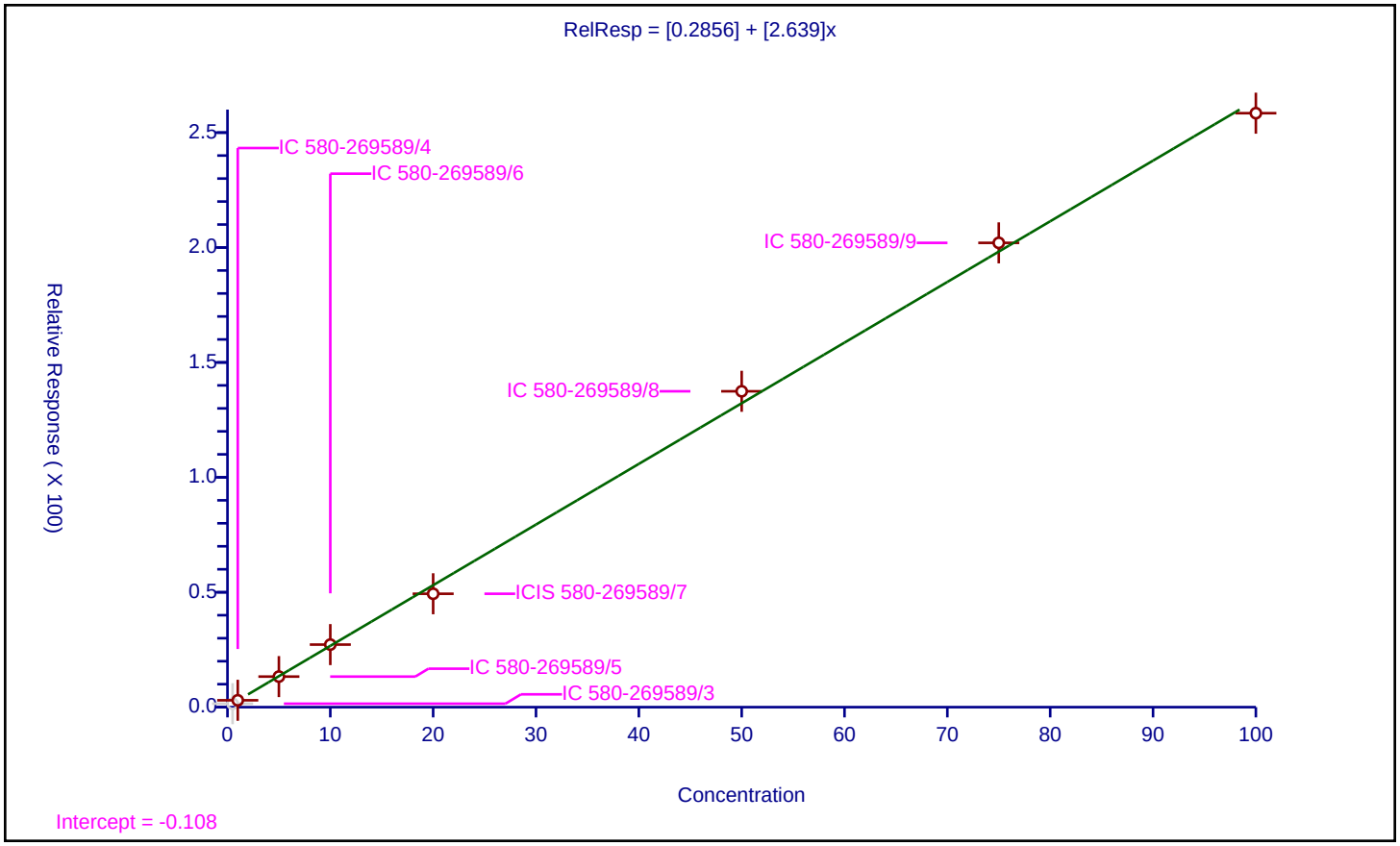
Curve Coefficients

Intercept:	0.2856
Slope:	2.639

Error Coefficients

Standard Error:	2390000
Relative Standard Error:	4.2
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	1.516865	48.75	712257.0	3.033729	N
2	IC 580-269589/4	1.0	2.993825	48.75	697537.0	2.993825	Y
3	IC 580-269589/5	5.0	13.302474	48.75	712171.0	2.660495	Y
4	IC 580-269589/6	10.0	27.222851	48.75	673677.0	2.722285	Y
5	ICIS 580-269589/7	20.0	49.34709	48.75	664680.0	2.467354	Y
6	IC 580-269589/8	50.0	137.43701	48.75	720868.0	2.74874	Y
7	IC 580-269589/9	75.0	202.028668	48.75	735675.0	2.693716	Y
8	IC 580-269589/10	100.0	258.444316	48.75	718634.0	2.584443	Y



Calibration / Hexachlorobutadiene

Curve Type:	Linear
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

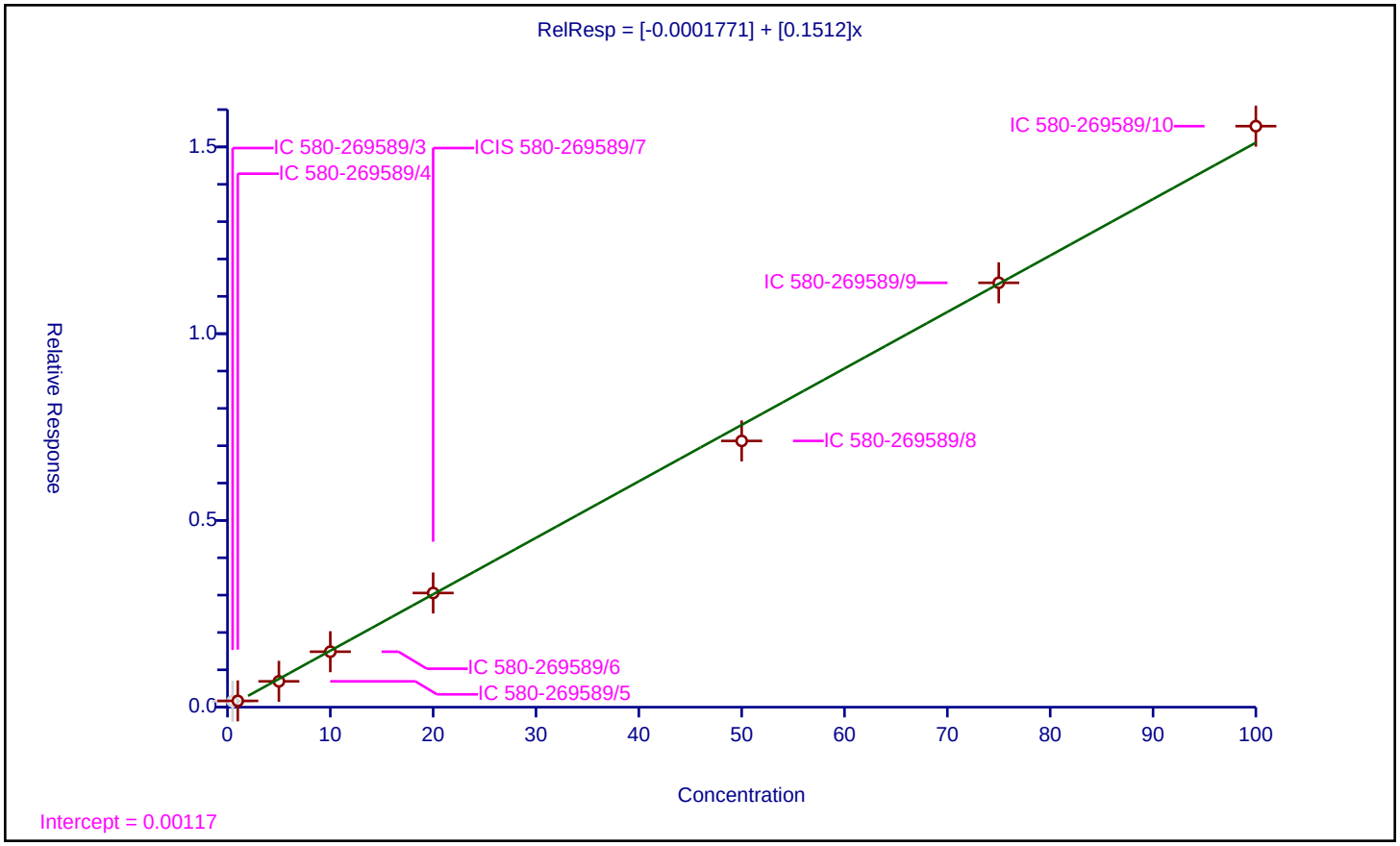
Curve Coefficients

Intercept:	-0.0001771
Slope:	0.1512

Error Coefficients

Standard Error:	138000
Relative Standard Error:	7.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.159407	48.75	712257.0	0.318814	N
2	IC 580-269589/4	1.0	0.168502	48.75	697537.0	0.168502	Y
3	IC 580-269589/5	5.0	0.691783	48.75	712171.0	0.138357	Y
4	IC 580-269589/6	10.0	1.484983	48.75	673677.0	0.148498	Y
5	ICIS 580-269589/7	20.0	3.056886	48.75	664680.0	0.152844	Y
6	IC 580-269589/8	50.0	7.128542	48.75	720868.0	0.142571	Y
7	IC 580-269589/9	75.0	11.362973	48.75	735675.0	0.151506	Y
8	IC 580-269589/10	100.0	15.556864	48.75	718634.0	0.155569	Y



Calibration / 1,2,3-Trichlorobenzene

Curve Type:	Linear
Weighting:	Conc
Origin:	None
Dependency:	Response
Calib Mode:	ISTD
Response Base:	
RF Rounding:	0

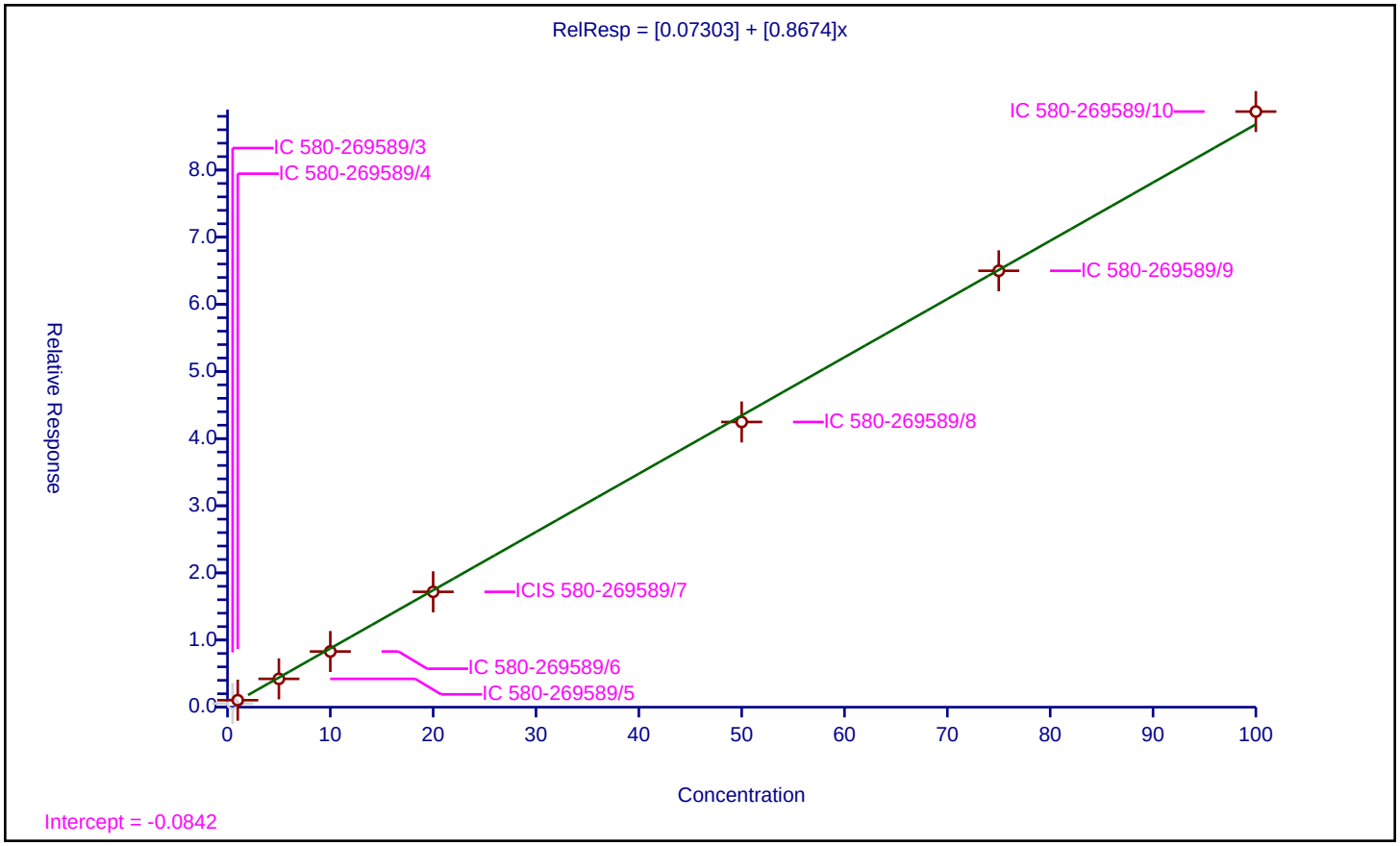
Curve Coefficients

Intercept:	0.07303
Slope:	0.8674

Error Coefficients

Standard Error:	792000
Relative Standard Error:	6.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 580-269589/3	0.5	0.532566	48.75	712257.0	1.065132	N
2	IC 580-269589/4	1.0	1.038827	48.75	697537.0	1.038827	Y
3	IC 580-269589/5	5.0	4.218395	48.75	712171.0	0.843679	Y
4	IC 580-269589/6	10.0	8.289592	48.75	673677.0	0.828959	Y
5	ICIS 580-269589/7	20.0	17.176623	48.75	664680.0	0.858831	Y
6	IC 580-269589/8	50.0	42.476261	48.75	720868.0	0.849525	Y
7	IC 580-269589/9	75.0	64.993241	48.75	735675.0	0.866577	Y
8	IC 580-269589/10	100.0	88.706149	48.75	718634.0	0.887061	Y



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID (1): CCVIS 580-269828/3 Instrument ID (1): SEA102

GC Column (1): DB-VRX ID: 0.25(mm) Date Analyzed (1): 03/25/2018 02:52

ANALYTE	RT	RESOLUTION (%)
Vinyl chloride	4.62	100.0
1,1-Dichloroethene	6.49	100.0
2-Butanone (MEK)	7.86	100.0
Chloroform	8.19	100.0
Dibromofluoromethane (Surr)	8.30	100.0
1,2-Dichloroethane-d4 (Surr)	8.69	100.0
1,2-Dichloroethane	8.75	100.0
Carbon tetrachloride	9.15	100.0
Benzene	9.17	100.0
Trichloroethene	9.69	100.0
Trifluorotoluene (Surr)	9.83	100.0
Toluene-d8 (Surr)	10.92	100.0
Tetrachloroethene	11.67	100.0
Chlorobenzene	12.31	100.0
4-Bromofluorobenzene (Surr)	13.40	100.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 280-406767/16 Calibration Date: 03/05/2018 09:41

Instrument ID: VMS_R1 Calib Start Date: 03/05/2018 07:47

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/05/2018 09:22

Lab File ID: R6836.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Isopropyl ether	Ave	0.2063	0.2330		0.0113	0.0100	12.9	20.0
Dibromofluoromethane (Surr)	Ave	0.2512	0.2571		0.0102	0.0100	2.3	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.2224	0.2247		0.0101	0.0100	1.0	20.0
Toluene-d8 (Surr)	Ave	5.974	6.137		0.0103	0.0100	2.7	20.0
4-Bromofluorobenzene (Surr)	Ave	1.490	1.486		0.00997	0.0100	-0.3	20.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6836.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 05-Mar-2018 09:41:30 ALS Bottle#: 19 Worklist Smp#: 16
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: ICV
Operator ID: DOBRANSKYM Instrument ID: VMS_R1
Sublist:

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 05-Mar-2018 12:49:13 Calib Date: 05-Mar-2018 09:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK015

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	110667	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.153	0.001	98	1571960	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.446	0.007	88	329540	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	436197	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.609	6.602	0.007	93	323307	10.0	10.2	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.896	6.888	0.008	0	282510	10.0	10.1	
$ 7 Toluene-d8 (Surr)	98	8.386	8.378	0.008	94	1617983	10.0	10.3	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	85	518619	10.0	9.97	
28 Ethylene oxide	43	4.217	4.216	0.001	100	406760	1000.0	1001.6	
33 Ethanol	45	4.580	4.594	-0.014	96	34888	600.0	470.4	
38 Propene oxide	58	4.818	4.818	0.000	97	2693710	1000.0	1085.3	
42 Isopropyl alcohol	45	4.972	4.972	0.000	98	64256	100.0	99.5	
46 Acetonitrile	41	5.168	5.168	0.000	99	124438	100.0	101.4	
56 Isopropyl ether	87	5.826	5.825	0.001	94	292989	10.0	11.3	
58 2-Chloro-1,3-butadiene	53	5.924	5.923	0.001	92	787525	10.0	10.4	
59 Tert-butyl ethyl ether	59	6.101	6.100	0.001	97	770616	10.0	11.0	
60 Ethyl acetate	43	6.222	6.222	0.000	99	207193	20.0	21.4	
65 Propionitrile	54	6.273	6.265	0.008	99	148448	100.0	108.3	
66 Methacrylonitrile	41	6.402	6.394	0.008	92	747569	100.0	106.3	
75 Tert-amyl methyl ether	73	6.982	6.981	0.001	90	537965	10.0	11.0	
78 n-Butanol	56	7.182	7.182	0.000	89	68167	250.0	253.2	
81 Methyl methacrylate	100	7.583	7.583	0.000	92	72584	20.0	21.4	
88 2-Nitropropane	41	7.949	7.941	0.008	98	33483	20.0	17.3	
99 Tetrahydrothiophene	60	9.059	9.059	0.000	93	60867	20.0	18.7	
110 cis-1,4-Dichloro-2-butene	53	10.169	10.169	0.000	0	85794	20.0	18.5	
125 1,2,3-Trimethylbenzene	105	11.244	11.243	0.001	99	1634715	10.0	10.7	
16 1,3,5-Trichlorobenzene	180	12.476	12.476	0.000	96	614191	10.0	10.5	

Reagents:

MV-ARCH SS A_00091	Amount Added:	0.80	Units: uL
MV-568718-D_00008	Amount Added:	1.00	Units: uL
MV-Supp B_00020	Amount Added:	5.00	Units: uL

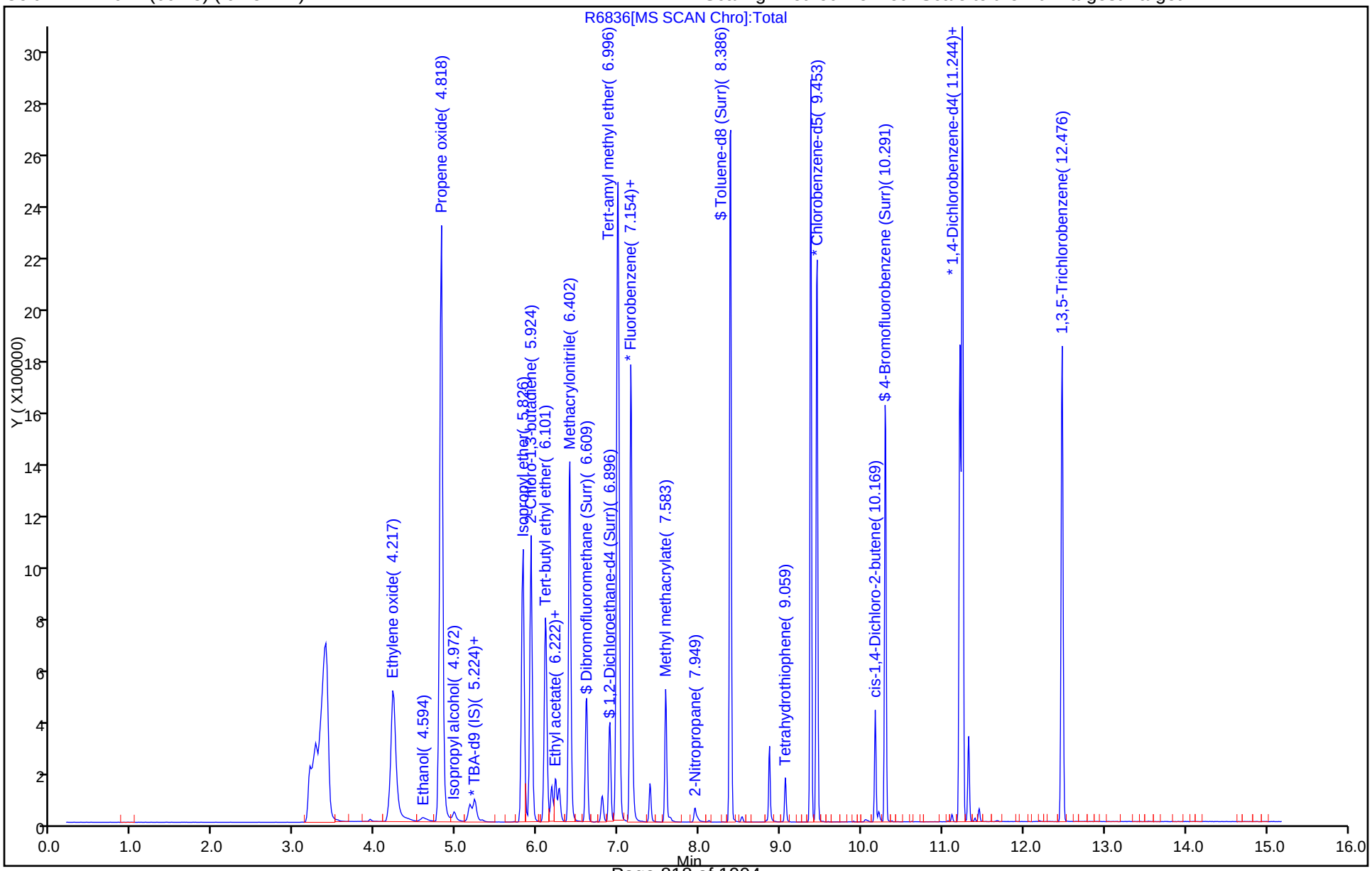
Report Date: 05-Mar-2018 12:49:14 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6836.D

Injection Date:	05-Mar-2018 09:41:30	Instrument ID:	VMS_R1	Operator ID:	DOBRANSKYM
Lims ID:	ICV			Worklist Smp#:	16
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 280-407291/18 Calibration Date: 03/08/2018 21:47

Instrument ID: VMS_R1 Calib Start Date: 03/08/2018 19:13

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/08/2018 21:08

Lab File ID: R7060.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Lin2		0.3462		0.00908	0.0100	-9.2	20.0
Chloromethane	Ave	0.2877	0.2463	0.1000	0.00856	0.0100	-14.4	20.0
Vinyl chloride	Ave	0.3181	0.2768		0.00870	0.0100	-13.0	20.0
Bromomethane	Ave	0.2271	0.1925		0.00847	0.0100	-15.3	20.0
Chloroethane	Ave	0.2024	0.1683		0.00832	0.0100	-16.8	20.0
Trichlorofluoromethane	Ave	0.4739	0.4252		0.00897	0.0100	-10.3	20.0
Acetone	Lin2		0.0237		0.0390	0.0400	-2.6	20.0
1,1-Dichloroethene	Ave	0.3047	0.3430		0.0113	0.0100	12.6	20.0
Carbon disulfide	Ave	1.327	1.477		0.0111	0.0100	11.4	20.0
Methylene Chloride	Lin2		0.2821		0.0104	0.0100	4.4	20.0
Methyl tert-butyl ether	Ave	0.4121	0.4420		0.0107	0.0100	7.3	20.0
trans-1,2-Dichloroethene	Ave	0.3275	0.3704		0.0113	0.0100	13.1	20.0
1,1-Dichloroethane	Ave	0.5861	0.6281	0.1000	0.0107	0.0100	7.2	20.0
2-Butanone (MEK)	Ave	0.0387	0.0362		0.0375	0.0400	-6.3	20.0
cis-1,2-Dichloroethene	Ave	0.3252	0.3484		0.0107	0.0100	7.1	20.0
2,2-Dichloropropane	Lin2		0.4746		0.0114	0.0100	13.7	20.0
Bromochloromethane	Ave	0.0954	0.1026		0.0108	0.0100	7.5	20.0
Chloroform	Ave	0.5031	0.5279		0.0105	0.0100	4.9	20.0
1,1,1-Trichloroethane	Ave	0.4754	0.5295		0.0111	0.0100	11.4	20.0
1,1-Dichloropropene	Ave	0.4888	0.5641		0.0115	0.0100	15.4	20.0
Carbon tetrachloride	Ave	0.3991	0.4530		0.0114	0.0100	13.5	20.0
1,2-Dichloroethane	Ave	0.2617	0.2583		0.00987	0.0100	-1.3	20.0
Benzene	Ave	1.331	1.448		0.0109	0.0100	8.8	20.0
Trichloroethene	Ave	0.3365	0.3620		0.0108	0.0100	7.6	20.0
1,2-Dichloropropane	Ave	0.2943	0.3123		0.0106	0.0100	6.1	20.0
Dibromomethane	Ave	0.0912	0.0962		0.0105	0.0100	5.4	20.0
Bromodichloromethane	Lin2		0.3115		0.0105	0.0100	4.5	20.0
cis-1,3-Dichloropropene	Lin2		1.860		0.0108	0.0100	8.4	20.0
4-Methyl-2-pentanone (MIBK)	Lin2		0.0845		0.0377	0.0400	-5.8	20.0
Toluene	Ave	1.437	1.535		0.0107	0.0100	6.8	20.0
trans-1,3-Dichloropropene	Lin1		0.2758		0.00974	0.0100	-2.6	20.0
1,1,2-Trichloroethane	Ave	0.1370	0.1439		0.0105	0.0100	5.0	20.0
2-Hexanone	Lin2		0.2705		0.0389	0.0400	-2.6	20.0
1,3-Dichloropropane	Ave	1.269	1.301		0.0102	0.0100	2.5	20.0
Tetrachloroethene	Ave	1.249	1.373		0.0110	0.0100	10.0	20.0
Dibromochloromethane	Lin2		0.7507		0.0102	0.0100	2.2	20.0
1,2-Dibromoethane (EDB)	Ave	0.5563	0.5920		0.0106	0.0100	6.4	20.0
Chlorobenzene	Ave	3.933	4.112	0.3000	0.0105	0.0100	4.6	20.0
1,1,1,2-Tetrachloroethane	Ave	1.065	1.184		0.0111	0.0100	11.1	20.0
Ethylbenzene	Ave	2.459	2.706		0.0110	0.0100	10.0	20.0
m-Xylene & p-Xylene	Ave	2.979	3.261		0.0109	0.0100	9.5	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 280-407291/18 Calibration Date: 03/08/2018 21:47

Instrument ID: VMS_R1 Calib Start Date: 03/08/2018 19:13

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/08/2018 21:08

Lab File ID: R7060.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
o-Xylene	Ave	2.701	2.974		0.0110	0.0100	10.1	20.0
Styrene	Lin2		4.454		0.0109	0.0100	9.2	20.0
Bromoform	Lin2		0.3041	0.1000	0.00943	0.0100	-5.7	20.0
Isopropylbenzene	Ave	5.325	6.029		0.0113	0.0100	13.2	20.0
1,1,2,2-Tetrachloroethane	Ave	0.4486	0.4695	0.3000	0.0105	0.0100	4.7	20.0
1,2,3-Trichloropropane	Ave	0.1198	0.1286		0.0107	0.0100	7.4	20.0
Bromobenzene	Ave	0.9077	0.9832		0.0108	0.0100	8.3	20.0
N-Propylbenzene	Ave	1.486	1.679		0.0113	0.0100	13.0	20.0
1,3,5-Trimethylbenzene	Ave	4.300	4.854		0.0113	0.0100	12.9	20.0
2-Chlorotoluene	Ave	1.139	1.261		0.0111	0.0100	10.7	20.0
4-Chlorotoluene	Ave	1.142	1.263		0.0111	0.0100	10.6	20.0
tert-Butylbenzene	Ave	4.362	4.920		0.0113	0.0100	12.8	20.0
1,2,4-Trimethylbenzene	Ave	4.278	4.718		0.0110	0.0100	10.3	20.0
sec-Butylbenzene	Ave	1.190	1.352		0.0114	0.0100	13.6	20.0
4-Isopropyltoluene	Ave	4.915	5.592		0.0114	0.0100	13.8	20.0
1,3-Dichlorobenzene	Ave	2.023	2.152		0.0106	0.0100	6.4	20.0
1,4-Dichlorobenzene	Ave	1.953	2.113		0.0108	0.0100	8.2	20.0
n-Butylbenzene	Ave	4.867	5.578		0.0115	0.0100	14.6	20.0
1,2-Dichlorobenzene	Ave	1.588	1.699		0.0107	0.0100	7.0	20.0
1,2-Dibromo-3-Chloropropane	Lin2		0.0563		0.0100	0.0100	0.0	20.0
1,2,4-Trichlorobenzene	Ave	1.085	1.177		0.0108	0.0100	8.4	20.0
Hexachlorobutadiene	Ave	0.8349	0.9479		0.0114	0.0100	13.5	20.0
Naphthalene	Ave	1.356	1.512		0.0112	0.0100	11.5	20.0
1,2,3-Trichlorobenzene	Ave	0.8154	0.9139		0.0112	0.0100	12.1	20.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7060.D
Lims ID: icv
Client ID:
Sample Type: ICV
Inject. Date: 08-Mar-2018 21:47:30 ALS Bottle#: 19 Worklist Smp#: 18
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: ICV
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist:

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 09-Mar-2018 16:54:48 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: newcomer Date: 09-Mar-2018 17:02:38

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	160509	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	99	1588225	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.453	-0.007	87	340508	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	95	482264	12.5	12.5	
23 Dichlorodifluoromethane	85	3.601	3.601	0.000	99	439812	10.0	9.08	
26 Chloromethane	50	3.839	3.839	-0.001	99	312880	10.0	8.56	
27 Vinyl chloride	62	3.964	3.965	-0.001	98	351633	10.0	8.70	
29 Bromomethane	94	4.300	4.300	0.000	90	244520	10.0	8.47	
30 Chloroethane	64	4.342	4.342	0.000	99	213850	10.0	8.32	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	610403	10.0	9.77	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	98	540270	10.0	8.97	
35 Ethyl ether	59	4.734	4.734	0.000	89	167801	10.0	9.11	
39 Acrolein	56	4.860	4.860	0.000	100	181386	100.0	95.7	
41 Acetone	43	4.958	4.958	0.000	100	120283	40.0	39.0	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.972	0.000	96	346734	10.0	11.3	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	96	435803	10.0	11.3	
44 Iodomethane	142	5.154	5.154	0.000	98	603505	10.0	11.1	
45 Methyl acetate	43	5.182	5.182	0.000	98	410149	50.0	50.4	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	85	777937	10.0	11.3	
48 Carbon disulfide	76	5.252	5.252	0.000	99	1877111	10.0	11.1	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	92	97588	100.0	110.7	
50 Methylene Chloride	84	5.322	5.322	0.000	94	358425	10.0	10.4	
52 Acrylonitrile	53	5.462	5.462	0.000	100	431153	100.0	106.7	
51 Methyl tert-butyl ether	73	5.518	5.518	0.000	95	561576	10.0	10.7	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	98	470604	10.0	11.3	
54 Hexane	57	5.713	5.714	-0.001	91	905399	10.0	11.9	
55 Vinyl acetate	43	5.783	5.798	-0.015	97	639970	20.0	21.0	
57 1,1-Dichloroethane	63	5.853	5.853	0.000	96	798071	10.0	10.7	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	100	184143	40.0	37.5	
62 sec-Butyl Alcohol	45	6.272	6.272	0.000	94	235507	300.0	317.7	
63 cis-1,2-Dichloroethene	96	6.279	6.280	-0.001	81	442677	10.0	10.7	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
64 2,2-Dichloropropane	77	6.315	6.315	0.000	92	602983	10.0	11.4	
67 Chlorobromomethane	128	6.466	6.466	0.000	94	130336	10.0	10.8	
68 Chloroform	83	6.480	6.480	0.000	94	670695	10.0	10.5	
69 Tetrahydrofuran	42	6.509	6.509	0.000	89	63925	20.0	20.5	
70 Isobutyl alcohol	41	6.681	6.681	0.000	95	80940	250.0	239.5	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	98	672718	10.0	11.1	
72 Cyclohexane	56	6.781	6.781	0.000	91	986450	10.0	11.6	
73 1,1-Dichloropropene	75	6.802	6.803	0.000	97	716737	10.0	11.5	
74 Carbon tetrachloride	117	6.845	6.845	0.000	97	575590	10.0	11.4	
76 1,2-Dichloroethane	62	6.953	6.953	0.000	97	328136	10.0	9.87	
77 Benzene	78	6.981	6.982	-0.001	95	1839680	10.0	10.9	
14 n-Heptane	43	7.075	7.082	-0.007	92	921764	10.0	11.9	
79 Trichloroethene	95	7.440	7.440	0.000	99	459916	10.0	10.8	
80 2-Pentanone	43	7.476	7.476	0.000	99	367196	40.0	24.1	
83 1,2-Dichloropropane	63	7.619	7.619	0.000	97	396783	10.0	10.6	
82 Methylcyclohexane	55	7.648	7.648	0.000	93	789118	10.0	11.3	
84 1,4-Dioxane	88	7.683	7.684	-0.001	96	24420	200.0	208.8	
85 Dibromomethane	93	7.719	7.719	0.000	94	122181	10.0	10.5	
86 Dichlorobromomethane	83	7.798	7.798	0.000	100	395730	10.0	10.5	
87 2-Chloroethyl vinyl ether	63	7.956	7.956	0.000	91	93059	10.0	9.57	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	95	506607	10.0	10.8	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.199	0.000	96	429308	40.0	37.7	
91 Toluene	91	8.436	8.436	0.000	99	1950350	10.0	10.7	
92 Ethyl methacrylate	69	8.529	8.529	0.000	67	222349	10.0	10.8	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	350412	10.0	9.74	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	91	182772	10.0	10.5	
95 2-Hexanone	43	8.808	8.808	0.000	96	294746	40.0	38.9	
96 1,3-Dichloropropane	76	8.822	8.822	0.000	96	354319	10.0	10.2	
97 Tetrachloroethene	164	8.858	8.858	0.000	96	374101	10.0	11.0	
98 Chlorodibromomethane	129	9.016	9.016	0.000	91	204507	10.0	10.2	
100 Ethylene Dibromide	107	9.137	9.138	-0.001	98	161252	10.0	10.6	
101 1-Chlorohexane	91	9.374	9.374	0.000	98	738010	10.0	11.4	
102 Chlorobenzene	112	9.474	9.474	0.000	94	1120235	10.0	10.5	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.503	0.000	95	322498	10.0	11.1	
103 Ethylbenzene	106	9.517	9.517	0.000	98	737010	10.0	11.0	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	888196	10.0	10.9	
107 o-Xylene	106	9.897	9.897	0.000	88	810242	10.0	11.0	
106 Styrene	104	9.897	9.897	0.000	87	1213423	10.0	10.9	
108 Bromoform	173	10.083	10.083	0.000	96	82839	10.0	9.43	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	2326176	10.0	11.3	
111 Cyclohexanone	55	10.262	10.262	0.000	92	148995	400.0	396.9	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	93	181126	10.0	10.5	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	90	44847	10.0	11.4	
114 1,2,3-Trichloropropane	110	10.405	10.406	-0.001	84	49621	10.0	10.7	
116 Bromobenzene	156	10.448	10.448	0.000	96	379332	10.0	10.8	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	647862	10.0	11.3	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	1872848	10.0	11.3	
118 2-Chlorotoluene	126	10.570	10.570	0.000	88	486332	10.0	11.1	
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	487385	10.0	11.1	
120 tert-Butylbenzene	119	10.857	10.857	0.000	94	1898004	10.0	11.3	
121 1,2,4-Trimethylbenzene	105	10.885	10.885	0.000	97	1820280	10.0	11.0	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	521702	10.0	11.4	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
123 4-Isopropyltoluene	119	11.114	11.115	-0.001	97	2157549	10.0	11.4	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	830420	10.0	10.6	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	94	815295	10.0	10.8	
127 n-Butylbenzene	91	11.458	11.458	0.000	98	2152122	10.0	11.5	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	97	655419	10.0	10.7	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	78	21736	10.0	10.0	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	453993	10.0	10.8	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	365693	10.0	11.4	
132 Naphthalene	128	13.478	13.478	0.000	97	583459	10.0	11.2	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	352603	10.0	11.2	
S 140 1,2-Dichloroethene, Total	96				0		20.0	22.0	
S 134 Trihalomethanes, Total	1				0		40.0	40.6	
S 135 Xylenes, Total (URS)	1				0		20.0	22.0	
S 137 1,3-Dichloropropene, Total	1				0		20.0	20.6	
S 139 Xylenes, Total	106				0		20.0	22.0	
S 138 1,2-Dichloroethene, Total	1				0		10.0	22.0	

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL
MV-Gas/Ket B_00041	Amount Added:	5.00	Units: uL
MV-SS 2-Cleve_00042	Amount Added:	5.00	Units: uL
MV-Main B_00020	Amount Added:	5.00	Units: uL

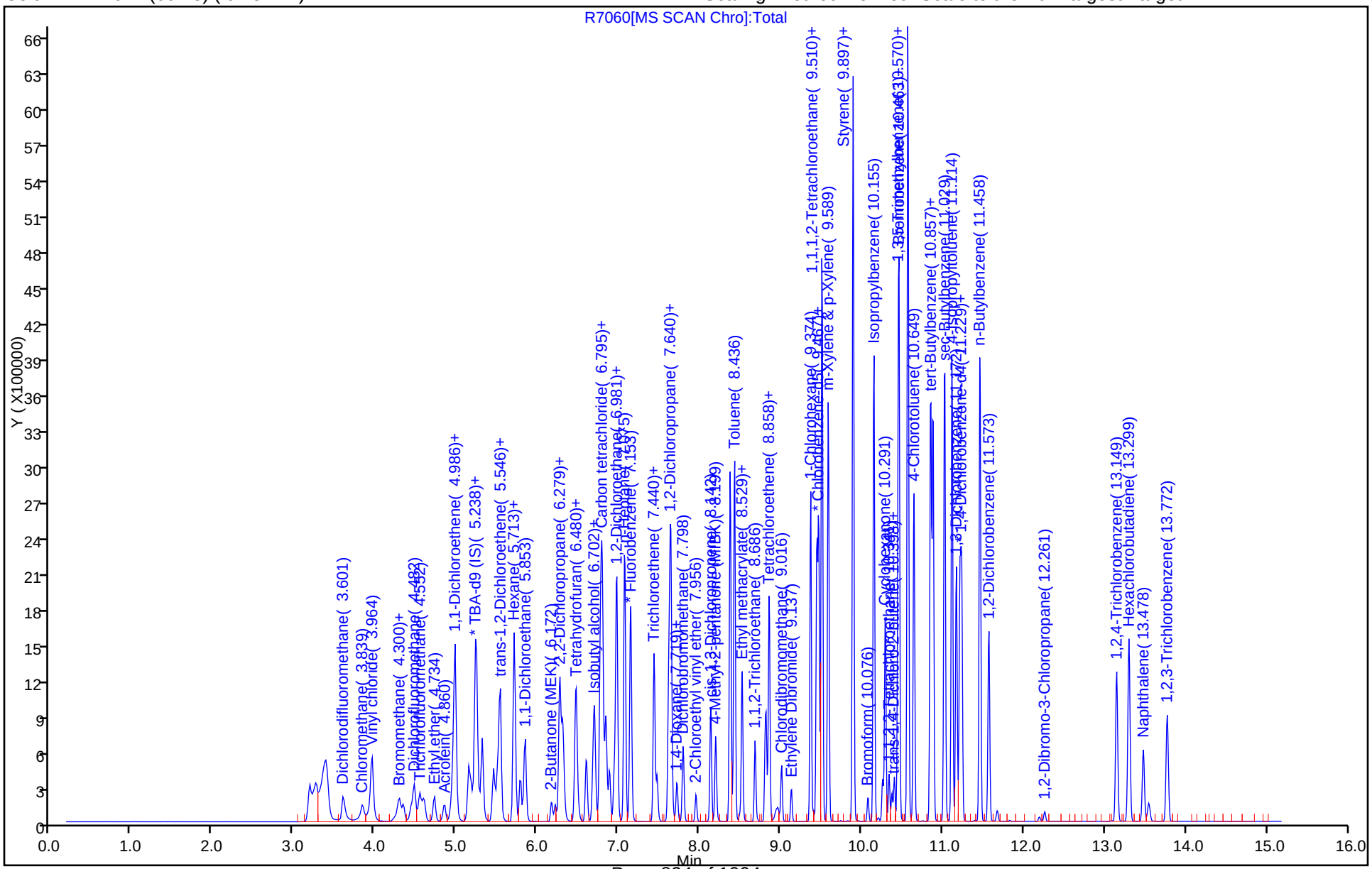
Report Date: 09-Mar-2018 17:02:40 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7060.D

Injection Date:	08-Mar-2018 21:47:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	icv			Worklist Smp#:	18
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 280-408044/15 Calibration Date: 03/15/2018 20:28

Instrument ID: VMS_R1 Calib Start Date: 03/15/2018 18:53

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/15/2018 20:09

Lab File ID: R7387.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dibromofluoromethane (Surr)	Ave	0.2642	0.2669		0.0101	0.0100	1.0	20.0
1,2-Dichloroethane-d4 (Surr)	Lin2		0.2539		0.0103	0.0100	2.7	20.0
Toluene-d8 (Surr)	Ave	5.986	6.010		0.0100	0.0100	0.4	20.0
4-Bromofluorobenzene (Surr)	Ave	1.393	1.360		0.00977	0.0100	-2.3	20.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7387.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 15-Mar-2018 20:28:30 ALS Bottle#: 18 Worklist Smp#: 15
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: ICV
Operator ID: LINESJ Instrument ID: VMS_R1
Sublist:

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 16-Mar-2018 19:54:35 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK027

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	113157	250.0	250.0	
* 1 Fluorobenzene	96	7.146	7.154	-0.008	98	1379851	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.453	-0.007	89	290285	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	97	389976	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.602	0.000	92	294609	10.0	10.1	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.888	6.888	0.000	0	280285	10.0	10.3	
$ 7 Toluene-d8 (Surr)	98	8.378	8.378	0.000	94	1395643	10.0	10.0	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	84	424416	10.0	9.77	

Reagents:

MV-568718-D_00014 Amount Added: 1.00 Units: uL
MV-ARCH SS A_00091 Amount Added: 0.80 Units: uL

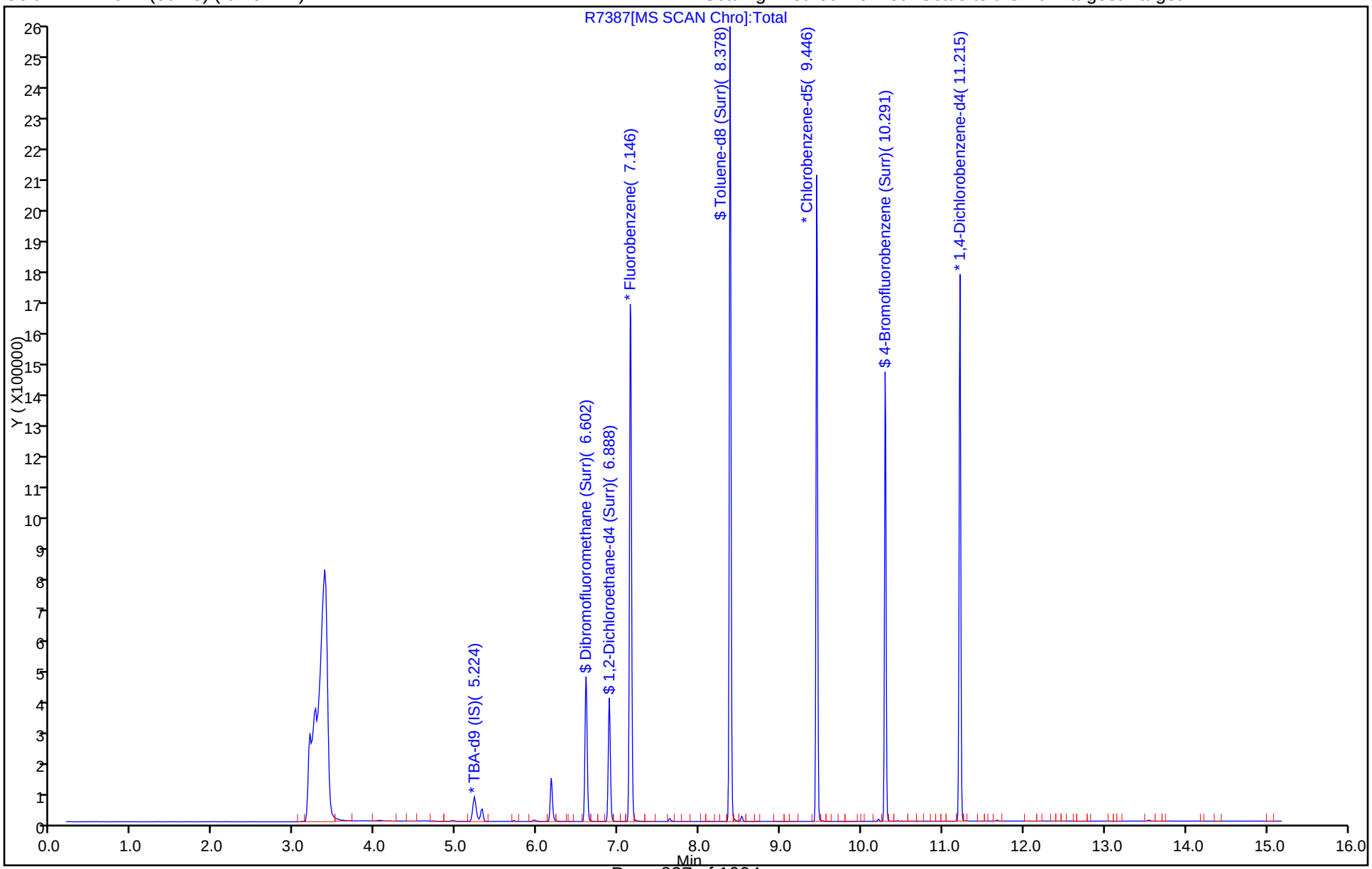
Report Date: 16-Mar-2018 19:54:35 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7387.D

Injection Date:	15-Mar-2018 20:28:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	ICV			Worklist Smp#:	15
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	18
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 280-409141/2 Calibration Date: 03/27/2018 07:07

Instrument ID: VMS_R1 Calib Start Date: 03/08/2018 19:13

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/08/2018 21:08

Lab File ID: R7860.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Lin2		0.3461		0.00908	0.0100	-9.2	20.0
Chloromethane	Ave	0.2877	0.2393	0.1000	0.00832	0.0100	-16.8	20.0
Vinyl chloride	Ave	0.3181	0.2774		0.00872	0.0100	-12.8	20.0
Bromomethane	Ave	0.2271	0.2108		0.00928	0.0100	-7.2	20.0
Chloroethane	Ave	0.2024	0.1787		0.00883	0.0100	-11.7	20.0
Trichlorofluoromethane	Ave	0.4739	0.5163		0.0109	0.0100	8.9	20.0
Acetone	Lin2		0.0205		0.0336	0.0400	-16.0	20.0
1,1-Dichloroethene	Ave	0.3047	0.3130		0.0103	0.0100	2.7	20.0
Carbon disulfide	Ave	1.327	1.386		0.0104	0.0100	4.4	20.0
Methylene Chloride	Lin2		0.2971		0.0110	0.0100	10.0	20.0
Methyl tert-butyl ether	Ave	0.4121	0.3566		0.00865	0.0100	-13.5	20.0
trans-1,2-Dichloroethene	Ave	0.3275	0.3440		0.0105	0.0100	5.0	20.0
1,1-Dichloroethane	Ave	0.5861	0.5933	0.1000	0.0101	0.0100	1.2	20.0
2-Butanone (MEK)	Ave	0.0387	0.0365		0.0377	0.0400	-5.8	20.0
cis-1,2-Dichloroethene	Ave	0.3252	0.3272		0.0101	0.0100	0.6	20.0
2,2-Dichloropropane	Lin2		0.4751		0.0114	0.0100	13.8	20.0
Bromochloromethane	Ave	0.0954	0.0945		0.00991	0.0100	-0.9	20.0
Chloroform	Ave	0.5031	0.5221		0.0104	0.0100	3.8	20.0
1,1,1-Trichloroethane	Ave	0.4754	0.5326		0.0112	0.0100	12.0	20.0
1,1-Dichloropropene	Ave	0.4888	0.5185		0.0106	0.0100	6.1	20.0
Carbon tetrachloride	Ave	0.3991	0.4697		0.0118	0.0100	17.7	20.0
1,2-Dichloroethane	Ave	0.2617	0.2541		0.00971	0.0100	-2.9	20.0
Benzene	Ave	1.331	1.340		0.0101	0.0100	0.7	20.0
Trichloroethene	Ave	0.3365	0.3410		0.0101	0.0100	1.3	20.0
1,2-Dichloropropane	Ave	0.2943	0.2868		0.00975	0.0100	-2.5	20.0
Dibromomethane	Ave	0.0912	0.0922		0.0101	0.0100	1.1	20.0
Bromodichloromethane	Lin2		0.2975		0.00999	0.0100	-0.1	20.0
cis-1,3-Dichloropropene	Lin2		1.589		0.00928	0.0100	-7.2	20.0
4-Methyl-2-pentanone (MIBK)	Lin2		0.0678		0.0303	0.0400	-24.2*	20.0
Toluene	Ave	1.437	1.478		0.0103	0.0100	2.9	20.0
trans-1,3-Dichloropropene	Lin1		0.2606		0.00922	0.0100	-7.8	20.0
1,1,2-Trichloroethane	Ave	0.1370	0.1282		0.00936	0.0100	-6.4	20.0
2-Hexanone	Lin2		0.1991		0.0288	0.0400	-28.1*	20.0
1,3-Dichloropropane	Ave	1.269	1.165		0.00918	0.0100	-8.2	20.0
Tetrachloroethene	Ave	1.249	1.342		0.0107	0.0100	7.5	20.0
Dibromochloromethane	Lin2		0.7371		0.0100	0.0100	0.3	20.0
1,2-Dibromoethane (EDB)	Ave	0.5563	0.5310		0.00954	0.0100	-4.6	20.0
Chlorobenzene	Ave	3.933	4.002	0.3000	0.0102	0.0100	1.8	20.0
1,1,1,2-Tetrachloroethane	Ave	1.065	1.140		0.0107	0.0100	7.1	20.0
Ethylbenzene	Ave	2.459	2.608		0.0106	0.0100	6.1	20.0
m-Xylene & p-Xylene	Ave	2.979	3.139		0.0105	0.0100	5.4	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 280-409141/2 Calibration Date: 03/27/2018 07:07

Instrument ID: VMS_R1 Calib Start Date: 03/08/2018 19:13

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/08/2018 21:08

Lab File ID: R7860.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
o-Xylene	Ave	2.701	2.863		0.0106	0.0100	6.0	20.0
Styrene	Lin2		3.932		0.00965	0.0100	-3.5	20.0
Bromoform	Lin2		0.2863	0.1000	0.00890	0.0100	-11.0	20.0
Isopropylbenzene	Ave	5.325	5.771		0.0108	0.0100	8.4	20.0
1,1,2,2-Tetrachloroethane	Ave	0.4486	0.4014	0.3000	0.00895	0.0100	-10.5	20.0
1,2,3-Trichloropropane	Ave	0.1198	0.1100		0.00918	0.0100	-8.2	20.0
Bromobenzene	Ave	0.9077	0.9429		0.0104	0.0100	3.9	20.0
N-Propylbenzene	Ave	1.486	1.632		0.0110	0.0100	9.9	20.0
1,3,5-Trimethylbenzene	Ave	4.300	4.744		0.0110	0.0100	10.3	20.0
2-Chlorotoluene	Ave	1.139	1.244		0.0109	0.0100	9.3	20.0
4-Chlorotoluene	Ave	1.142	1.206		0.0106	0.0100	5.7	20.0
tert-Butylbenzene	Ave	4.362	4.786		0.0110	0.0100	9.7	20.0
1,2,4-Trimethylbenzene	Ave	4.278	4.647		0.0109	0.0100	8.6	20.0
sec-Butylbenzene	Ave	1.190	1.322		0.0111	0.0100	11.1	20.0
4-Isopropyltoluene	Ave	4.915	5.488		0.0112	0.0100	11.7	20.0
1,3-Dichlorobenzene	Ave	2.023	2.111		0.0104	0.0100	4.3	20.0
1,4-Dichlorobenzene	Ave	1.953	2.024		0.0104	0.0100	3.6	20.0
n-Butylbenzene	Ave	4.867	5.349		0.0110	0.0100	9.9	20.0
1,2-Dichlorobenzene	Ave	1.588	1.608		0.0101	0.0100	1.2	20.0
1,2-Dibromo-3-Chloropropane	Lin2		0.0494		0.00883	0.0100	-11.7	20.0
1,2,4-Trichlorobenzene	Ave	1.085	1.061		0.00978	0.0100	-2.2	20.0
Hexachlorobutadiene	Ave	0.8349	0.9194		0.0110	0.0100	10.1	20.0
Naphthalene	Ave	1.356	1.178		0.00868	0.0100	-13.2	20.0
1,2,3-Trichlorobenzene	Ave	0.8154	0.7724		0.00947	0.0100	-5.3	20.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7860.D
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 27-Mar-2018 07:07:30 ALS Bottle#: 11 Worklist Smp#: 2
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: ccv m
Operator ID: wickhamt Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub75

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 27-Mar-2018 14:14:57 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK022

First Level Reviewer: wickhamt Date: 27-Mar-2018 07:43:55

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	118362	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	99	1754614	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	91	385901	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	552122	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.609	6.609	0.000	93	407666	11.3	11.0	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.896	6.896	0.000	0	343607	11.3	9.90	
$ 7 Toluene-d8 (Surr)	98	8.386	8.386	0.000	93	2085864	11.3	11.3	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	86	678438	11.3	11.0	
23 Dichlorodifluoromethane	85	3.615	3.615	0.000	99	485853	10.0	9.08	
26 Chloromethane	50	3.839	3.839	0.000	98	335943	10.0	8.32	
27 Vinyl chloride	62	3.965	3.965	0.000	98	389315	10.0	8.72	
29 Bromomethane	94	4.300	4.300	0.000	90	295864	10.0	9.28	
30 Chloroethane	64	4.342	4.342	0.000	99	250867	10.0	8.83	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	734376	10.0	10.6	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	98	724687	10.0	10.9	
35 Ethyl ether	59	4.734	4.734	0.000	90	174707	10.0	8.59	
39 Acrolein	56	4.846	4.846	0.000	99	191295	100.0	91.3	
41 Acetone	43	4.958	4.958	0.000	100	115141	40.0	33.6	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	96	439371	10.0	10.3	
40 1,1,2-Trichloro-1,2,2-trif	151	4.986	4.986	0.000	95	368169	10.0	10.8	
44 Iodomethane	142	5.154	5.154	0.000	99	620726	10.0	10.4	
45 Methyl acetate	43	5.182	5.182	0.000	98	366244	50.0	40.7	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	82	764239	10.0	10.0	
48 Carbon disulfide	76	5.252	5.252	0.000	99	1944918	10.0	10.4	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	92	79898	100.0	82.0	
50 Methylene Chloride	84	5.322	5.322	0.000	93	417022	10.0	11.0	
52 Acrylonitrile	53	5.462	5.462	0.000	99	388799	100.0	87.1	
51 Methyl tert-butyl ether	73	5.518	5.518	0.000	96	500557	10.0	8.65	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	97	482796	10.0	10.5	
54 Hexane	57	5.714	5.714	0.000	92	819887	10.0	9.51	
55 Vinyl acetate	43	5.798	5.798	0.000	97	613335	20.0	18.2	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
57 1,1-Dichloroethane	63	5.853	5.853	0.000	96	832811	10.0	10.1	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	100	204653	40.0	37.7	
62 sec-Butyl Alcohol	45	6.272	6.272	0.000	93	180533	300.0	330.3	
63 cis-1,2-Dichloroethene	96	6.280	6.280	0.000	82	459213	10.0	10.1	
64 2,2-Dichloropropane	77	6.315	6.315	0.000	91	666857	10.0	11.4	
67 Chlorobromomethane	128	6.466	6.466	0.000	94	132641	10.0	9.91	
68 Chloroform	83	6.480	6.480	0.000	94	732892	10.0	10.4	
69 Tetrahydrofuran	42	6.509	6.509	0.000	86	51035	20.0	14.8	
70 Isobutyl alcohol	41	6.681	6.681	0.000	93	70632	250.0	283.0	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	99	747608	10.0	11.2	
72 Cyclohexane	56	6.781	6.781	0.000	91	942832	10.0	10.1	
73 1,1-Dichloropropene	75	6.810	6.810	0.000	97	727818	10.0	10.6	
74 Carbon tetrachloride	117	6.845	6.845	0.000	98	659339	10.0	11.8	
76 1,2-Dichloroethane	62	6.953	6.953	0.000	98	356601	10.0	9.71	
77 Benzene	78	6.982	6.982	0.000	96	1881463	10.0	10.1	
14 n-Heptane	43	7.082	7.082	0.000	91	856241	10.0	9.98	
79 Trichloroethene	95	7.447	7.447	0.000	98	478626	10.0	10.1	
80 2-Pentanone	43	7.483	7.483	0.000	99	407390	40.0	24.2	
83 1,2-Dichloropropane	63	7.626	7.626	0.000	96	402592	10.0	9.75	
82 Methylcyclohexane	55	7.648	7.648	0.000	93	780768	10.0	10.1	
84 1,4-Dioxane	88	7.684	7.684	0.000	89	21792	200.0	171.0	
85 Dibromomethane	93	7.727	7.727	0.000	95	129466	10.0	10.1	
86 Dichlorobromomethane	83	7.805	7.805	0.000	99	417584	10.0	9.99	
87 2-Chloroethyl vinyl ether	63	7.963	7.963	0.000	91	36105	10.0	3.58	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	95	490631	10.0	9.28	
90 4-Methyl-2-pentanone (MIBK	43	8.206	8.206	0.000	97	380555	40.0	30.3	
91 Toluene	91	8.436	8.436	0.000	98	2074274	10.0	10.3	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	365777	10.0	9.22	
92 Ethyl methacrylate	69	8.529	8.529	0.000	61	180238	10.0	7.78	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	92	179984	10.0	9.36	
95 2-Hexanone	43	8.815	8.815	0.000	97	245904	40.0	28.8	
96 1,3-Dichloropropane	76	8.830	8.830	0.000	96	359571	10.0	9.18	
97 Tetrachloroethene	164	8.865	8.865	0.000	96	414240	10.0	10.7	
98 Chlorodibromomethane	129	9.016	9.016	0.000	90	227554	10.0	10.0	
100 Ethylene Dibromide	107	9.138	9.138	0.000	98	163931	10.0	9.54	
101 1-Chlorohexane	91	9.374	9.374	0.000	98	783142	10.0	10.7	
102 Chlorobenzene	112	9.474	9.474	0.000	96	1235382	10.0	10.2	
104 1,1,1,2-Tetrachloroethane	131	9.510	9.510	0.000	94	352065	10.0	10.7	
103 Ethylbenzene	106	9.517	9.517	0.000	98	805220	10.0	10.6	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	968969	10.0	10.5	
106 Styrene	104	9.897	9.897	0.000	85	1213782	10.0	9.65	
107 o-Xylene	106	9.897	9.897	0.000	89	883799	10.0	10.6	
108 Bromoform	173	10.083	10.083	0.000	95	88377	10.0	8.90	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	2549119	10.0	10.8	
111 Cyclohexanone	55	10.262	10.262	0.000	92	122186	400.0	288.6	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	95	177279	10.0	8.95	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	89	40640	10.0	9.01	
114 1,2,3-Trichloropropane	110	10.405	10.405	0.000	84	48563	10.0	9.18	
116 Bromobenzene	156	10.448	10.448	0.000	96	416453	10.0	10.4	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	721063	10.0	11.0	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	2095204	10.0	11.0	
118 2-Chlorotoluene	126	10.570	10.570	0.000	88	549686	10.0	10.9	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	532869	10.0	10.6	
120 tert-Butylbenzene	119	10.857	10.857	0.000	93	2114023	10.0	11.0	
121 1,2,4-Trimethylbenzene	105	10.885	10.885	0.000	97	2052469	10.0	10.9	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	583811	10.0	11.1	
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	2424205	10.0	11.2	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	932332	10.0	10.4	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	95	893932	10.0	10.4	
127 n-Butylbenzene	91	11.458	11.458	0.000	98	2362760	10.0	11.0	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	97	710036	10.0	10.1	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	80	21801	10.0	8.83	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	468572	10.0	9.78	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	406108	10.0	11.0	
132 Naphthalene	128	13.478	13.478	0.000	97	520125	10.0	8.68	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	341147	10.0	9.47	
S 140 1,2-Dichloroethene, Total	96				0		20.0	20.6	
S 137 1,3-Dichloropropene, Total	1				0		20.0	18.5	
S 134 Trihalomethanes, Total	1				0		40.0	39.3	
S 139 Xylenes, Total	106				0		20.0	21.1	
S 135 Xylenes, Total (URS)	1				0		20.0	21.1	
S 138 1,2-Dichloroethene, Total	1				0		20.0	20.6	

Reagents:

MV-Gas/Ket A_00071	Amount Added:	5.00	Units: uL	
MV-2cleve+AVA_00033	Amount Added:	5.00	Units: uL	
MV-Main A_00034	Amount Added:	5.00	Units: uL	
MV-568718-D_00014	Amount Added:	1.00	Units: uL	Run Reagent
MV-ARCH SS A_00091	Amount Added:	0.90	Units: uL	Run Reagent

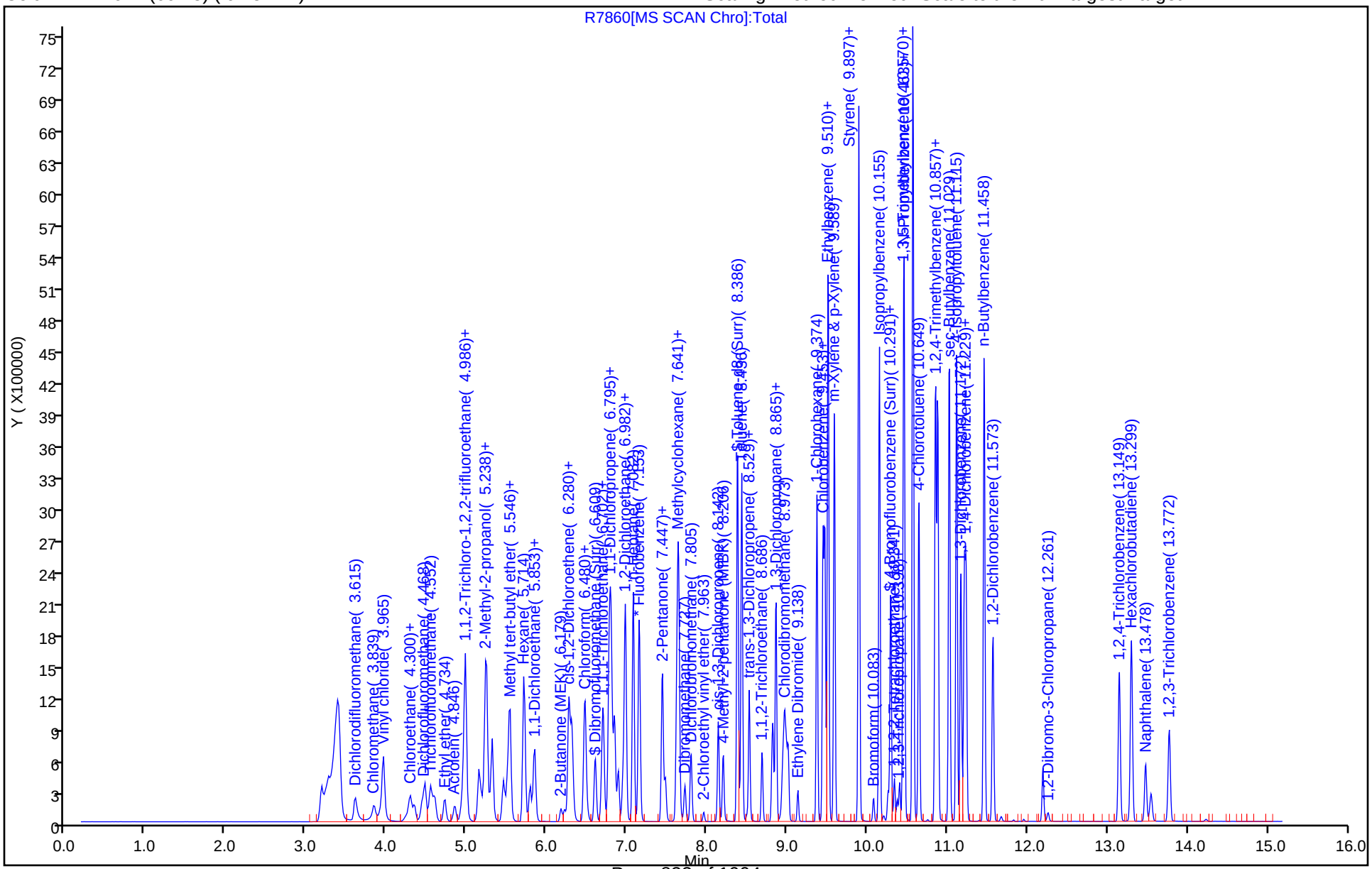
Report Date: 27-Mar-2018 14:14:58 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7860.D

Injection Date:	27-Mar-2018 07:07:30	Instrument ID:	VMS_R1	Operator ID:	wickhamt
Lims ID:	CCV			Worklist Smp#:	2
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 280-409141/2 Calibration Date: 03/27/2018 07:07

Instrument ID: VMS_R1 Calib Start Date: 03/15/2018 18:53

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/15/2018 20:09

Lab File ID: R7860.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dibromofluoromethane (Surr)	Ave	0.2642	0.2582		0.0110	0.0113	-2.3	20.0
1,2-Dichloroethane-d4 (Surr)	Lin2		0.2176		0.00990	0.0113	-12.0	20.0
Toluene-d8 (Surr)	Ave	5.986	6.006		0.0113	0.0113	0.3	20.0
4-Bromofluorobenzene (Surr)	Ave	1.393	1.365		0.0110	0.0113	-2.0	20.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7860.D
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 27-Mar-2018 07:07:30 ALS Bottle#: 11 Worklist Smp#: 2
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: ccv m
Operator ID: wickhamt Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub75

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 27-Mar-2018 14:14:57 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK022

First Level Reviewer: wickhamt Date: 27-Mar-2018 07:43:55

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	118362	250.0	250.0	
* 1 Fluorobenzene	96	7.153	7.153	0.000	99	1754614	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	91	385901	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	552122	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.609	6.609	0.000	93	407666	11.3	11.0	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.896	6.896	0.000	0	343607	11.3	9.90	
$ 7 Toluene-d8 (Surr)	98	8.386	8.386	0.000	93	2085864	11.3	11.3	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	86	678438	11.3	11.0	
23 Dichlorodifluoromethane	85	3.615	3.615	0.000	99	485853	10.0	9.08	
26 Chloromethane	50	3.839	3.839	0.000	98	335943	10.0	8.32	
27 Vinyl chloride	62	3.965	3.965	0.000	98	389315	10.0	8.72	
29 Bromomethane	94	4.300	4.300	0.000	90	295864	10.0	9.28	
30 Chloroethane	64	4.342	4.342	0.000	99	250867	10.0	8.83	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	734376	10.0	10.6	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	98	724687	10.0	10.9	
35 Ethyl ether	59	4.734	4.734	0.000	90	174707	10.0	8.59	
39 Acrolein	56	4.846	4.846	0.000	99	191295	100.0	91.3	
41 Acetone	43	4.958	4.958	0.000	100	115141	40.0	33.6	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	96	439371	10.0	10.3	
40 1,1,2-Trichloro-1,2,2-trif	151	4.986	4.986	0.000	95	368169	10.0	10.8	
44 Iodomethane	142	5.154	5.154	0.000	99	620726	10.0	10.4	
45 Methyl acetate	43	5.182	5.182	0.000	98	366244	50.0	40.7	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	82	764239	10.0	10.0	
48 Carbon disulfide	76	5.252	5.252	0.000	99	1944918	10.0	10.4	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	92	79898	100.0	82.0	
50 Methylene Chloride	84	5.322	5.322	0.000	93	417022	10.0	11.0	
52 Acrylonitrile	53	5.462	5.462	0.000	99	388799	100.0	87.1	
51 Methyl tert-butyl ether	73	5.518	5.518	0.000	96	500557	10.0	8.65	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	97	482796	10.0	10.5	
54 Hexane	57	5.714	5.714	0.000	92	819887	10.0	9.51	
55 Vinyl acetate	43	5.798	5.798	0.000	97	613335	20.0	18.2	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
57 1,1-Dichloroethane	63	5.853	5.853	0.000	96	832811	10.0	10.1	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	100	204653	40.0	37.7	
62 sec-Butyl Alcohol	45	6.272	6.272	0.000	93	180533	300.0	330.3	
63 cis-1,2-Dichloroethene	96	6.280	6.280	0.000	82	459213	10.0	10.1	
64 2,2-Dichloropropane	77	6.315	6.315	0.000	91	666857	10.0	11.4	
67 Chlorobromomethane	128	6.466	6.466	0.000	94	132641	10.0	9.91	
68 Chloroform	83	6.480	6.480	0.000	94	732892	10.0	10.4	
69 Tetrahydrofuran	42	6.509	6.509	0.000	86	51035	20.0	14.8	
70 Isobutyl alcohol	41	6.681	6.681	0.000	93	70632	250.0	283.0	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	99	747608	10.0	11.2	
72 Cyclohexane	56	6.781	6.781	0.000	91	942832	10.0	10.1	
73 1,1-Dichloropropene	75	6.810	6.810	0.000	97	727818	10.0	10.6	
74 Carbon tetrachloride	117	6.845	6.845	0.000	98	659339	10.0	11.8	
76 1,2-Dichloroethane	62	6.953	6.953	0.000	98	356601	10.0	9.71	
77 Benzene	78	6.982	6.982	0.000	96	1881463	10.0	10.1	
14 n-Heptane	43	7.082	7.082	0.000	91	856241	10.0	9.98	
79 Trichloroethene	95	7.447	7.447	0.000	98	478626	10.0	10.1	
80 2-Pentanone	43	7.483	7.483	0.000	99	407390	40.0	24.2	
83 1,2-Dichloropropane	63	7.626	7.626	0.000	96	402592	10.0	9.75	
82 Methylcyclohexane	55	7.648	7.648	0.000	93	780768	10.0	10.1	
84 1,4-Dioxane	88	7.684	7.684	0.000	89	21792	200.0	171.0	
85 Dibromomethane	93	7.727	7.727	0.000	95	129466	10.0	10.1	
86 Dichlorobromomethane	83	7.805	7.805	0.000	99	417584	10.0	9.99	
87 2-Chloroethyl vinyl ether	63	7.963	7.963	0.000	91	36105	10.0	3.58	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	95	490631	10.0	9.28	
90 4-Methyl-2-pentanone (MIBK	43	8.206	8.206	0.000	97	380555	40.0	30.3	
91 Toluene	91	8.436	8.436	0.000	98	2074274	10.0	10.3	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	365777	10.0	9.22	
92 Ethyl methacrylate	69	8.529	8.529	0.000	61	180238	10.0	7.78	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	92	179984	10.0	9.36	
95 2-Hexanone	43	8.815	8.815	0.000	97	245904	40.0	28.8	
96 1,3-Dichloropropane	76	8.830	8.830	0.000	96	359571	10.0	9.18	
97 Tetrachloroethene	164	8.865	8.865	0.000	96	414240	10.0	10.7	
98 Chlorodibromomethane	129	9.016	9.016	0.000	90	227554	10.0	10.0	
100 Ethylene Dibromide	107	9.138	9.138	0.000	98	163931	10.0	9.54	
101 1-Chlorohexane	91	9.374	9.374	0.000	98	783142	10.0	10.7	
102 Chlorobenzene	112	9.474	9.474	0.000	96	1235382	10.0	10.2	
104 1,1,1,2-Tetrachloroethane	131	9.510	9.510	0.000	94	352065	10.0	10.7	
103 Ethylbenzene	106	9.517	9.517	0.000	98	805220	10.0	10.6	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	968969	10.0	10.5	
106 Styrene	104	9.897	9.897	0.000	85	1213782	10.0	9.65	
107 o-Xylene	106	9.897	9.897	0.000	89	883799	10.0	10.6	
108 Bromoform	173	10.083	10.083	0.000	95	88377	10.0	8.90	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	2549119	10.0	10.8	
111 Cyclohexanone	55	10.262	10.262	0.000	92	122186	400.0	288.6	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	95	177279	10.0	8.95	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	89	40640	10.0	9.01	
114 1,2,3-Trichloropropane	110	10.405	10.405	0.000	84	48563	10.0	9.18	
116 Bromobenzene	156	10.448	10.448	0.000	96	416453	10.0	10.4	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	721063	10.0	11.0	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	2095204	10.0	11.0	
118 2-Chlorotoluene	126	10.570	10.570	0.000	88	549686	10.0	10.9	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	532869	10.0	10.6	
120 tert-Butylbenzene	119	10.857	10.857	0.000	93	2114023	10.0	11.0	
121 1,2,4-Trimethylbenzene	105	10.885	10.885	0.000	97	2052469	10.0	10.9	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	583811	10.0	11.1	
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	2424205	10.0	11.2	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	932332	10.0	10.4	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	95	893932	10.0	10.4	
127 n-Butylbenzene	91	11.458	11.458	0.000	98	2362760	10.0	11.0	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	97	710036	10.0	10.1	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	80	21801	10.0	8.83	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	468572	10.0	9.78	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	406108	10.0	11.0	
132 Naphthalene	128	13.478	13.478	0.000	97	520125	10.0	8.68	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	341147	10.0	9.47	
S 140 1,2-Dichloroethene, Total	96				0		20.0	20.6	
S 137 1,3-Dichloropropene, Total	1				0		20.0	18.5	
S 134 Trihalomethanes, Total	1				0		40.0	39.3	
S 139 Xylenes, Total	106				0		20.0	21.1	
S 135 Xylenes, Total (URS)	1				0		20.0	21.1	
S 138 1,2-Dichloroethene, Total	1				0		20.0	20.6	

Reagents:

MV-Gas/Ket A_00071	Amount Added:	5.00	Units: uL	
MV-2cleve+AVA_00033	Amount Added:	5.00	Units: uL	
MV-Main A_00034	Amount Added:	5.00	Units: uL	
MV-568718-D_00014	Amount Added:	1.00	Units: uL	Run Reagent
MV-ARCH SS A_00091	Amount Added:	0.90	Units: uL	Run Reagent

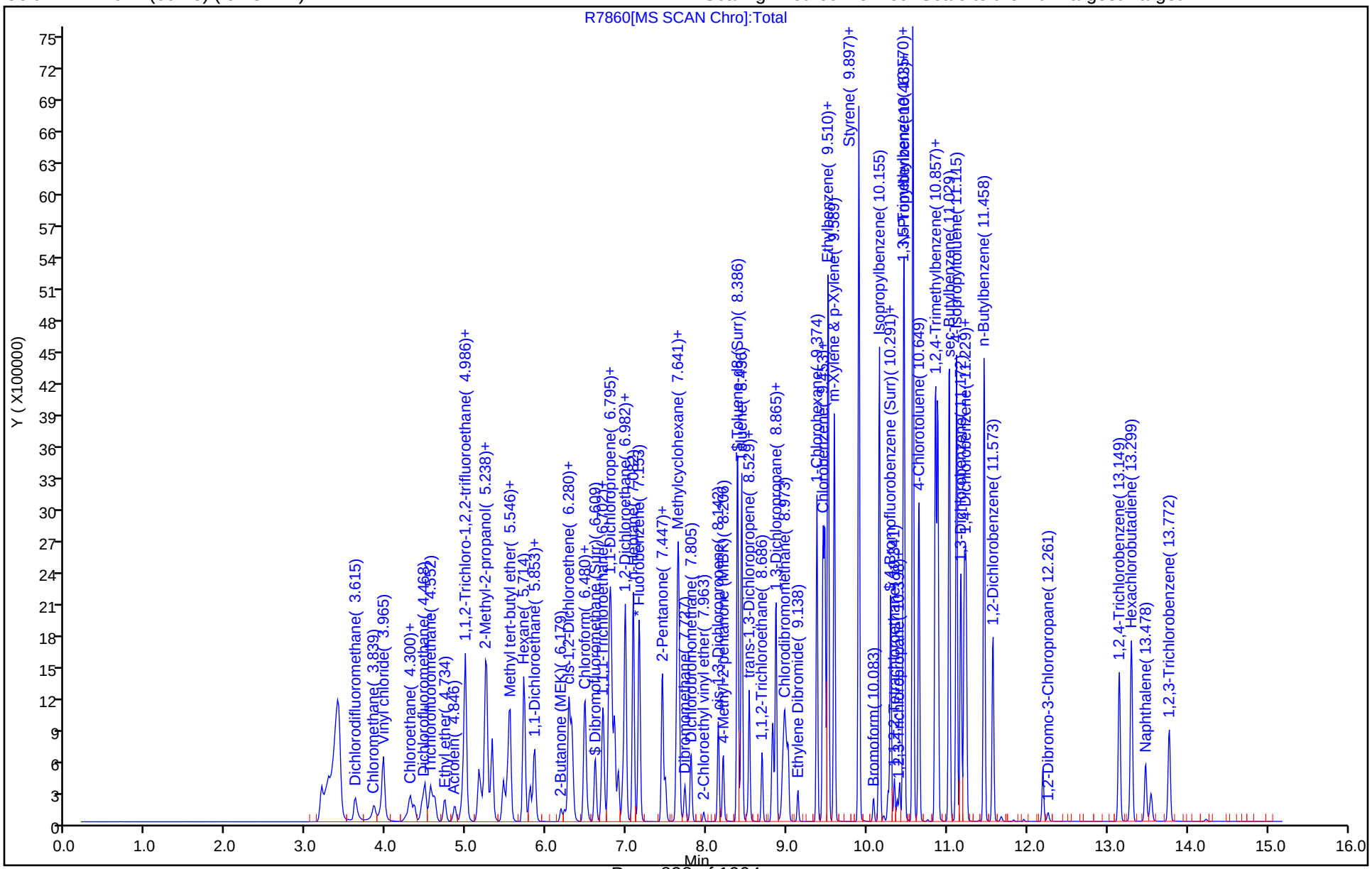
Report Date: 27-Mar-2018 14:14:58 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7860.D

Injection Date:	27-Mar-2018 07:07:30	Instrument ID:	VMS_R1	Operator ID:	wickhamt
Lims ID:	CCV			Worklist Smp#:	2
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVC 280-409141/28 Calibration Date: 03/27/2018 14:35

Instrument ID: VMS_R1 Calib Start Date: 03/08/2018 19:13

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/08/2018 21:08

Lab File ID: R7881.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Lin2		0.3157		0.00829	0.0100	-17.1	50.0
Chloromethane	Ave	0.2877	0.2209	0.1000	0.00768	0.0100	-23.2	50.0
Vinyl chloride	Ave	0.3181	0.2498		0.00785	0.0100	-21.5	50.0
Bromomethane	Ave	0.2271	0.2003		0.00882	0.0100	-11.8	50.0
Chloroethane	Ave	0.2024	0.1605		0.00793	0.0100	-20.7	50.0
Trichlorofluoromethane	Ave	0.4739	0.4544		0.00959	0.0100	-4.1	50.0
Acetone	Lin2		0.0218		0.0358	0.0400	-10.4	50.0
1,1-Dichloroethene	Ave	0.3047	0.2998		0.00984	0.0100	-1.6	50.0
Carbon disulfide	Ave	1.327	1.295		0.00976	0.0100	-2.4	50.0
Methylene Chloride	Lin2		0.3040		0.0113	0.0100	12.6	50.0
Methyl tert-butyl ether	Ave	0.4121	0.3889		0.00944	0.0100	-5.6	50.0
trans-1,2-Dichloroethene	Ave	0.3275	0.3318		0.0101	0.0100	1.3	50.0
1,1-Dichloroethane	Ave	0.5861	0.5823	0.1000	0.00994	0.0100	-0.6	50.0
2-Butanone (MEK)	Ave	0.0387	0.0311		0.0322	0.0400	-19.5	50.0
cis-1,2-Dichloroethene	Ave	0.3252	0.3260		0.0100	0.0100	0.2	50.0
2,2-Dichloropropane	Lin2		0.4674		0.0112	0.0100	12.0	50.0
Bromochloromethane	Ave	0.0954	0.0998		0.0105	0.0100	4.7	50.0
Chloroform	Ave	0.5031	0.5161		0.0103	0.0100	2.6	50.0
1,1,1-Trichloroethane	Ave	0.4754	0.5020		0.0106	0.0100	5.6	50.0
1,1-Dichloropropene	Ave	0.4888	0.4829		0.00988	0.0100	-1.2	50.0
Carbon tetrachloride	Ave	0.3991	0.4267		0.0107	0.0100	6.9	50.0
1,2-Dichloroethane	Ave	0.2617	0.2554		0.00976	0.0100	-2.4	50.0
Benzene	Ave	1.331	1.313		0.00986	0.0100	-1.4	50.0
Trichloroethene	Ave	0.3365	0.3272		0.00972	0.0100	-2.8	50.0
1,2-Dichloropropane	Ave	0.2943	0.2858		0.00971	0.0100	-2.9	50.0
Dibromomethane	Ave	0.0912	0.0928		0.0102	0.0100	1.6	50.0
Bromodichloromethane	Lin2		0.2954		0.00992	0.0100	-0.8	50.0
cis-1,3-Dichloropropene	Lin2		1.626		0.00950	0.0100	-5.0	50.0
4-Methyl-2-pentanone (MIBK)	Lin2		0.0751		0.0335	0.0400	-16.2	50.0
Toluene	Ave	1.437	1.451		0.0101	0.0100	1.0	50.0
trans-1,3-Dichloropropene	Lin1		0.2711		0.00958	0.0100	-4.2	50.0
1,1,2-Trichloroethane	Ave	0.1370	0.1339		0.00977	0.0100	-2.3	50.0
2-Hexanone	Lin2		0.2137		0.0308	0.0400	-22.9	50.0
1,3-Dichloropropane	Ave	1.269	1.207		0.00951	0.0100	-4.9	50.0
Tetrachloroethene	Ave	1.249	1.263		0.0101	0.0100	1.2	50.0
Dibromochloromethane	Lin2		0.7265		0.00989	0.0100	-1.1	50.0
1,2-Dibromoethane (EDB)	Ave	0.5563	0.5325		0.00957	0.0100	-4.3	50.0
Chlorobenzene	Ave	3.933	3.917	0.3000	0.00996	0.0100	-0.4	50.0
1,1,1,2-Tetrachloroethane	Ave	1.065	1.125		0.0106	0.0100	5.6	50.0
Ethylbenzene	Ave	2.459	2.483		0.0101	0.0100	1.0	50.0
m-Xylene & p-Xylene	Ave	2.979	3.023		0.0101	0.0100	1.5	50.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVC 280-409141/28 Calibration Date: 03/27/2018 14:35

Instrument ID: VMS_R1 Calib Start Date: 03/08/2018 19:13

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/08/2018 21:08

Lab File ID: R7881.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
o-Xylene	Ave	2.701	2.764		0.0102	0.0100	2.4	50.0
Styrene	Lin2		3.968		0.00974	0.0100	-2.6	50.0
Bromoform	Lin2		0.2899	0.1000	0.00901	0.0100	-9.9	50.0
Isopropylbenzene	Ave	5.325	5.428		0.0102	0.0100	1.9	50.0
1,1,2,2-Tetrachloroethane	Ave	0.4486	0.4121	0.3000	0.00919	0.0100	-8.1	50.0
1,2,3-Trichloropropane	Ave	0.1198	0.1113		0.00929	0.0100	-7.1	50.0
Bromobenzene	Ave	0.9077	0.9393		0.0103	0.0100	3.5	50.0
N-Propylbenzene	Ave	1.486	1.521		0.0102	0.0100	2.4	50.0
1,3,5-Trimethylbenzene	Ave	4.300	4.435		0.0103	0.0100	3.1	50.0
2-Chlorotoluene	Ave	1.139	1.192		0.0105	0.0100	4.7	50.0
4-Chlorotoluene	Ave	1.142	1.161		0.0102	0.0100	1.7	50.0
tert-Butylbenzene	Ave	4.362	4.460		0.0102	0.0100	2.2	50.0
1,2,4-Trimethylbenzene	Ave	4.278	4.420		0.0103	0.0100	3.3	50.0
sec-Butylbenzene	Ave	1.190	1.212		0.0102	0.0100	1.9	50.0
4-Isopropyltoluene	Ave	4.915	5.040		0.0103	0.0100	2.5	50.0
1,3-Dichlorobenzene	Ave	2.023	2.068		0.0102	0.0100	2.2	50.0
1,4-Dichlorobenzene	Ave	1.953	1.975		0.0101	0.0100	1.1	50.0
n-Butylbenzene	Ave	4.867	4.889		0.0100	0.0100	0.4	50.0
1,2-Dichlorobenzene	Ave	1.588	1.590		0.0100	0.0100	0.1	50.0
1,2-Dibromo-3-Chloropropane	Lin2		0.0524		0.00934	0.0100	-6.6	50.0
1,2,4-Trichlorobenzene	Ave	1.085	1.079		0.00994	0.0100	-0.6	50.0
Hexachlorobutadiene	Ave	0.8349	0.8524		0.0102	0.0100	2.1	50.0
Naphthalene	Ave	1.356	1.272		0.00938	0.0100	-6.2	50.0
1,2,3-Trichlorobenzene	Ave	0.8154	0.8054		0.00988	0.0100	-1.2	50.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7881.D
Lims ID: ccvc
Client ID:
Sample Type: CCVC
Inject. Date: 27-Mar-2018 14:35:30 ALS Bottle#: 32 Worklist Smp#: 28
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: ccvc
Operator ID: wickhamt Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub75

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 28-Mar-2018 06:25:55 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK031

First Level Reviewer: wickhamt Date: 28-Mar-2018 06:21:57

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	153976	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.154	0.000	98	1905895	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	87	421476	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	95	605028	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.609	-0.007	93	438707	11.3	10.9	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.889	6.896	-0.007	0	359385	11.3	9.53	
$ 7 Toluene-d8 (Surr)	98	8.378	8.386	-0.008	93	2256774	11.3	11.2	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	87	726134	11.3	10.8	
23 Dichlorodifluoromethane	85	3.601	3.615	-0.014	99	481272	10.0	8.29	
26 Chloromethane	50	3.839	3.839	0.000	99	336821	10.0	7.68	
27 Vinyl chloride	62	3.965	3.965	0.000	98	380913	10.0	7.85	
29 Bromomethane	94	4.300	4.300	0.000	90	305382	10.0	8.82	
30 Chloroethane	64	4.342	4.342	0.000	99	244745	10.0	7.93	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	733046	10.0	9.78	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	99	692879	10.0	9.59	
35 Ethyl ether	59	4.720	4.734	-0.014	91	217405	10.0	9.84	
39 Acrolein	56	4.846	4.846	0.000	100	225219	100.0	99.0	
41 Acetone	43	4.944	4.958	-0.014	100	133052	40.0	35.8	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.986	-0.014	95	366530	10.0	9.94	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	97	457054	10.0	9.84	
44 Iodomethane	142	5.154	5.154	0.000	99	672711	10.0	10.4	
45 Methyl acetate	43	5.182	5.182	0.000	97	416809	50.0	42.7	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	83	803245	10.0	9.72	
48 Carbon disulfide	76	5.252	5.252	0.000	99	1973809	10.0	9.76	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	92	95761	100.0	90.5	
50 Methylene Chloride	84	5.322	5.322	0.000	93	463457	10.0	11.3	
52 Acrylonitrile	53	5.462	5.462	0.000	100	446674	100.0	92.1	
51 Methyl tert-butyl ether	73	5.518	5.518	0.000	95	592931	10.0	9.44	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	97	505906	10.0	10.1	
54 Hexane	57	5.714	5.714	0.000	91	819360	10.0	8.71	
55 Vinyl acetate	43	5.784	5.798	-0.014	97	750655	20.0	20.5	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
57 1,1-Dichloroethane	63	5.854	5.853	0.001	96	887873	10.0	9.94	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	99	189778	40.0	32.2	
62 sec-Butyl Alcohol	45	6.273	6.272	0.000	95	209555	300.0	294.7	
63 cis-1,2-Dichloroethene	96	6.280	6.280	0.000	82	496993	10.0	10.0	
64 2,2-Dichloropropane	77	6.315	6.315	0.000	91	712645	10.0	11.2	
67 Chlorobromomethane	128	6.466	6.466	0.000	96	152231	10.0	10.5	
68 Chloroform	83	6.480	6.480	0.000	94	786839	10.0	10.3	
69 Tetrahydrofuran	42	6.509	6.509	0.000	87	61247	20.0	16.4	
70 Isobutyl alcohol	41	6.681	6.681	0.000	93	78804	250.0	243.1	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	98	765385	10.0	10.6	
72 Cyclohexane	56	6.781	6.781	0.000	91	952173	10.0	9.37	
73 1,1-Dichloropropene	75	6.803	6.810	-0.007	98	736258	10.0	9.88	
74 Carbon tetrachloride	117	6.846	6.845	0.001	97	650546	10.0	10.7	
76 1,2-Dichloroethane	62	6.953	6.953	0.000	98	389343	10.0	9.76	
77 Benzene	78	6.982	6.982	0.000	96	2001251	10.0	9.86	
14 n-Heptane	43	7.075	7.082	-0.007	91	844488	10.0	9.06	
79 Trichloroethene	95	7.440	7.447	-0.007	98	498895	10.0	9.72	
80 2-Pentanone	43	7.483	7.483	0.000	99	312260	40.0	17.1	
83 1,2-Dichloropropane	63	7.619	7.626	-0.007	97	435802	10.0	9.71	
82 Methylcyclohexane	55	7.648	7.648	0.000	93	768469	10.0	9.18	
84 1,4-Dioxane	88	7.684	7.684	0.000	92	24313	200.0	175.3	
85 Dibromomethane	93	7.727	7.727	0.000	95	141410	10.0	10.2	
86 Dichlorobromomethane	83	7.798	7.805	-0.007	99	450465	10.0	9.92	
87 2-Chloroethyl vinyl ether	63	7.963	7.963	0.000	92	66828	10.0	5.86	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	96	548390	10.0	9.50	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.206	-0.007	96	457762	40.0	33.5	
91 Toluene	91	8.436	8.436	0.000	98	2212407	10.0	10.1	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	97	413391	10.0	9.58	
92 Ethyl methacrylate	69	8.529	8.529	0.000	60	215353	10.0	8.51	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	91	204175	10.0	9.77	
95 2-Hexanone	43	8.808	8.815	-0.007	96	288251	40.0	30.8	
96 1,3-Dichloropropane	76	8.823	8.830	-0.007	95	407054	10.0	9.51	
97 Tetrachloroethene	164	8.858	8.865	-0.007	97	425986	10.0	10.1	
98 Chlorodibromomethane	129	9.016	9.016	0.000	91	244949	10.0	9.89	
100 Ethylene Dibromide	107	9.138	9.138	0.000	99	179544	10.0	9.57	
101 1-Chlorohexane	91	9.374	9.374	0.000	98	774976	10.0	9.66	
102 Chlorobenzene	112	9.474	9.474	0.000	95	1320893	10.0	9.96	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.510	-0.007	95	379226	10.0	10.6	
103 Ethylbenzene	106	9.517	9.517	0.000	98	837286	10.0	10.1	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	1019185	10.0	10.1	
107 o-Xylene	106	9.897	9.897	0.000	89	932035	10.0	10.2	
106 Styrene	104	9.897	9.897	0.000	86	1338080	10.0	9.74	
108 Bromoform	173	10.083	10.083	0.000	96	97740	10.0	9.01	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	2627040	10.0	10.2	
111 Cyclohexanone	55	10.262	10.262	0.000	90	138817	400.0	300.0	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	94	199472	10.0	9.19	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	90	43310	10.0	8.77	
114 1,2,3-Trichloropropane	110	10.406	10.405	0.001	84	53881	10.0	9.29	
116 Bromobenzene	156	10.449	10.448	0.001	97	454633	10.0	10.3	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	736363	10.0	10.2	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	2146836	10.0	10.3	
118 2-Chlorotoluene	126	10.570	10.570	0.000	93	577134	10.0	10.5	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	562168	10.0	10.2	
120 tert-Butylbenzene	119	10.857	10.857	0.000	93	2158569	10.0	10.2	
121 1,2,4-Trimethylbenzene	105	10.878	10.885	-0.007	98	2139279	10.0	10.3	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	586792	10.0	10.2	
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	2439549	10.0	10.3	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	1001118	10.0	10.2	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	94	956002	10.0	10.1	
127 n-Butylbenzene	91	11.459	11.458	0.001	98	2366173	10.0	10.0	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	97	769810	10.0	10.0	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	81	25347	10.0	9.34	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	522105	10.0	9.94	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	412572	10.0	10.2	
132 Naphthalene	128	13.479	13.478	0.001	97	615664	10.0	9.38	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	389837	10.0	9.88	
S 140 1,2-Dichloroethene, Total	96				0		20.0	20.2	
S 135 Xylenes, Total (URS)	1				0		20.0	20.4	
S 138 1,2-Dichloroethene, Total	1				0		20.0	20.2	
S 139 Xylenes, Total	106				0		20.0	20.4	
S 136 Total BTEX	1				0			50.4	
S 137 1,3-Dichloropropene, Total	1				0		20.0	19.1	
S 134 Trihalomethanes, Total	1				0		40.0	39.1	

Reagents:

MV-Main A_00034	Amount Added:	5.00	Units: uL	
MV-Gas/Ket A_00071	Amount Added:	5.00	Units: uL	
MV-2cleve+AVA_00033	Amount Added:	5.00	Units: uL	
MV-568718-D_00014	Amount Added:	1.00	Units: uL	Run Reagent
MV-ARCH SS A_00091	Amount Added:	0.90	Units: uL	Run Reagent

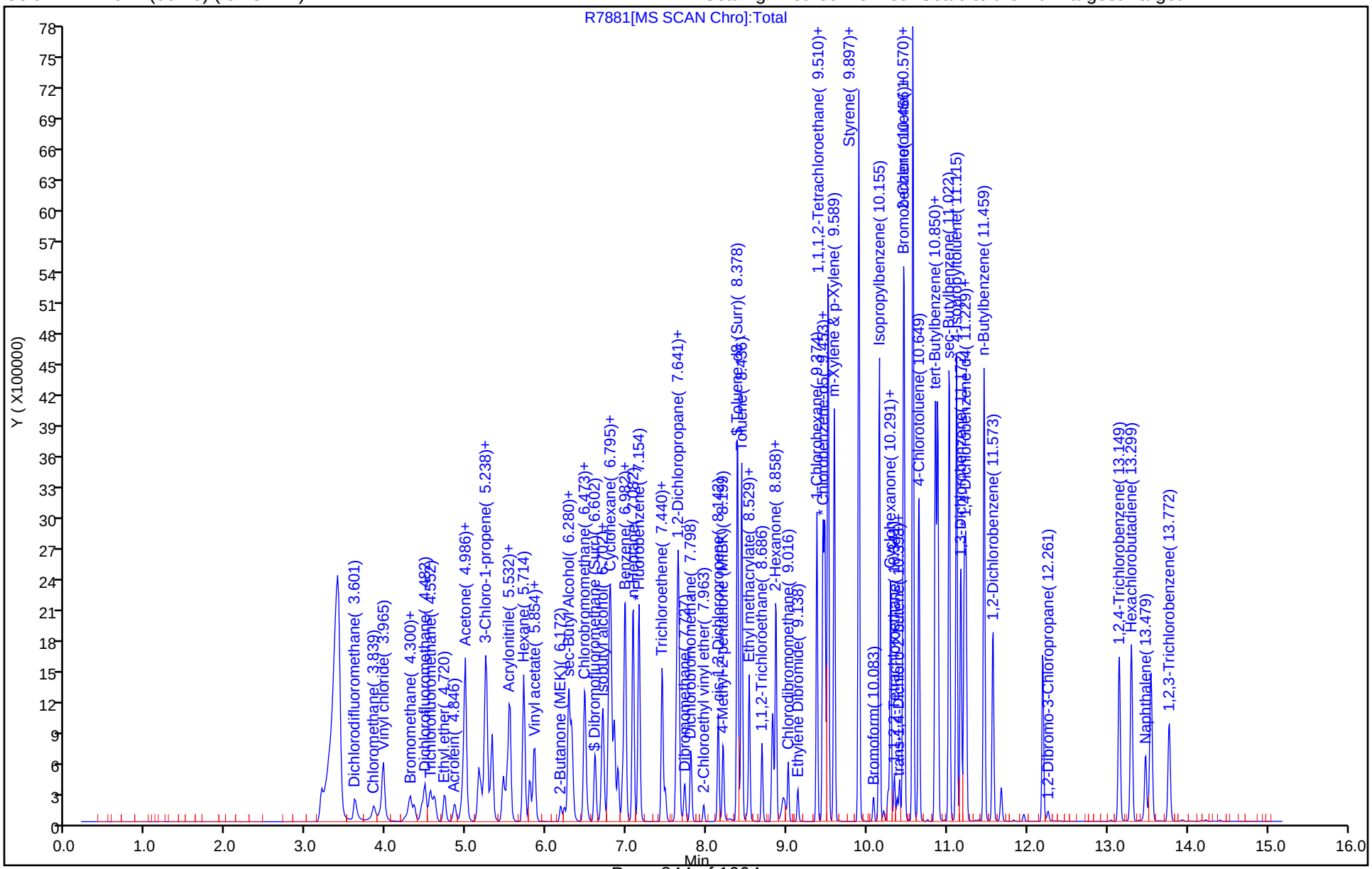
Report Date: 28-Mar-2018 06:25:56 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7881.D

Injection Date:	27-Mar-2018 14:35:30	Instrument ID:	VMS_R1	Operator ID:	wickhamt
Lims ID:	ccvc			Worklist Smp#:	28
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	32
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVC 280-409141/28 Calibration Date: 03/27/2018 14:35

Instrument ID: VMS_R1 Calib Start Date: 03/15/2018 18:53

GC Column: DB-624 (60.25) ID: 0.25(mm) Calib End Date: 03/15/2018 20:09

Lab File ID: R7881.D Conc. Units: mg/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dibromofluoromethane (Surr)	Ave	0.2642	0.2558		0.0109	0.0113	-3.2	50.0
1,2-Dichloroethane-d4 (Surr)	Lin2		0.2095		0.00953	0.0113	-15.3	50.0
Toluene-d8 (Surr)	Ave	5.986	5.949		0.0112	0.0113	-0.6	50.0
4-Bromofluorobenzene (Surr)	Ave	1.393	1.334		0.0108	0.0113	-4.3	50.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7881.D
Lims ID: ccvc
Client ID:
Sample Type: CCVC
Inject. Date: 27-Mar-2018 14:35:30 ALS Bottle#: 32 Worklist Smp#: 28
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: ccvc
Operator ID: wickhamt Instrument ID: VMS_R1
Sublist: chrom-AQ_VMSR1_8260*sub75

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 28-Mar-2018 06:25:55 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK031

First Level Reviewer: wickhamt Date: 28-Mar-2018 06:21:57

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	153976	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.154	0.000	98	1905895	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	87	421476	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	95	605028	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.609	-0.007	93	438707	11.3	10.9	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.889	6.896	-0.007	0	359385	11.3	9.53	
$ 7 Toluene-d8 (Surr)	98	8.378	8.386	-0.008	93	2256774	11.3	11.2	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	87	726134	11.3	10.8	
23 Dichlorodifluoromethane	85	3.601	3.615	-0.014	99	481272	10.0	8.29	
26 Chloromethane	50	3.839	3.839	0.000	99	336821	10.0	7.68	
27 Vinyl chloride	62	3.965	3.965	0.000	98	380913	10.0	7.85	
29 Bromomethane	94	4.300	4.300	0.000	90	305382	10.0	8.82	
30 Chloroethane	64	4.342	4.342	0.000	99	244745	10.0	7.93	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	733046	10.0	9.78	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	99	692879	10.0	9.59	
35 Ethyl ether	59	4.720	4.734	-0.014	91	217405	10.0	9.84	
39 Acrolein	56	4.846	4.846	0.000	100	225219	100.0	99.0	
41 Acetone	43	4.944	4.958	-0.014	100	133052	40.0	35.8	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.986	-0.014	95	366530	10.0	9.94	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	97	457054	10.0	9.84	
44 Iodomethane	142	5.154	5.154	0.000	99	672711	10.0	10.4	
45 Methyl acetate	43	5.182	5.182	0.000	97	416809	50.0	42.7	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	83	803245	10.0	9.72	
48 Carbon disulfide	76	5.252	5.252	0.000	99	1973809	10.0	9.76	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	92	95761	100.0	90.5	
50 Methylene Chloride	84	5.322	5.322	0.000	93	463457	10.0	11.3	
52 Acrylonitrile	53	5.462	5.462	0.000	100	446674	100.0	92.1	
51 Methyl tert-butyl ether	73	5.518	5.518	0.000	95	592931	10.0	9.44	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	97	505906	10.0	10.1	
54 Hexane	57	5.714	5.714	0.000	91	819360	10.0	8.71	
55 Vinyl acetate	43	5.784	5.798	-0.014	97	750655	20.0	20.5	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
57 1,1-Dichloroethane	63	5.854	5.853	0.001	96	887873	10.0	9.94	
61 2-Butanone (MEK)	43	6.222	6.222	0.000	99	189778	40.0	32.2	
62 sec-Butyl Alcohol	45	6.273	6.272	0.000	95	209555	300.0	294.7	
63 cis-1,2-Dichloroethene	96	6.280	6.280	0.000	82	496993	10.0	10.0	
64 2,2-Dichloropropane	77	6.315	6.315	0.000	91	712645	10.0	11.2	
67 Chlorobromomethane	128	6.466	6.466	0.000	96	152231	10.0	10.5	
68 Chloroform	83	6.480	6.480	0.000	94	786839	10.0	10.3	
69 Tetrahydrofuran	42	6.509	6.509	0.000	87	61247	20.0	16.4	
70 Isobutyl alcohol	41	6.681	6.681	0.000	93	78804	250.0	243.1	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	98	765385	10.0	10.6	
72 Cyclohexane	56	6.781	6.781	0.000	91	952173	10.0	9.37	
73 1,1-Dichloropropene	75	6.803	6.810	-0.007	98	736258	10.0	9.88	
74 Carbon tetrachloride	117	6.846	6.845	0.001	97	650546	10.0	10.7	
76 1,2-Dichloroethane	62	6.953	6.953	0.000	98	389343	10.0	9.76	
77 Benzene	78	6.982	6.982	0.000	96	2001251	10.0	9.86	
14 n-Heptane	43	7.075	7.082	-0.007	91	844488	10.0	9.06	
79 Trichloroethene	95	7.440	7.447	-0.007	98	498895	10.0	9.72	
80 2-Pentanone	43	7.483	7.483	0.000	99	312260	40.0	17.1	
83 1,2-Dichloropropane	63	7.619	7.626	-0.007	97	435802	10.0	9.71	
82 Methylcyclohexane	55	7.648	7.648	0.000	93	768469	10.0	9.18	
84 1,4-Dioxane	88	7.684	7.684	0.000	92	24313	200.0	175.3	
85 Dibromomethane	93	7.727	7.727	0.000	95	141410	10.0	10.2	
86 Dichlorobromomethane	83	7.798	7.805	-0.007	99	450465	10.0	9.92	
87 2-Chloroethyl vinyl ether	63	7.963	7.963	0.000	92	66828	10.0	5.86	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	96	548390	10.0	9.50	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.206	-0.007	96	457762	40.0	33.5	
91 Toluene	91	8.436	8.436	0.000	98	2212407	10.0	10.1	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	97	413391	10.0	9.58	
92 Ethyl methacrylate	69	8.529	8.529	0.000	60	215353	10.0	8.51	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	91	204175	10.0	9.77	
95 2-Hexanone	43	8.808	8.815	-0.007	96	288251	40.0	30.8	
96 1,3-Dichloropropane	76	8.823	8.830	-0.007	95	407054	10.0	9.51	
97 Tetrachloroethene	164	8.858	8.865	-0.007	97	425986	10.0	10.1	
98 Chlorodibromomethane	129	9.016	9.016	0.000	91	244949	10.0	9.89	
100 Ethylene Dibromide	107	9.138	9.138	0.000	99	179544	10.0	9.57	
101 1-Chlorohexane	91	9.374	9.374	0.000	98	774976	10.0	9.66	
102 Chlorobenzene	112	9.474	9.474	0.000	95	1320893	10.0	9.96	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.510	-0.007	95	379226	10.0	10.6	
103 Ethylbenzene	106	9.517	9.517	0.000	98	837286	10.0	10.1	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	1019185	10.0	10.1	
107 o-Xylene	106	9.897	9.897	0.000	89	932035	10.0	10.2	
106 Styrene	104	9.897	9.897	0.000	86	1338080	10.0	9.74	
108 Bromoform	173	10.083	10.083	0.000	96	97740	10.0	9.01	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	2627040	10.0	10.2	
111 Cyclohexanone	55	10.262	10.262	0.000	90	138817	400.0	300.0	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	94	199472	10.0	9.19	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	90	43310	10.0	8.77	
114 1,2,3-Trichloropropane	110	10.406	10.405	0.001	84	53881	10.0	9.29	
116 Bromobenzene	156	10.449	10.448	0.001	97	454633	10.0	10.3	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	736363	10.0	10.2	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	2146836	10.0	10.3	
118 2-Chlorotoluene	126	10.570	10.570	0.000	93	577134	10.0	10.5	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	562168	10.0	10.2	
120 tert-Butylbenzene	119	10.857	10.857	0.000	93	2158569	10.0	10.2	
121 1,2,4-Trimethylbenzene	105	10.878	10.885	-0.007	98	2139279	10.0	10.3	
122 sec-Butylbenzene	134	11.029	11.029	0.000	94	586792	10.0	10.2	
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	2439549	10.0	10.3	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	1001118	10.0	10.2	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	94	956002	10.0	10.1	
127 n-Butylbenzene	91	11.459	11.458	0.001	98	2366173	10.0	10.0	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	97	769810	10.0	10.0	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	81	25347	10.0	9.34	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	522105	10.0	9.94	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	98	412572	10.0	10.2	
132 Naphthalene	128	13.479	13.478	0.001	97	615664	10.0	9.38	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	389837	10.0	9.88	
S 140 1,2-Dichloroethene, Total	96				0		20.0	20.2	
S 135 Xylenes, Total (URS)	1				0		20.0	20.4	
S 138 1,2-Dichloroethene, Total	1				0		20.0	20.2	
S 139 Xylenes, Total	106				0		20.0	20.4	
S 136 Total BTEX	1				0			50.4	
S 137 1,3-Dichloropropene, Total	1				0		20.0	19.1	
S 134 Trihalomethanes, Total	1				0		40.0	39.1	

Reagents:

MV-Main A_00034	Amount Added:	5.00	Units: uL	
MV-Gas/Ket A_00071	Amount Added:	5.00	Units: uL	
MV-2cleve+AVA_00033	Amount Added:	5.00	Units: uL	
MV-568718-D_00014	Amount Added:	1.00	Units: uL	Run Reagent
MV-ARCH SS A_00091	Amount Added:	0.90	Units: uL	Run Reagent

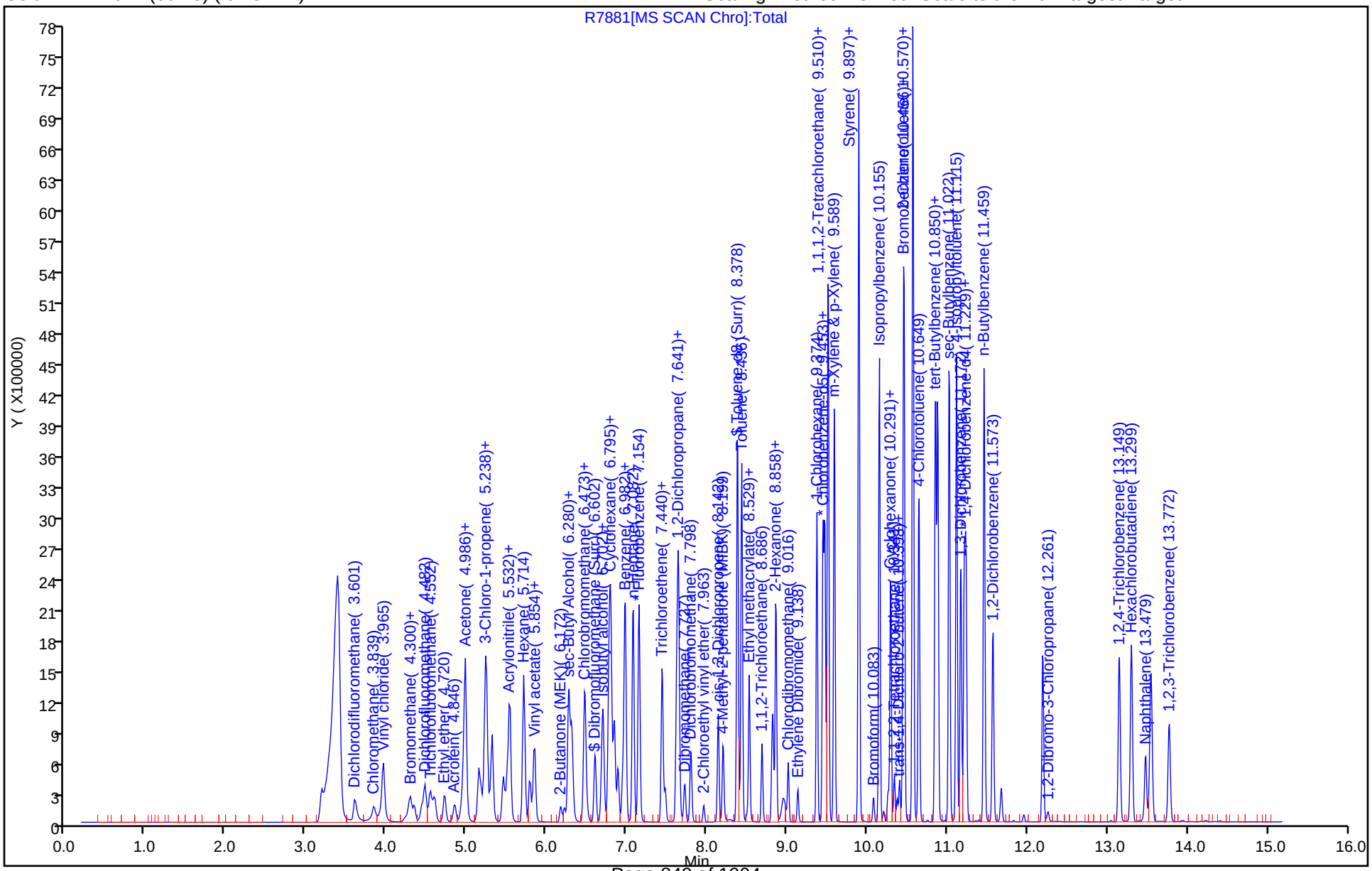
Report Date: 28-Mar-2018 06:25:56 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7881.D

Injection Date:	27-Mar-2018 14:35:30	Instrument ID:	VMS_R1	Operator ID:	wickhamt
Lims ID:	ccvc			Worklist Smp#:	28
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	32
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 580-269589/12 Calibration Date: 03/21/2018 16:28

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C211812.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.4254	0.5482		25.8	20.0	28.9*	20.0
Chloromethane	Qua2		0.5003	0.1000	23.9	20.0	19.3	20.0
Vinyl chloride	Ave	0.8369	1.015		24.3	20.0	21.3*	20.0
Butadiene	Ave	0.3900	0.4570		23.4	20.0	17.2	20.0
Bromomethane	Ave	0.5460	0.6462		23.7	20.0	18.3	20.0
Chloroethane	Ave	0.2111	0.2447		23.2	20.0	15.9	20.0
Dichlorofluoromethane	Ave	0.5291	0.6156		23.3	20.0	16.4	20.0
Acrolein	Ave	0.0812	0.0697		103	120	-14.2	20.0
Acetonitrile	Qua1		0.0472		204	250	-18.3	20.0
Trichlorofluoromethane	Ave	0.9589	1.206		25.1	20.0	25.7*	20.0
Isopropyl alcohol	Qua1		0.0241		161	200	-19.3	20.0
Acetone	Qua1		0.0995		94.0	100	-6.0	20.0
Ethyl ether	Ave	0.2949	0.3103		21.0	20.0	5.2	20.0
1,1-Dichloroethene	Ave	0.6060	0.7089		23.4	20.0	17.0	20.0
t-Butyl alcohol	Qua1		0.0389		179	200	-10.4	20.0
Acrylonitrile	Ave	0.1391	0.1328		191	200	-4.6	20.0
Iodomethane	Ave	0.5073	0.5801		22.9	20.0	14.3	20.0
Methylene Chloride	Qua2		0.3598		23.6	20.0	18.1	20.0
Methyl acetate	Ave	0.3518	0.3343		95.0	100	-5.0	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.4396	0.4953		22.5	20.0	12.7	20.0
3-Chloro-1-propene	Ave	0.3832	0.4207		22.0	20.0	9.8	20.0
Carbon disulfide	Ave	0.9165	1.069		23.3	20.0	16.6	20.0
trans-1,2-Dichloroethene	Qua2		0.2969		23.4	20.0	17.2	20.0
Methyl tert-butyl ether	Ave	0.8978	0.9663		21.5	20.0	7.6	20.0
Propionitrile	Qua1		0.0545		229	250	-8.6	20.0
1,1-Dichloroethane	Ave	1.316	1.508	0.1000	22.9	20.0	14.7	20.0
Vinyl acetate	Ave	0.0596	0.0482		40.2	50.0	-19.2	20.0
2-Chloro-1,3-butadiene	Ave	1.017	1.133		22.3	20.0	11.4	20.0
Hexane	Ave	0.3643	0.3963		21.8	20.0	8.8	20.0
2-Butanone (MEK)	Ave	0.0880	0.0861		97.9	100	-2.1	20.0
Diisopropyl ether	Ave	1.250	1.389		27.8	25.0	11.1	20.0
Methacrylonitrile	Ave	0.0502	0.0504		201	200	0.6	20.0
cis-1,2-Dichloroethene	Qua1		0.8560		24.0	20.0	20.2*	20.0
Ethyl acetate	Qua1		0.3613		37.6	40.0	-6.0	20.0
Bromochloromethane	Ave	0.1543	0.1648		21.4	20.0	6.8	20.0
Chloroform	Ave	1.169	1.316		22.5	20.0	12.6	20.0
Tert-butyl ethyl ether	Ave	1.082	1.190		27.5	25.0	10.0	20.0
Isobutanol	Qua1		0.0288		454	500	-9.2	20.0
2,2-Dichloropropane	Ave	0.3707	0.3643		19.7	20.0	-1.7	20.0
Tetrahydrofuran	Ave	0.1403	0.1335		38.1	40.0	-4.8	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 580-269589/12 Calibration Date: 03/21/2018 16:28

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C211812.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2-Dichloroethane	Ave	0.4143	0.4223		20.4	20.0	1.9	20.0
1,1,1-Trichloroethane	Ave	0.4094	0.4479		21.9	20.0	9.4	20.0
n-Butyl alcohol	Ave	0.0134	0.0113		382	500	-15.6	20.0
1,1-Dichloropropene	Ave	0.3655	0.4029		22.0	20.0	10.2	20.0
Cyclohexane	Ave	0.8338	0.9846		23.6	20.0	18.1	20.0
Carbon tetrachloride	Ave	0.3081	0.3459		22.5	20.0	12.3	20.0
Benzene	Ave	2.602	3.084		23.7	20.0	18.5	20.0
Tert-amyl methyl ether	Ave	0.8982	0.9615		26.8	25.0	7.0	20.0
Ethyl acrylate	Ave	0.4467	0.4387		19.6	20.0	-1.8	20.0
n-Heptane	Ave	0.2819	0.2869		20.4	20.0	1.8	20.0
Dibromomethane	Ave	0.1859	0.1876		20.2	20.0	1.0	20.0
1,2-Dichloropropane	Ave	0.7588	0.8670		22.9	20.0	14.3	20.0
2-Nitropropane	Ave	0.1139	0.1027		36.1	40.0	-9.9	20.0
Trichloroethene	Ave	0.6842	0.8051		23.5	20.0	17.7	20.0
Bromodichloromethane	Ave	0.7924	0.9373		23.7	20.0	18.3	20.0
Methyl methacrylate	Ave	0.3320	0.3117		37.6	40.0	-6.1	20.0
2-Chloroethyl vinyl ether	Ave	0.3851	0.3783		19.6	20.0	-1.8	20.0
Methylcyclohexane	Ave	0.7752	0.9015		23.3	20.0	16.3	20.0
cis-1,3-Dichloropropene	Ave	0.8971	0.9535		21.3	20.0	6.3	20.0
4-Methyl-2-pentanone	Lin1		0.9389		101	100	1.3	20.0
trans-1,3-Dichloropropene	Qua1		0.9917		21.3	20.0	6.5	20.0
1,1,2-Trichloroethane	Lin1		0.6070		22.1	20.0	10.7	20.0
Ethyl methacrylate	Lin2		0.8191		21.4	20.0	7.0	20.0
Toluene	Ave	1.546	1.718		22.2	20.0	11.1	20.0
1,3-Dichloropropane	Ave	1.000	1.052		21.0	20.0	5.2	20.0
2-Hexanone	Lin1		0.2910		99.2	100	-0.8	20.0
Dibromochloromethane	Lin2		0.6193		21.0	20.0	5.0	20.0
n-Butyl acetate	Lin1		1.325		20.5	20.0	2.5	20.0
1,2-Dibromoethane	Ave	0.6127	0.6393		20.9	20.0	4.3	20.0
Tetrachloroethene	Ave	0.2127	0.2292		21.5	20.0	7.7	20.0
1,1,1,2-Tetrachloroethane	Ave	0.6972	0.8014		23.0	20.0	15.0	20.0
Chlorobenzene	Ave	1.743	1.939	0.3000	22.2	20.0	11.2	20.0
Ethylbenzene	Ave	0.9050	0.996		22.0	20.0	10.1	20.0
m-Xylene & p-Xylene	Ave	2.280	2.445		21.4	20.0	7.2	20.0
Bromoform	Qua1		0.3678	0.1000	20.4	20.0	2.2	20.0
Styrene	Ave	1.757	2.006		22.8	20.0	14.2	20.0
o-Xylene	Ave	1.173	1.324		22.6	20.0	12.9	20.0
1,1,2,2-Tetrachloroethane	Qua1		0.7278	0.3000	19.6	20.0	-1.8	20.0
trans-1,4-Dichloro-2-butene	Qua2		0.2031		20.1	20.0	0.3	20.0
1,2,3-Trichloropropane	Lin2		0.2276		20.9	20.0	4.3	20.0
Isopropylbenzene	Ave	2.797	3.190		22.8	20.0	14.1	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 580-269589/12 Calibration Date: 03/21/2018 16:28

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C211812.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Bromobenzene	Lin2		0.7681		21.7	20.0	8.6	20.0
N-Propylbenzene	Ave	0.6072	0.6744		22.2	20.0	11.1	20.0
2-Chlorotoluene	Lin2		0.6673		21.9	20.0	9.6	20.0
4-Chlorotoluene	Ave	1.765	1.972		22.3	20.0	11.7	20.0
1,3,5-Trimethylbenzene	Ave	2.015	2.245		22.3	20.0	11.4	20.0
t-Butylbenzene	Ave	1.589	1.755		22.1	20.0	10.4	20.0
1,2,4-Trimethylbenzene	Ave	2.165	2.385		22.0	20.0	10.2	20.0
sec-Butylbenzene	Ave	2.245	2.462		21.9	20.0	9.7	20.0
Benzyl chloride	Lin2		1.413		18.6	20.0	-7.1	20.0
1,3-Dichlorobenzene	Lin2		0.7124		21.9	20.0	9.3	20.0
4-Isopropyltoluene	Lin1		2.197		21.6	20.0	7.9	20.0
1,4-Dichlorobenzene	Lin2		1.534		22.5	20.0	12.7	20.0
1,2,3-Trimethylbenzene	Lin2		2.689		22.5	20.0	12.6	20.0
1,2-Dichlorobenzene	Lin2		1.532		22.4	20.0	12.1	20.0
n-Butylbenzene	Lin2		1.822		22.0	20.0	10.2	20.0
1,2-Dibromo-3-Chloropropane	Ave	0.2043	0.2065		20.2	20.0	1.1	20.0
1,3,5-Trichlorobenzene	Lin2		1.043		22.2	20.0	10.8	20.0
1,2,4-Trichlorobenzene	Ave	1.131	1.251		22.1	20.0	10.6	20.0
Naphthalene	Lin1		2.780		21.0	20.0	4.8	20.0
Hexachlorobutadiene	Lin1		0.1626		21.5	20.0	7.6	20.0
1,2,3-Trichlorobenzene	Lin1		0.9603		22.1	20.0	10.3	20.0
Dibromofluoromethane (Surr)	Ave	0.2597	0.2605		48.9	48.8	0.3	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.3178	0.3355		51.5	48.8	5.6	20.0
Trifluorotoluene (Surr)	Ave	0.5007	0.4962		49.5	50.0	-0.9	20.0
Toluene-d8 (Surr)	Ave	2.209	2.254		49.7	48.8	2.1	20.0
4-Bromofluorobenzene (Surr)	Ave	0.9456	0.9598		49.5	48.8	1.5	20.0

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211812.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 21-Mar-2018 16:28:30 ALS Bottle#: 12 Worklist Smp#: 12
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ICV
Operator ID: RSB Instrument ID: SEA102
Sublist:

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:41 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 14:27:39

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.052	4.058	-0.006	100	121717	20.0	25.8	
2 Chloromethane	50	4.356	4.356	0.000	100	276273	20.0	23.9	
3 Vinyl chloride	62	4.617	4.617	0.000	99	225430	20.0	24.3	
4 Butadiene	39	4.733	4.733	0.000	97	252373	20.0	23.4	
5 Bromomethane	94	5.140	5.134	0.006	91	143464	20.0	23.7	
6 Chloroethane	64	5.280	5.280	0.000	98	135105	20.0	23.2	
7 Dichlorofluoromethane	67	5.359	5.353	0.006	99	339961	20.0	23.3	
10 Acrolein	56	5.906	5.906	0.000	99	230971	120.0	103.0	
12 Acetonitrile	41	5.943	5.919	0.024	98	325935	250.0	204.2	
14 Isopropyl alcohol	45	5.967	5.961	0.006	27	132969	200.0	161.3	
11 Trichlorofluoromethane	101	5.955	5.961	-0.006	100	267690	20.0	25.1	
13 Acetone	43	6.040	6.034	0.006	98	274581	100.0	94.0	
15 Ethyl ether	59	6.162	6.162	0.000	95	171357	20.0	21.0	
* 16 TBA-d9 (IS)	65	6.417	6.417	0.000	0	904804	975.0	975.0	
17 1,1-Dichloroethene	96	6.496	6.490	0.006	94	157401	20.0	23.4	
19 2-Methyl-2-propanol	59	6.496	6.496	0.000	50	214850	200.0	179.2	
18 Acrylonitrile	52	6.533	6.527	0.006	98	733407	200.0	190.9	
20 Iodomethane	142	6.551	6.545	0.006	97	320342	20.0	22.9	
21 Methylene Chloride	84	6.636	6.636	0.000	96	198705	20.0	23.6	
22 Methyl acetate	43	6.661	6.660	0.001	100	923050	100.0	95.0	
23 1,1,2-Trichloro-1,2,2-trif	151	6.685	6.685	0.000	91	134674	20.0	22.5	
9 3-Chloro-1-propene	76	6.721	6.715	0.006	91	93397	20.0	22.0	
24 Carbon disulfide	76	6.904	6.892	0.012	100	590268	20.0	23.3	
25 trans-1,2-Dichloroethene	96	7.275	7.269	0.006	95	163963	20.0	23.4	
26 Methyl tert-butyl ether	73	7.366	7.360	0.006	99	533607	20.0	21.5	
29 Propionitrile	54	7.494	7.494	0.000	99	376506	250.0	228.6	
28 1,1-Dichloroethane	63	7.500	7.500	0.000	97	334904	20.0	22.9	
30 Vinyl acetate	86	7.591	7.591	0.000	100	66470	50.0	40.2	
31 2-Chloro-1,3-butadiene	53	7.828	7.828	0.000	94	308115	20.0	22.3	
32 Hexane	57	7.846	7.846	0.000	94	218847	20.0	21.8	
33 Isopropyl ether	45	7.865	7.865	0.000	90	958633	25.0	27.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
34 2-Butanone (MEK)	72	7.865	7.865	0.000	94	95627	100.0	97.9	
35 Methacrylonitrile	66	7.956	7.956	0.000	97	278483	200.0	201.1	
36 cis-1,2-Dichloroethene	96	8.011	8.011	0.000	84	190055	20.0	24.0	
40 Ethyl acetate	43	8.132	8.132	0.000	99	399070	40.0	37.6	
37 Chlorobromomethane	128	8.157	8.156	0.001	92	91026	20.0	21.4	
38 Chloroform	83	8.193	8.193	0.000	94	292193	20.0	22.5	
39 Tert-butyl ethyl ether	59	8.211	8.211	0.000	98	821611	25.0	27.5	
41 Isobutyl alcohol	43	8.242	8.242	0.000	83	398024	500.0	454.1	
42 2,2-Dichloropropane	77	8.260	8.260	0.000	94	201177	20.0	19.7	
$ 43 Dibromofluoromethane (Surr	113	8.296	8.296	0.000	94	350679	48.8	48.9	
44 Tetrahydrofuran	42	8.473	8.473	0.000	93	147479	40.0	38.1	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.686	8.679	0.007	0	451524	48.8	51.5	
46 1,2-Dichloroethane	62	8.753	8.746	0.007	96	233186	20.0	20.4	
47 1,1,1-Trichloroethane	97	8.838	8.838	0.000	99	247323	20.0	21.9	
49 n-Butanol	56	8.856	8.850	0.006	95	155827	500.0	381.7	
48 1,1-Dichloropropene	75	8.984	8.977	0.007	93	222465	20.0	22.0	
50 Cyclohexane	84	9.081	9.081	0.000	96	218604	20.0	23.6	
51 Carbon tetrachloride	119	9.148	9.148	0.000	99	190999	20.0	22.5	
52 Benzene	78	9.172	9.172	0.000	98	684644	20.0	23.7	
53 Tert-amyl methyl ether	73	9.269	9.269	0.000	94	663706	25.0	26.8	
* 54 Fluorobenzene (IS)	96	9.336	9.330	0.006	98	1346028	48.8	48.8	
56 Ethyl acrylate	55	9.549	9.549	0.000	98	242253	20.0	19.6	
57 n-Heptane	43	9.561	9.561	0.000	96	158434	20.0	20.4	
58 Dibromomethane	93	9.646	9.646	0.000	91	103610	20.0	20.2	
59 1,2-Dichloropropane	63	9.665	9.665	0.000	93	192498	20.0	22.9	
60 2-Nitropropane	43	9.683	9.683	0.000	93	113383	40.0	36.1	
61 Trichloroethene	130	9.695	9.695	0.000	96	178741	20.0	23.5	
62 Dichlorobromomethane	83	9.744	9.744	0.000	99	208104	20.0	23.7	
63 Methyl methacrylate	41	9.805	9.805	0.000	95	344248	40.0	37.6	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.835	0.000	93	684697	50.0	49.5	
65 2-Chloroethyl vinyl ether	43	10.048	10.048	0.000	91	83987	20.0	19.6	
66 Methylcyclohexane	83	10.145	10.145	0.000	97	200153	20.0	23.3	
67 cis-1,3-Dichloropropene	75	10.273	10.273	0.000	92	259251	20.0	21.3	
68 4-Methyl-2-pentanone (MIBK	43	10.340	10.340	0.000	99	1042291	100.0	101.3	
69 trans-1,3-Dichloropropene	75	10.650	10.650	0.000	97	220186	20.0	21.3	
71 1,1,2-Trichloroethane	97	10.814	10.814	0.000	93	134763	20.0	22.1	
$ 73 Toluene-d8 (Surr)	98	10.917	10.917	0.000	94	1219740	48.8	49.7	
75 Ethyl methacrylate	69	10.972	10.972	0.000	96	181858	20.0	21.4	
76 Toluene	92	10.984	10.978	0.006	98	381452	20.0	22.2	
77 1,3-Dichloropropane	76	11.027	11.027	0.000	99	233614	20.0	21.0	
78 2-Hexanone	58	11.112	11.112	0.000	99	323082	100.0	99.2	
79 Chlorodibromomethane	129	11.307	11.307	0.000	91	137488	20.0	21.0	
80 n-Butyl acetate	43	11.380	11.380	0.000	97	294214	20.0	20.5	
81 Ethylene Dibromide	107	11.538	11.538	0.000	98	141930	20.0	20.9	
82 Tetrachloroethene	164	11.672	11.671	0.001	99	126559	20.0	21.5	
84 1,1,1,2-Tetrachloroethane	131	12.231	12.231	0.000	93	177937	20.0	23.0	
* 85 Chlorobenzene-d5	82	12.274	12.274	0.000	87	541184	48.8	48.8	
86 Chlorobenzene	112	12.310	12.310	0.000	94	430541	20.0	22.2	
87 Ethylbenzene	106	12.468	12.468	0.000	99	221225	20.0	22.0	
88 m-Xylene & p-Xylene	91	12.638	12.638	0.000	68	542783	20.0	21.4	
89 Bromoform	173	12.815	12.809	0.006	98	81651	20.0	20.4	
90 Styrene	104	12.955	12.955	0.000	96	445426	20.0	22.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
91 o-Xylene	106	13.022	13.022	0.000	98	294062	20.0	22.6	
92 1,1,2,2-Tetrachloroethane	83	13.028	13.028	0.000	95	197901	20.0	19.6	
93 trans-1,4-Dichloro-2-buten	53	13.149	13.149	0.000	92	55233	20.0	20.1	
94 1,2,3-Trichloropropane	110	13.161	13.161	0.000	88	61873	20.0	20.9	
96 Isopropylbenzene	105	13.350	13.350	0.000	96	708304	20.0	22.8	
$ 97 4-Bromofluorobenzene (Surr	95	13.405	13.405	0.000	93	519446	48.8	49.5	
98 Bromobenzene	156	13.618	13.618	0.000	93	208837	20.0	21.7	
99 N-Propylbenzene	120	13.745	13.745	0.000	99	183359	20.0	22.2	
100 2-Chlorotoluene	126	13.855	13.855	0.000	96	181434	20.0	21.9	
101 4-Chlorotoluene	91	13.916	13.916	0.000	98	536188	20.0	22.3	
102 1,3,5-Trimethylbenzene	105	13.982	13.982	0.000	95	610305	20.0	22.3	
104 tert-Butylbenzene	119	14.244	14.244	0.000	95	477101	20.0	22.1	
105 1,2,4-Trimethylbenzene	105	14.335	14.335	0.000	98	648487	20.0	22.0	
106 sec-Butylbenzene	105	14.439	14.438	0.001	94	669410	20.0	21.9	
107 Benzyl chloride	91	14.530	14.530	0.000	99	384317	20.0	18.6	
108 1,3-Dichlorobenzene	146	14.536	14.536	0.000	98	393406	20.0	21.9	
* 109 1,4-Dichlorobenzene-d4	152	14.572	14.572	0.000	96	662768	48.8	48.8	
110 4-Isopropyltoluene	119	14.591	14.591	0.000	97	597479	20.0	21.6	
111 1,4-Dichlorobenzene	146	14.597	14.597	0.000	96	417033	20.0	22.5	
112 1,2,3-Trimethylbenzene	105	14.730	14.730	0.000	99	731056	20.0	22.5	
113 1,2-Dichlorobenzene	146	14.925	14.925	0.000	98	416593	20.0	22.4	
114 n-Butylbenzene	91	14.962	14.961	0.001	98	495321	20.0	22.0	
116 1,2-Dibromo-3-Chloropropan	157	15.363	15.369	-0.006	86	56142	20.0	20.2	
117 1,3,5-Trichlorobenzene	180	16.154	16.153	0.001	98	283572	20.0	22.2	
118 1,2,4-Trichlorobenzene	180	16.719	16.725	-0.006	94	277707	20.0	22.1	
119 Naphthalene	128	17.011	17.011	0.000	97	755806	20.0	21.0	
120 Hexachlorobutadiene	190	17.035	17.035	0.000	95	44223	20.0	21.5	
121 1,2,3-Trichlorobenzene	180	17.242	17.236	0.006	96	261098	20.0	22.1	

Reagents:

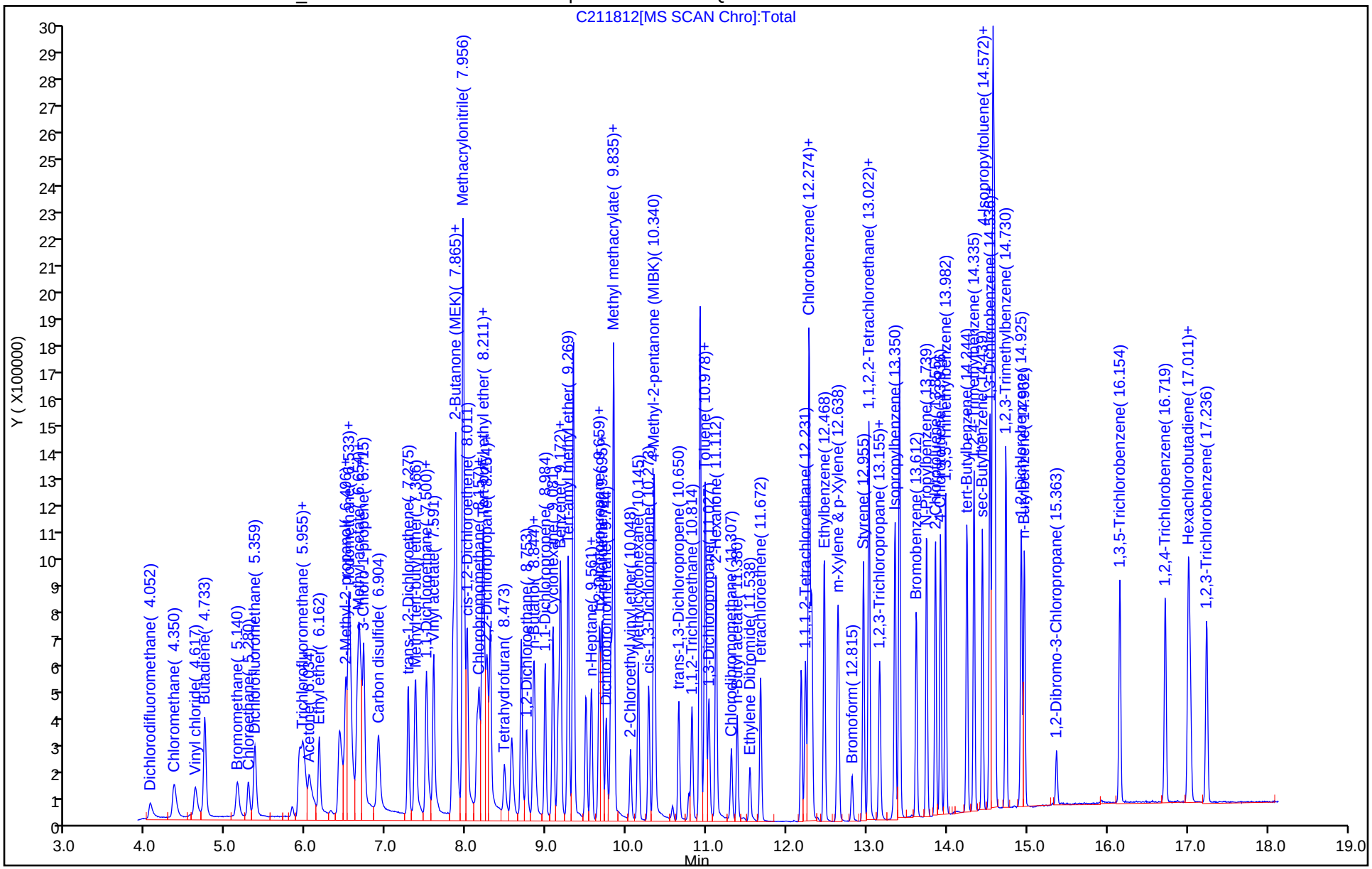
VOAMasterSEC_00014	Amount Added: 20.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 22-Mar-2018 15:22:47 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211812.D

Injection Date:	21-Mar-2018 16:28:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	ICV			Worklist Smp#:	12
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	12
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVIS 580-269828/3 Calibration Date: 03/25/2018 02:52

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C241828.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.4254	0.8054		37.9	20.0	89.3*	20.0
Chloromethane	Qua2		0.6590	0.1000	31.6	20.0	58.0*	20.0
Vinyl chloride	Ave	0.8369	1.067		25.5	20.0	27.5*	20.0
Butadiene	Ave	0.3900	0.6492		33.3	20.0	66.5*	20.0
Bromomethane	Ave	0.5460	0.5838		21.4	20.0	6.9	20.0
Chloroethane	Ave	0.2111	0.2661		25.2	20.0	26.0*	20.0
Dichlorofluoromethane	Ave	0.5291	0.5808		22.0	20.0	9.8	20.0
Acrolein	Ave	0.0812	0.0524		77.4	120	-35.5*	20.0
Acetonitrile	Qua1		0.0663		286	250	14.4	20.0
Isopropyl alcohol	Qua1		0.0544		363	200	81.4*	20.0
Trichlorofluoromethane	Ave	0.9589	1.108		23.1	20.0	15.5	20.0
Acetone	Qua1		0.1397		131	100	31.3*	20.0
Ethyl ether	Ave	0.2949	0.3316		22.5	20.0	12.4	20.0
1,1-Dichloroethene	Ave	0.6060	0.6796		22.4	20.0	12.1	20.0
t-Butyl alcohol	Qua1		0.0478		220	200	10.1	20.0
Acrylonitrile	Ave	0.1391	0.1666		239	200	19.7	20.0
Iodomethane	Ave	0.5073	0.5705		22.5	20.0	12.4	20.0
Methylene Chloride	Qua2		0.3540		23.2	20.0	16.1	20.0
Methyl acetate	Ave	0.3518	0.3978		113	100	13.1	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.4396	0.5614		25.5	20.0	27.7*	20.0
3-Chloro-1-propene	Ave	0.3832	0.3859		20.1	20.0	0.7	20.0
Carbon disulfide	Ave	0.9165	1.144		25.0	20.0	24.9*	20.0
trans-1,2-Dichloroethene	Qua2		0.3035		24.0	20.0	19.8	20.0
Methyl tert-butyl ether	Ave	0.8978	1.043		23.2	20.0	16.2	20.0
Propionitrile	Qua1		0.0700		292	250	16.6	20.0
1,1-Dichloroethane	Ave	1.316	1.412	0.1000	21.5	20.0	7.3	20.0
Vinyl acetate	Ave	0.0596	0.0266		22.2	50.0	-55.3*	20.0
2-Chloro-1,3-butadiene	Ave	1.017	1.343		26.4	20.0	32.0*	20.0
Hexane	Ave	0.3643	0.4111		22.6	20.0	12.8	20.0
2-Butanone (MEK)	Ave	0.0880	0.1023		116	100	16.3	20.0
Diisopropyl ether	Ave	1.250	1.555		31.1	25.0	24.5*	20.0
Methacrylonitrile	Ave	0.0502	0.0590		235	200	17.6	20.0
cis-1,2-Dichloroethene	Qua1		0.8038		22.5	20.0	12.5	20.0
Ethyl acetate	Qua1		0.4655		48.8	40.0	22.1*	20.0
Bromochloromethane	Ave	0.1543	0.1674		21.7	20.0	8.5	20.0
Chloroform	Ave	1.169	1.229		21.0	20.0	5.1	20.0
Tert-butyl ethyl ether	Ave	1.082	1.289		29.8	25.0	19.1	20.0
Isobutanol	Qua1		0.0393		621	500	24.1*	20.0
2,2-Dichloropropane	Ave	0.3707	0.3371		18.2	20.0	-9.1	20.0
Tetrahydrofuran	Ave	0.1403	0.1700		48.5	40.0	21.2*	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVIS 580-269828/3 Calibration Date: 03/25/2018 02:52

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C241828.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2-Dichloroethane	Ave	0.4143	0.4637		22.4	20.0	11.9	20.0
1,1,1-Trichloroethane	Ave	0.4094	0.4659		22.8	20.0	13.8	20.0
n-Butyl alcohol	Ave	0.0134	0.0195		660	500	45.8*	20.0
1,1-Dichloropropene	Ave	0.3655	0.4090		22.4	20.0	11.9	20.0
Cyclohexane	Ave	0.8338	0.9735		23.4	20.0	16.8	20.0
Carbon tetrachloride	Ave	0.3081	0.3570		23.2	20.0	15.9	20.0
Benzene	Ave	2.602	2.797		21.5	20.0	7.5	20.0
Tert-amyl methyl ether	Ave	0.8982	1.044		29.1	25.0	16.2	20.0
Ethyl acrylate	Ave	0.4467	0.5816		26.0	20.0	30.2*	20.0
n-Heptane	Ave	0.2819	0.2906		20.6	20.0	3.1	20.0
Dibromomethane	Ave	0.1859	0.2062		22.2	20.0	10.9	20.0
1,2-Dichloropropane	Ave	0.7588	0.8465		22.3	20.0	11.6	20.0
2-Nitropropane	Ave	0.1139	0.1243		43.6	40.0	9.1	20.0
Trichloroethene	Ave	0.6842	0.8119		23.7	20.0	18.7	20.0
Bromodichloromethane	Ave	0.7924	0.8871		22.4	20.0	11.9	20.0
Methyl methacrylate	Ave	0.3320	0.4451		53.6	40.0	34.1*	20.0
2-Chloroethyl vinyl ether	Ave	0.3851	0.4962		25.8	20.0	28.8*	20.0
Methylcyclohexane	Ave	0.7752	0.8591		22.2	20.0	10.8	20.0
cis-1,3-Dichloropropene	Ave	0.8971	1.088		24.3	20.0	21.3*	20.0
4-Methyl-2-pentanone	Lin1		1.232		133	100	33.3*	20.0
trans-1,3-Dichloropropene	Qua1		1.007		21.6	20.0	8.2	20.0
1,1,2-Trichloroethane	Lin1		0.6374		23.3	20.0	16.3	20.0
Ethyl methacrylate	Lin2		0.9890		25.9	20.0	29.3*	20.0
Toluene	Ave	1.546	1.697		22.0	20.0	9.8	20.0
1,3-Dichloropropane	Ave	1.000	1.175		23.5	20.0	17.5	20.0
2-Hexanone	Lin1		0.3764		129	100	28.9*	20.0
Dibromochloromethane	Lin2		0.6836		23.2	20.0	15.8	20.0
n-Butyl acetate	Lin1		1.671		25.9	20.0	29.4*	20.0
1,2-Dibromoethane	Ave	0.6127	0.7140		23.3	20.0	16.5	20.0
Tetrachloroethene	Ave	0.2127	0.2340		22.0	20.0	10.0	20.0
1,1,1,2-Tetrachloroethane	Ave	0.6972	0.7264		20.8	20.0	4.2	20.0
Chlorobenzene	Ave	1.743	1.894	0.3000	21.7	20.0	8.7	20.0
Ethylbenzene	Ave	0.9050	0.9806		21.7	20.0	8.4	20.0
m-Xylene & p-Xylene	Ave	2.280	2.398		21.0	20.0	5.2	20.0
Bromoform	Qua1		0.4502	0.1000	24.5	20.0	22.5*	20.0
Styrene	Ave	1.757	1.978		22.5	20.0	12.6	20.0
o-Xylene	Ave	1.173	1.252		21.3	20.0	6.7	20.0
1,1,2,2-Tetrachloroethane	Qua1		0.8068	0.3000	21.8	20.0	9.0	20.0
trans-1,4-Dichloro-2-butene	Qua2		0.1600		15.8	20.0	-20.8*	20.0
1,2,3-Trichloropropane	Lin2		0.2868		26.4	20.0	31.8*	20.0
Isopropylbenzene	Ave	2.797	2.977		21.3	20.0	6.4	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVIS 580-269828/3 Calibration Date: 03/25/2018 02:52

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C241828.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Bromobenzene	Lin2		0.8449		23.9	20.0	19.5	20.0
N-Propylbenzene	Ave	0.6072	0.7121		23.5	20.0	17.3	20.0
2-Chlorotoluene	Lin2		0.7078		23.3	20.0	16.3	20.0
4-Chlorotoluene	Ave	1.765	2.142		24.3	20.0	21.3*	20.0
1,3,5-Trimethylbenzene	Ave	2.015	2.369		23.5	20.0	17.5	20.0
t-Butylbenzene	Ave	1.589	1.867		23.5	20.0	17.5	20.0
1,2,4-Trimethylbenzene	Ave	2.165	2.546		23.5	20.0	17.6	20.0
sec-Butylbenzene	Ave	2.245	2.591		23.1	20.0	15.4	20.0
Benzyl chloride	Lin2		1.287		16.9	20.0	-15.5	20.0
1,3-Dichlorobenzene	Lin2		0.6776		20.8	20.0	3.9	20.0
4-Isopropyltoluene	Lin1		2.261		22.2	20.0	11.0	20.0
1,4-Dichlorobenzene	Lin2		1.540		22.6	20.0	13.2	20.0
1,2,3-Trimethylbenzene	Lin2		2.821		23.6	20.0	18.2	20.0
1,2-Dichlorobenzene	Lin2		1.554		22.7	20.0	13.7	20.0
n-Butylbenzene	Lin2		1.835		22.2	20.0	11.0	20.0
1,2-Dibromo-3-Chloropropane	Ave	0.2043	0.2449		24.0	20.0	19.9	20.0
1,3,5-Trichlorobenzene	Lin2		0.9713		20.6	20.0	3.1	20.0
1,2,4-Trichlorobenzene	Ave	1.131	1.032		18.3	20.0	-8.7	20.0
Naphthalene	Lin1		3.185		24.0	20.0	20.1*	20.0
Hexachlorobutadiene	Lin1		0.1485		19.7	20.0	-1.7	20.0
1,2,3-Trichlorobenzene	Lin1		0.9109		20.9	20.0	4.6	20.0
Dibromofluoromethane (Surr)	Ave	0.2597	0.2547		47.8	48.8	-1.9	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.3178	0.3197		49.0	48.8	0.6	20.0
Trifluorotoluene (Surr)	Ave	0.5007	0.5043		50.3	50.0	0.7	20.0
Toluene-d8 (Surr)	Ave	2.209	2.186		48.3	48.8	-1.0	20.0
4-Bromofluorobenzene (Surr)	Ave	0.9456	0.9083		46.8	48.8	-3.9	20.0

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241828.D
Lims ID: CCVIS
Client ID:
Sample Type: CCVIS
Inject. Date: 25-Mar-2018 02:52:30 ALS Bottle#: 28 Worklist Smp#: 3
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: CCVIS
Operator ID: JSM Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 12:49:29 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:18:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.057	4.057	0.000	100	195753	20.0	37.9	
2 Chloromethane	50	4.349	4.349	0.000	100	365894	20.0	31.6	
3 Vinyl chloride	62	4.616	4.616	0.000	99	259427	20.0	25.5	
4 Butadiene	39	4.732	4.732	0.000	98	360448	20.0	33.3	
5 Bromomethane	94	5.139	5.139	0.000	90	141885	20.0	21.4	
6 Chloroethane	64	5.279	5.279	0.000	98	147754	20.0	25.2	
7 Dichlorofluoromethane	67	5.352	5.352	0.000	99	322486	20.0	22.0	
10 Acrolein	56	5.906	5.906	0.000	98	174436	120.0	77.4	
12 Acetonitrile	41	5.918	5.918	0.000	100	460219	250.0	286.1	
11 Trichlorofluoromethane	101	5.960	5.960	0.000	100	269296	20.0	23.1	
14 Isopropyl alcohol	45	5.960	5.960	0.000	28	301776	200.0	362.8	
13 Acetone	43	6.033	6.033	0.000	99	387761	100.0	131.3	
15 Ethyl ether	59	6.161	6.161	0.000	95	184146	20.0	22.5	
* 16 TBA-d9 (IS)	65	6.410	6.410	0.000	0	1015649	975.0	975.0	
17 1,1-Dichloroethene	96	6.489	6.489	0.000	93	165168	20.0	22.4	
19 2-Methyl-2-propanol	59	6.495	6.495	0.000	98	265343	200.0	220.2	
18 Acrylonitrile	52	6.526	6.526	0.000	97	925006	200.0	239.4	
20 Iodomethane	142	6.544	6.544	0.000	98	316749	20.0	22.5	
21 Methylene Chloride	84	6.635	6.635	0.000	95	196544	20.0	23.2	
22 Methyl acetate	43	6.660	6.660	0.000	100	1104418	100.0	113.1	
23 1,1,2-Trichloro-1,2,2-trif	151	6.684	6.684	0.000	92	142045	20.0	25.5	
9 3-Chloro-1-propene	76	6.714	6.714	0.000	90	93795	20.0	20.1	
24 Carbon disulfide	76	6.891	6.891	0.000	100	635471	20.0	25.0	
25 trans-1,2-Dichloroethene	96	7.274	7.274	0.000	94	168544	20.0	24.0	
26 Methyl tert-butyl ether	73	7.359	7.359	0.000	99	579122	20.0	23.2	
29 Propionitrile	54	7.493	7.493	0.000	99	485835	250.0	291.5	
28 1,1-Dichloroethane	63	7.499	7.499	0.000	97	343119	20.0	21.5	
30 Vinyl acetate	86	7.590	7.590	0.000	100	36961	50.0	22.2	
31 2-Chloro-1,3-butadiene	53	7.827	7.827	0.000	95	339768	20.0	26.4	
32 Hexane	57	7.846	7.846	0.000	81	228254	20.0	22.6	
34 2-Butanone (MEK)	72	7.864	7.864	0.000	95	124355	100.0	116.3	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
33 Isopropyl ether	45	7.864	7.864	0.000	90	1079576	25.0	31.1	M
35 Methacrylonitrile	66	7.955	7.955	0.000	98	327505	200.0	235.2	
36 cis-1,2-Dichloroethene	96	8.010	8.010	0.000	84	195355	20.0	22.5	
40 Ethyl acetate	43	8.131	8.131	0.000	99	516971	40.0	48.8	
37 Chlorobromomethane	128	8.156	8.156	0.000	90	92931	20.0	21.7	
38 Chloroform	83	8.192	8.192	0.000	95	298686	20.0	21.0	
39 Tert-butyl ethyl ether	59	8.210	8.210	0.000	99	894957	25.0	29.8	
41 Isobutyl alcohol	43	8.241	8.241	0.000	95	546150	500.0	620.7	
42 2,2-Dichloropropane	77	8.259	8.259	0.000	88	187154	20.0	18.2	
$ 43 Dibromofluoromethane (Surr	113	8.296	8.296	0.000	94	344723	48.8	47.8	
44 Tetrahydrofuran	42	8.472	8.472	0.000	94	188831	40.0	48.5	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.685	8.685	0.000	0	432753	48.8	49.0	
46 1,2-Dichloroethane	62	8.746	8.746	0.000	96	257473	20.0	22.4	
47 1,1,1-Trichloroethane	97	8.837	8.837	0.000	98	258670	20.0	22.8	
49 n-Butanol	56	8.849	8.849	0.000	95	270671	500.0	659.6	
48 1,1-Dichloropropene	75	8.983	8.983	0.000	92	227086	20.0	22.4	
50 Cyclohexane	84	9.080	9.080	0.000	96	236613	20.0	23.4	
51 Carbon tetrachloride	119	9.147	9.147	0.000	98	198216	20.0	23.2	
52 Benzene	78	9.171	9.171	0.000	98	679889	20.0	21.5	
53 Tert-amyl methyl ether	73	9.269	9.269	0.000	94	724481	25.0	29.1	
* 54 Fluorobenzene (IS)	96	9.335	9.335	0.000	98	1353433	48.8	48.8	
56 Ethyl acrylate	55	9.548	9.548	0.000	98	322928	20.0	26.0	
57 n-Heptane	43	9.560	9.560	0.000	98	161358	20.0	20.6	
58 Dibromomethane	93	9.646	9.646	0.000	93	114492	20.0	22.2	
59 1,2-Dichloropropane	63	9.664	9.664	0.000	92	205755	20.0	22.3	
60 2-Nitropropane	43	9.682	9.682	0.000	97	137984	40.0	43.6	
61 Trichloroethene	130	9.694	9.694	0.000	95	197325	20.0	23.7	
62 Dichlorobromomethane	83	9.743	9.743	0.000	98	215604	20.0	22.4	
63 Methyl methacrylate	41	9.804	9.804	0.000	94	494230	40.0	53.6	
$ 64 Trifluorotoluene (Surr)	146	9.834	9.834	0.000	90	699721	50.0	50.3	
65 2-Chloroethyl vinyl ether	43	10.047	10.047	0.000	91	120593	20.0	25.8	
66 Methylcyclohexane	83	10.144	10.144	0.000	98	208796	20.0	22.2	
67 cis-1,3-Dichloropropene	75	10.272	10.272	0.000	91	275222	20.0	24.3	
68 4-Methyl-2-pentanone (MIBK	43	10.339	10.339	0.000	98	1496997	100.0	133.3	
69 trans-1,3-Dichloropropene	75	10.649	10.649	0.000	99	244780	20.0	21.6	
71 1,1,2-Trichloroethane	97	10.813	10.813	0.000	93	154922	20.0	23.3	
S 70 Xylenes, Total	106				0		40.0	21.3	
$ 73 Toluene-d8 (Surr)	98	10.917	10.917	0.000	94	1295041	48.8	48.3	
75 Ethyl methacrylate	69	10.971	10.971	0.000	95	240381	20.0	25.9	
76 Toluene	92	10.984	10.984	0.000	99	412516	20.0	22.0	
77 1,3-Dichloropropane	76	11.026	11.026	0.000	98	285685	20.0	23.5	
78 2-Hexanone	58	11.111	11.111	0.000	99	457425	100.0	128.9	
79 Chlorodibromomethane	129	11.306	11.306	0.000	90	166150	20.0	23.2	
80 n-Butyl acetate	43	11.379	11.379	0.000	97	406064	20.0	25.9	
81 Ethylene Dibromide	107	11.537	11.537	0.000	98	173530	20.0	23.3	
82 Tetrachloroethene	164	11.671	11.671	0.000	99	129946	20.0	22.0	
84 1,1,1,2-Tetrachloroethane	131	12.230	12.230	0.000	93	176547	20.0	20.8	
* 85 Chlorobenzene-d5	82	12.273	12.273	0.000	88	592446	48.8	48.8	
86 Chlorobenzene	112	12.309	12.309	0.000	93	460331	20.0	21.7	
87 Ethylbenzene	106	12.467	12.467	0.000	99	238343	20.0	21.7	
88 m-Xylene & p-Xylene	91	12.638	12.638	0.000	68	582836	20.0	21.0	
89 Bromoform	173	12.814	12.814	0.000	97	109413	20.0	24.5	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.954	12.954	0.000	95	480849	20.0	22.5	
91 o-Xylene	106	13.021	13.021	0.000	98	304211	20.0	21.3	
92 1,1,2,2-Tetrachloroethane	83	13.027	13.027	0.000	96	204118	20.0	21.8	
93 trans-1,4-Dichloro-2-buten	53	13.148	13.148	0.000	77	40485	20.0	15.8	
94 1,2,3-Trichloropropane	110	13.161	13.161	0.000	89	72565	20.0	26.4	
96 Isopropylbenzene	105	13.349	13.349	0.000	97	723502	20.0	21.3	
$ 97 4-Bromofluorobenzene (Surr	95	13.404	13.404	0.000	91	538097	48.8	46.8	
98 Bromobenzene	156	13.617	13.617	0.000	95	213776	20.0	23.9	
99 N-Propylbenzene	120	13.744	13.744	0.000	99	180178	20.0	23.5	
100 2-Chlorotoluene	126	13.854	13.854	0.000	96	179071	20.0	23.3	
101 4-Chlorotoluene	91	13.915	13.915	0.000	98	541872	20.0	24.3	
102 1,3,5-Trimethylbenzene	105	13.982	13.982	0.000	96	599263	20.0	23.5	
104 tert-Butylbenzene	119	14.243	14.243	0.000	95	472287	20.0	23.5	
105 1,2,4-Trimethylbenzene	105	14.334	14.334	0.000	98	644041	20.0	23.5	
106 sec-Butylbenzene	105	14.438	14.438	0.000	95	655476	20.0	23.1	
107 Benzyl chloride	91	14.529	14.529	0.000	99	325709	20.0	16.9	
108 1,3-Dichlorobenzene	146	14.535	14.535	0.000	98	376250	20.0	20.8	
* 109 1,4-Dichlorobenzene-d4	152	14.571	14.571	0.000	96	616711	48.8	48.8	
110 4-Isopropyltoluene	119	14.590	14.590	0.000	97	571995	20.0	22.2	
111 1,4-Dichlorobenzene	146	14.596	14.596	0.000	96	389632	20.0	22.6	
112 1,2,3-Trimethylbenzene	105	14.730	14.730	0.000	99	713687	20.0	23.6	
113 1,2-Dichlorobenzene	146	14.924	14.924	0.000	98	393195	20.0	22.7	
114 n-Butylbenzene	91	14.961	14.961	0.000	98	464155	20.0	22.2	
116 1,2-Dibromo-3-Chloropropan	157	15.362	15.362	0.000	83	61956	20.0	24.0	
117 1,3,5-Trichlorobenzene	180	16.153	16.153	0.000	98	245750	20.0	20.6	
118 1,2,4-Trichlorobenzene	180	16.724	16.724	0.000	94	250823	20.0	18.3	
119 Naphthalene	128	17.010	17.010	0.000	97	805743	20.0	24.0	
120 Hexachlorobutadiene	190	17.034	17.034	0.000	96	37574	20.0	19.7	
121 1,2,3-Trichlorobenzene	180	17.235	17.235	0.000	96	230454	20.0	20.9	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

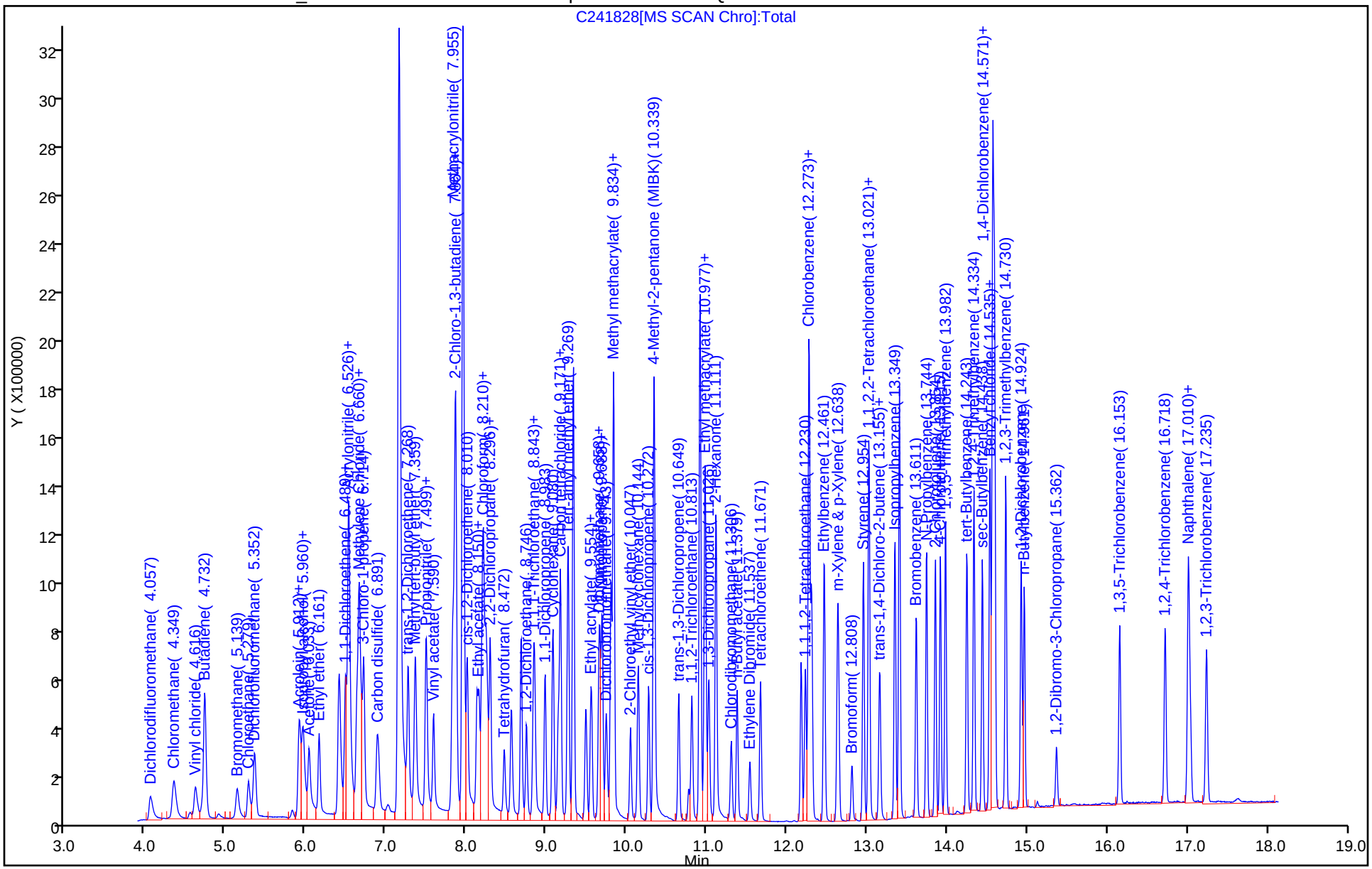
VOAMasterMix_00018	Amount Added: 20.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 26-Mar-2018 12:49:33 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241828.D

Injection Date:	25-Mar-2018 02:52:30	Instrument ID:	SEA102	Operator ID:	JSM
Lims ID:	CCVIS			Worklist Smp#:	3
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	28
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



Manual Integration/User Assign Peak Report

TestAmerica Seattle

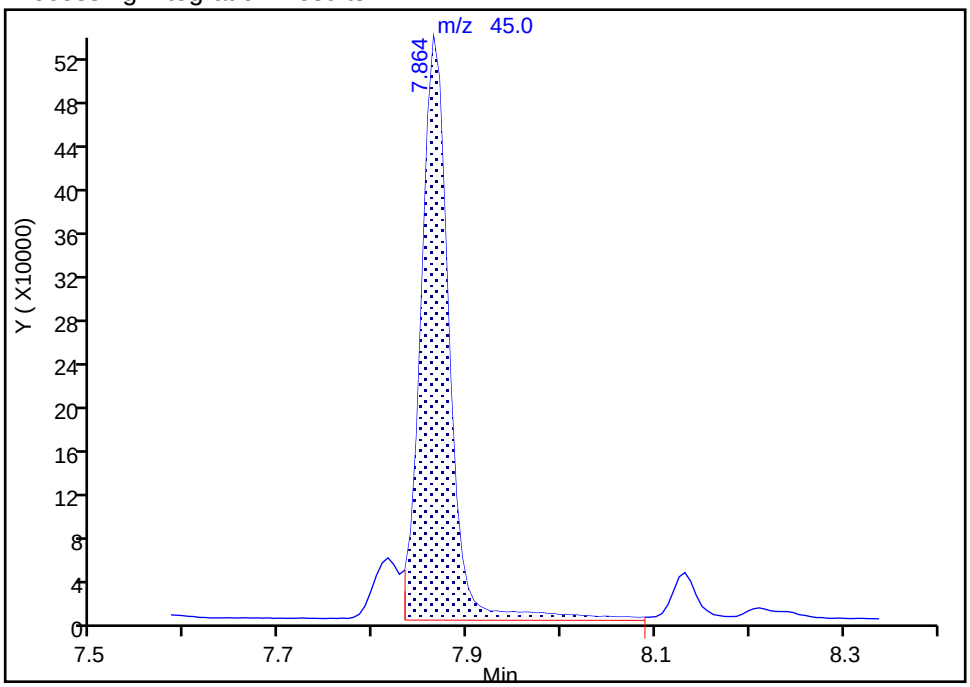
Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241828.D
Injection Date: 25-Mar-2018 02:52:30 Instrument ID: SEA102
Lims ID: CCVIS
Client ID:
Operator ID: JSM ALS Bottle#: 28 Worklist Smp#: 3
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Column: Detector MS SCAN

33 Isopropyl ether, CAS: 108-20-3

Signal: 1

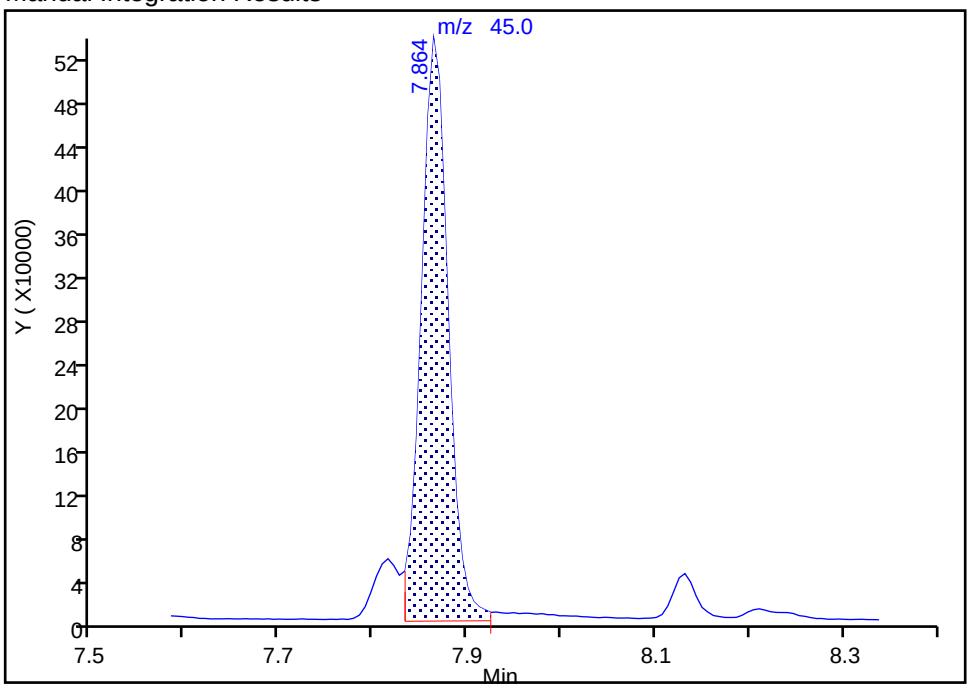
Processing Integration Results

RT: 7.86
Area: 1130655
Amount: 32.584584
Amount Units: ug/L



Manual Integration Results

RT: 7.86
Area: 1079576
Amount: 31.112528
Amount Units: ug/L



Reviewer: pimtongp, 26-Mar-2018 12:49:20
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVC 580-269828/13 Calibration Date: 03/25/2018 07:07

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C241837.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.4254	0.9149		43.0	20.0	115.1*	50.0
Chloromethane	Qua2		0.6947	0.1000	33.4	20.0	66.8*	50.0
Vinyl chloride	Ave	0.8369	1.118		26.7	20.0	33.6	50.0
Butadiene	Ave	0.3900	0.6710		34.4	20.0	72.1*	50.0
Bromomethane	Ave	0.5460	0.6343		23.2	20.0	16.2	50.0
Chloroethane	Ave	0.2111	0.2801		26.5	20.0	32.6	50.0
Dichlorofluoromethane	Ave	0.5291	0.6259		23.7	20.0	18.3	50.0
Acrolein	Ave	0.0812	0.0542		80.1	120	-33.3	50.0
Acetonitrile	Qua1		0.0826		354	250	41.8	50.0
Isopropyl alcohol	Qua1		0.0534		357	200	78.3*	50.0
Trichlorofluoromethane	Ave	0.9589	1.210		25.2	20.0	26.2	50.0
Acetone	Qua1		0.1557		146	100	45.8	50.0
Ethyl ether	Ave	0.2949	0.3387		23.0	20.0	14.8	50.0
1,1-Dichloroethene	Ave	0.6060	0.6904		22.8	20.0	13.9	50.0
t-Butyl alcohol	Qua1		0.0558		257	200	28.5	50.0
Acrylonitrile	Ave	0.1391	0.1717		247	200	23.4	50.0
Iodomethane	Ave	0.5073	0.5784		22.8	20.0	14.0	50.0
Methylene Chloride	Qua2		0.3634		23.9	20.0	19.3	50.0
Methyl acetate	Ave	0.3518	0.4138		118	100	17.6	50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.4396	0.5946		27.1	20.0	35.3	50.0
3-Chloro-1-propene	Ave	0.3832	0.3809		19.9	20.0	-0.6	50.0
Carbon disulfide	Ave	0.9165	1.164		25.4	20.0	27.0	50.0
trans-1,2-Dichloroethene	Qua2		0.3025		23.9	20.0	19.4	50.0
Methyl tert-butyl ether	Ave	0.8978	1.044		23.3	20.0	16.3	50.0
Propionitrile	Qua1		0.0785		326	250	30.3	50.0
1,1-Dichloroethane	Ave	1.316	1.454	0.1000	22.1	20.0	10.5	50.0
Vinyl acetate	Ave	0.0596	0.0205		17.1	50.0	-65.6*	50.0
2-Chloro-1,3-butadiene	Ave	1.017	1.442		28.4	20.0	41.8	50.0
Hexane	Ave	0.3643	0.4187		23.0	20.0	14.9	50.0
2-Butanone (MEK)	Ave	0.0880	0.1127		128	100	28.1	50.0
Diisopropyl ether	Ave	1.250	1.576		31.5	25.0	26.1	50.0
Methacrylonitrile	Ave	0.0502	0.0616		246	200	22.9	50.0
cis-1,2-Dichloroethene	Qua1		0.8063		22.6	20.0	12.9	50.0
Ethyl acetate	Qua1		0.4758		50.0	40.0	24.9	50.0
Bromochloromethane	Ave	0.1543	0.1677		21.7	20.0	8.7	50.0
Chloroform	Ave	1.169	1.232		21.1	20.0	5.4	50.0
Tert-butyl ethyl ether	Ave	1.082	1.289		29.8	25.0	19.1	50.0
Isobutanol	Qua1		0.0419		661	500	32.2	50.0
2,2-Dichloropropane	Ave	0.3707	0.3128		16.9	20.0	-15.6	50.0
Tetrahydrofuran	Ave	0.1403	0.1776		50.7	40.0	26.6	50.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVC 580-269828/13 Calibration Date: 03/25/2018 07:07

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C241837.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2-Dichloroethane	Ave	0.4143	0.4682		22.6	20.0	13.0	50.0
1,1,1-Trichloroethane	Ave	0.4094	0.4701		23.0	20.0	14.8	50.0
n-Butyl alcohol	Ave	0.0134	0.0198		670	500	48.0	50.0
1,1-Dichloropropene	Ave	0.3655	0.4156		22.7	20.0	13.7	50.0
Cyclohexane	Ave	0.8338	0.9789		23.5	20.0	17.4	50.0
Carbon tetrachloride	Ave	0.3081	0.3724		24.2	20.0	20.9	50.0
Benzene	Ave	2.602	2.841		21.8	20.0	9.2	50.0
Tert-amyl methyl ether	Ave	0.8982	1.042		29.0	25.0	16.0	50.0
Ethyl acrylate	Ave	0.4467	0.5687		25.5	20.0	27.3	50.0
n-Heptane	Ave	0.2819	0.2723		19.3	20.0	-3.4	50.0
Dibromomethane	Ave	0.1859	0.2156		23.2	20.0	16.0	50.0
1,2-Dichloropropane	Ave	0.7588	0.8512		22.4	20.0	12.2	50.0
2-Nitropropane	Ave	0.1139	0.1329		46.7	40.0	16.7	50.0
Trichloroethene	Ave	0.6842	0.8529		24.9	20.0	24.7	50.0
Bromodichloromethane	Ave	0.7924	0.9381		23.7	20.0	18.4	50.0
Methyl methacrylate	Ave	0.3320	0.4253		51.2	40.0	28.1	50.0
2-Chloroethyl vinyl ether	Ave	0.3851	0.4895		25.4	20.0	27.1	50.0
Methylcyclohexane	Ave	0.7752	0.8692		22.4	20.0	12.1	50.0
cis-1,3-Dichloropropene	Ave	0.8971	1.142		25.5	20.0	27.3	50.0
4-Methyl-2-pentanone	Lin1		1.262		137	100	36.5	50.0
trans-1,3-Dichloropropene	Qua1		1.018		21.9	20.0	9.3	50.0
1,1,2-Trichloroethane	Lin1		0.6407		23.4	20.0	16.9	50.0
Ethyl methacrylate	Lin2		0.8831		23.1	20.0	15.4	50.0
Toluene	Ave	1.546	1.709		22.1	20.0	10.5	50.0
1,3-Dichloropropane	Ave	1.000	1.164		23.3	20.0	16.3	50.0
2-Hexanone	Lin1		0.3551		121	100	21.5	50.0
Dibromochloromethane	Lin2		0.6909		23.4	20.0	17.0	50.0
n-Butyl acetate	Lin1		1.576		24.4	20.0	22.0	50.0
1,2-Dibromoethane	Ave	0.6127	0.6887		22.5	20.0	12.4	50.0
Tetrachloroethene	Ave	0.2127	0.2314		21.7	20.0	8.7	50.0
1,1,1,2-Tetrachloroethane	Ave	0.6972	0.7301		20.9	20.0	4.7	50.0
Chlorobenzene	Ave	1.743	1.853	0.3000	21.3	20.0	6.3	50.0
Ethylbenzene	Ave	0.9050	0.9509		21.0	20.0	5.1	50.0
m-Xylene & p-Xylene	Ave	2.280	2.329		20.4	20.0	2.2	50.0
Bromoform	Qua1		0.4580	0.1000	24.9	20.0	24.4	50.0
Styrene	Ave	1.757	1.857		21.1	20.0	5.7	50.0
o-Xylene	Ave	1.173	1.237		21.1	20.0	5.5	50.0
1,1,2,2-Tetrachloroethane	Qua1		0.8044	0.3000	21.7	20.0	8.7	50.0
trans-1,4-Dichloro-2-butene	Qua2		0.1822		18.0	20.0	-9.9	50.0
1,2,3-Trichloropropane	Lin2		0.2904		26.7	20.0	33.4	50.0
Isopropylbenzene	Ave	2.797	2.942		21.0	20.0	5.2	50.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVC 580-269828/13 Calibration Date: 03/25/2018 07:07

Instrument ID: SEA102 Calib Start Date: 03/21/2018 12:09

GC Column: DB-VRX ID: 0.25(mm) Calib End Date: 03/21/2018 15:30

Lab File ID: C241837.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Bromobenzene	Lin2		0.8442		23.9	20.0	19.4	50.0
N-Propylbenzene	Ave	0.6072	0.7261		23.9	20.0	19.6	50.0
2-Chlorotoluene	Lin2		0.7357		24.2	20.0	20.9	50.0
4-Chlorotoluene	Ave	1.765	2.143		24.3	20.0	21.4	50.0
1,3,5-Trimethylbenzene	Ave	2.015	2.466		24.5	20.0	22.3	50.0
t-Butylbenzene	Ave	1.589	1.983		25.0	20.0	24.8	50.0
1,2,4-Trimethylbenzene	Ave	2.165	2.597		24.0	20.0	20.0	50.0
sec-Butylbenzene	Ave	2.245	2.720		24.2	20.0	21.1	50.0
Benzyl chloride	Lin2		1.118		14.6	20.0	-26.8	50.0
1,3-Dichlorobenzene	Lin2		0.6563		20.1	20.0	0.6	50.0
4-Isopropyltoluene	Lin1		2.340		23.0	20.0	14.9	50.0
1,4-Dichlorobenzene	Lin2		1.577		23.2	20.0	15.9	50.0
1,2,3-Trimethylbenzene	Lin2		2.930		24.6	20.0	22.8	50.0
1,2-Dichlorobenzene	Lin2		1.591		23.3	20.0	16.4	50.0
n-Butylbenzene	Lin2		1.871		22.6	20.0	13.2	50.0
1,2-Dibromo-3-Chloropropane	Ave	0.2043	0.2651		26.0	20.0	29.8	50.0
1,3,5-Trichlorobenzene	Lin2		1.015		21.6	20.0	7.8	50.0
1,2,4-Trichlorobenzene	Ave	1.131	1.056		18.7	20.0	-6.6	50.0
Naphthalene	Lin1		3.435		25.9	20.0	29.6	50.0
Hexachlorobutadiene	Lin1		0.1567		20.7	20.0	3.6	50.0
1,2,3-Trichlorobenzene	Lin1		0.995		22.9	20.0	14.3	50.0
Dibromofluoromethane (Surr)	Ave	0.2597	0.2575		48.3	48.8	-0.9	50.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.3178	0.3227		49.5	48.8	1.5	50.0
Trifluorotoluene (Surr)	Ave	0.5007	0.5051		50.4	50.0	0.9	50.0
Toluene-d8 (Surr)	Ave	2.209	2.188		48.3	48.8	-0.9	50.0
4-Bromofluorobenzene (Surr)	Ave	0.9456	0.8619		44.4	48.8	-8.9	50.0

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241837.D
Lims ID: CCVC
Client ID:
Sample Type: CCVC
Inject. Date: 25-Mar-2018 07:07:30 ALS Bottle#: 37 Worklist Smp#: 13
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: CCVC
Operator ID: JSM Instrument ID: SEA102
Sublist: chrom-8260MeOHSoil_SEA102B*sub7

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 13:49:59 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 13:49:59

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
1 Dichlorodifluoromethane	85	4.058	4.057	0.001	100	218985	20.0	43.0	
2 Chloromethane	50	4.356	4.349	0.007	100	383072	20.0	33.4	
3 Vinyl chloride	62	4.617	4.616	0.001	99	267699	20.0	26.7	
4 Butadiene	39	4.733	4.733	0.001	99	369997	20.0	34.4	
5 Bromomethane	94	5.140	5.139	0.001	90	151826	20.0	23.2	
6 Chloroethane	64	5.280	5.279	0.001	98	154427	20.0	26.5	
7 Dichlorofluoromethane	67	5.359	5.353	0.007	99	345122	20.0	23.7	
10 Acrolein	56	5.907	5.906	0.001	100	179313	120.0	80.1	
12 Acetonitrile	41	5.919	5.918	0.001	99	569444	250.0	354.4	
11 Trichlorofluoromethane	101	5.961	5.960	0.001	99	289701	20.0	25.2	
14 Isopropyl alcohol	45	5.961	5.961	0.001	26	294483	200.0	356.7	
13 Acetone	43	6.034	6.033	0.001	98	429263	100.0	145.8	
15 Ethyl ether	59	6.162	6.162	0.001	95	186779	20.0	23.0	
* 16 TBA-d9 (IS)	65	6.411	6.410	0.001	0	1163387	975.0	975.0	
17 1,1-Dichloroethene	96	6.490	6.489	0.001	94	165245	20.0	22.8	
19 2-Methyl-2-propanol	59	6.496	6.495	0.001	98	307641	200.0	257.0	
18 Acrylonitrile	52	6.527	6.526	0.001	98	946755	200.0	246.8	
20 Iodomethane	142	6.545	6.544	0.001	98	318973	20.0	22.8	
21 Methylene Chloride	84	6.636	6.635	0.001	95	200365	20.0	23.9	
22 Methyl acetate	43	6.661	6.660	0.001	100	1140850	100.0	117.6	
23 1,1,2-Trichloro-1,2,2-trif	151	6.691	6.684	0.007	92	140452	20.0	27.1	
9 3-Chloro-1-propene	76	6.722	6.716	0.008	90	91173	20.0	19.9	
24 Carbon disulfide	76	6.892	6.891	0.001	100	641980	20.0	25.4	
25 trans-1,2-Dichloroethene	96	7.275	7.274	0.001	95	166795	20.0	23.9	
26 Methyl tert-butyl ether	73	7.360	7.359	0.001	99	575887	20.0	23.3	
29 Propionitrile	54	7.494	7.494	0.001	99	541172	250.0	325.7	
28 1,1-Dichloroethane	63	7.500	7.499	0.001	97	347988	20.0	22.1	
30 Vinyl acetate	86	7.591	7.590	0.001	100	28254	50.0	17.1	
31 2-Chloro-1,3-butadiene	53	7.828	7.829	0.001	93	340569	20.0	28.4	
32 Hexane	57	7.847	7.846	0.001	85	230880	20.0	23.0	
34 2-Butanone (MEK)	72	7.865	7.864	0.001	95	134854	100.0	128.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
33 Isopropyl ether	45	7.865	7.865	0.001	87	1086407	25.0	31.5	M
35 Methacrylonitrile	66	7.956	7.956	0.001	98	339797	200.0	245.7	
36 cis-1,2-Dichloroethene	96	8.011	8.010	0.001	85	192978	20.0	22.6	
40 Ethyl acetate	43	8.132	8.133	0.001	99	524790	40.0	50.0	
37 Chlorobromomethane	128	8.157	8.156	0.001	91	92464	20.0	21.7	
38 Chloroform	83	8.193	8.192	0.001	95	294879	20.0	21.1	
39 Tert-butyl ethyl ether	59	8.211	8.210	0.001	98	888782	25.0	29.8	
41 Isobutyl alcohol	43	8.242	8.241	0.001	95	577127	500.0	660.8	
42 2,2-Dichloropropane	77	8.260	8.259	0.001	88	172459	20.0	16.9	
$ 43 Dibromofluoromethane (Surr	113	8.297	8.296	0.001	94	346120	48.8	48.3	
44 Tetrahydrofuran	42	8.473	8.473	0.001	94	195891	40.0	50.7	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.680	8.685	-0.005	0	433753	48.8	49.5	
46 1,2-Dichloroethane	62	8.747	8.746	0.001	96	258204	20.0	22.6	
47 1,1,1-Trichloroethane	97	8.838	8.837	0.001	98	259223	20.0	23.0	
49 n-Butanol	56	8.850	8.849	0.001	95	272935	500.0	669.9	
48 1,1-Dichloropropene	75	8.978	8.983	-0.005	91	229200	20.0	22.7	
50 Cyclohexane	84	9.081	9.080	0.001	97	234305	20.0	23.5	
51 Carbon tetrachloride	119	9.148	9.147	0.001	98	205364	20.0	24.2	
52 Benzene	78	9.172	9.171	0.001	98	680031	20.0	21.8	
53 Tert-amyl methyl ether	73	9.270	9.269	0.001	94	718259	25.0	29.0	
* 54 Fluorobenzene (IS)	96	9.330	9.335	-0.005	98	1344119	48.8	48.8	
56 Ethyl acrylate	55	9.549	9.550	0.001	98	313613	20.0	25.5	
57 n-Heptane	43	9.561	9.562	0.001	97	150140	20.0	19.3	
58 Dibromomethane	93	9.647	9.646	0.001	93	118859	20.0	23.2	
59 1,2-Dichloropropane	63	9.665	9.664	0.001	92	203738	20.0	22.4	
60 2-Nitropropane	43	9.683	9.684	0.001	98	146556	40.0	46.7	
61 Trichloroethene	130	9.695	9.694	0.001	95	204129	20.0	24.9	
62 Dichlorobromomethane	83	9.744	9.743	0.001	98	224517	20.0	23.7	
63 Methyl methacrylate	41	9.799	9.805	-0.005	94	469046	40.0	51.2	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.834	0.001	90	695988	50.0	50.4	
65 2-Chloroethyl vinyl ether	43	10.048	10.047	0.001	90	117168	20.0	25.4	
66 Methylcyclohexane	83	10.145	10.144	0.001	97	208045	20.0	22.4	
67 cis-1,3-Dichloropropene	75	10.273	10.272	0.001	91	269694	20.0	25.5	
68 4-Methyl-2-pentanone (MIBK	43	10.340	10.339	0.001	98	1509720	100.0	136.5	
69 trans-1,3-Dichloropropene	75	10.650	10.649	0.001	99	243543	20.0	21.9	
71 1,1,2-Trichloroethane	97	10.814	10.813	0.001	93	153349	20.0	23.4	
S 70 Xylenes, Total	106				0		40.0	21.1	
$ 73 Toluene-d8 (Surr)	98	10.912	10.917	-0.005	95	1276671	48.8	48.3	
75 Ethyl methacrylate	69	10.972	10.972	0.001	95	211357	20.0	23.1	
76 Toluene	92	10.978	10.984	-0.006	98	408952	20.0	22.1	
77 1,3-Dichloropropane	76	11.027	11.026	0.001	98	278500	20.0	23.3	
78 2-Hexanone	58	11.112	11.111	0.001	99	424938	100.0	121.5	
79 Chlorodibromomethane	129	11.307	11.306	0.001	91	165370	20.0	23.4	
80 n-Butyl acetate	43	11.380	11.380	0.001	96	377165	20.0	24.4	
81 Ethylene Dibromide	107	11.538	11.537	0.001	98	164824	20.0	22.5	
82 Tetrachloroethene	164	11.672	11.671	0.001	99	127579	20.0	21.7	
84 1,1,1,2-Tetrachloroethane	131	12.231	12.226	0.001	91	174741	20.0	20.9	
* 85 Chlorobenzene-d5	82	12.274	12.273	0.001	88	583403	48.8	48.8	
86 Chlorobenzene	112	12.304	12.305	-0.005	93	443580	20.0	21.3	
87 Ethylbenzene	106	12.462	12.463	-0.005	99	227598	20.0	21.0	
88 m-Xylene & p-Xylene	91	12.639	12.633	0.001	68	557415	20.0	20.4	
89 Bromoform	173	12.809	12.810	-0.005	97	109607	20.0	24.9	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
90 Styrene	104	12.955	12.949	0.001	95	444516	20.0	21.1	
91 o-Xylene	106	13.022	13.016	0.001	99	296088	20.0	21.1	
92 1,1,2,2-Tetrachloroethane	83	13.028	13.022	0.001	95	190003	20.0	21.7	
93 trans-1,4-Dichloro-2-buten	53	13.149	13.144	0.001	93	43047	20.0	18.0	
94 1,2,3-Trichloropropane	110	13.162	13.156	0.001	89	68587	20.0	26.7	
96 Isopropylbenzene	105	13.344	13.345	-0.005	97	704193	20.0	21.0	
$ 97 4-Bromofluorobenzene (Surr	95	13.399	13.399	-0.005	91	502817	48.8	44.4	
98 Bromobenzene	156	13.612	13.612	-0.005	96	199406	20.0	23.9	
99 N-Propylbenzene	120	13.745	13.740	0.001	99	171517	20.0	23.9	
100 2-Chlorotoluene	126	13.855	13.849	0.001	96	173774	20.0	24.2	
101 4-Chlorotoluene	91	13.916	13.910	0.001	98	506096	20.0	24.3	
102 1,3,5-Trimethylbenzene	105	13.977	13.977	-0.005	96	582374	20.0	24.5	
104 tert-Butylbenzene	119	14.244	14.238	0.001	95	468310	20.0	25.0	
105 1,2,4-Trimethylbenzene	105	14.335	14.329	0.001	98	613444	20.0	24.0	
106 sec-Butylbenzene	105	14.439	14.433	0.001	95	642363	20.0	24.2	
107 Benzyl chloride	91	14.530	14.524	0.001	99	264170	20.0	14.6	
108 1,3-Dichlorobenzene	146	14.536	14.530	0.001	98	361907	20.0	20.1	
* 109 1,4-Dichlorobenzene-d4	152	14.566	14.571	-0.005	97	575753	48.8	48.8	
110 4-Isopropyltoluene	119	14.585	14.585	-0.005	98	552660	20.0	23.0	
111 1,4-Dichlorobenzene	146	14.591	14.591	-0.005	97	372549	20.0	23.2	
112 1,2,3-Trimethylbenzene	105	14.731	14.725	0.001	99	692159	20.0	24.6	
113 1,2-Dichlorobenzene	146	14.925	14.919	0.001	98	375799	20.0	23.3	
114 n-Butylbenzene	91	14.962	14.956	0.001	98	441966	20.0	22.6	
116 1,2-Dibromo-3-Chloropropan	157	15.363	15.357	0.001	82	62624	20.0	26.0	
117 1,3,5-Trichlorobenzene	180	16.154	16.147	0.001	98	239791	20.0	21.6	
118 1,2,4-Trichlorobenzene	180	16.719	16.719	-0.005	94	252669	20.0	18.7	
119 Naphthalene	128	17.011	17.004	0.001	97	811274	20.0	25.9	
120 Hexachlorobutadiene	190	17.035	17.029	0.001	96	37005	20.0	20.7	
121 1,2,3-Trichlorobenzene	180	17.236	17.229	0.001	95	235038	20.0	22.9	
S 123 1,3-Dichloropropene, Total	1				0			47.3	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

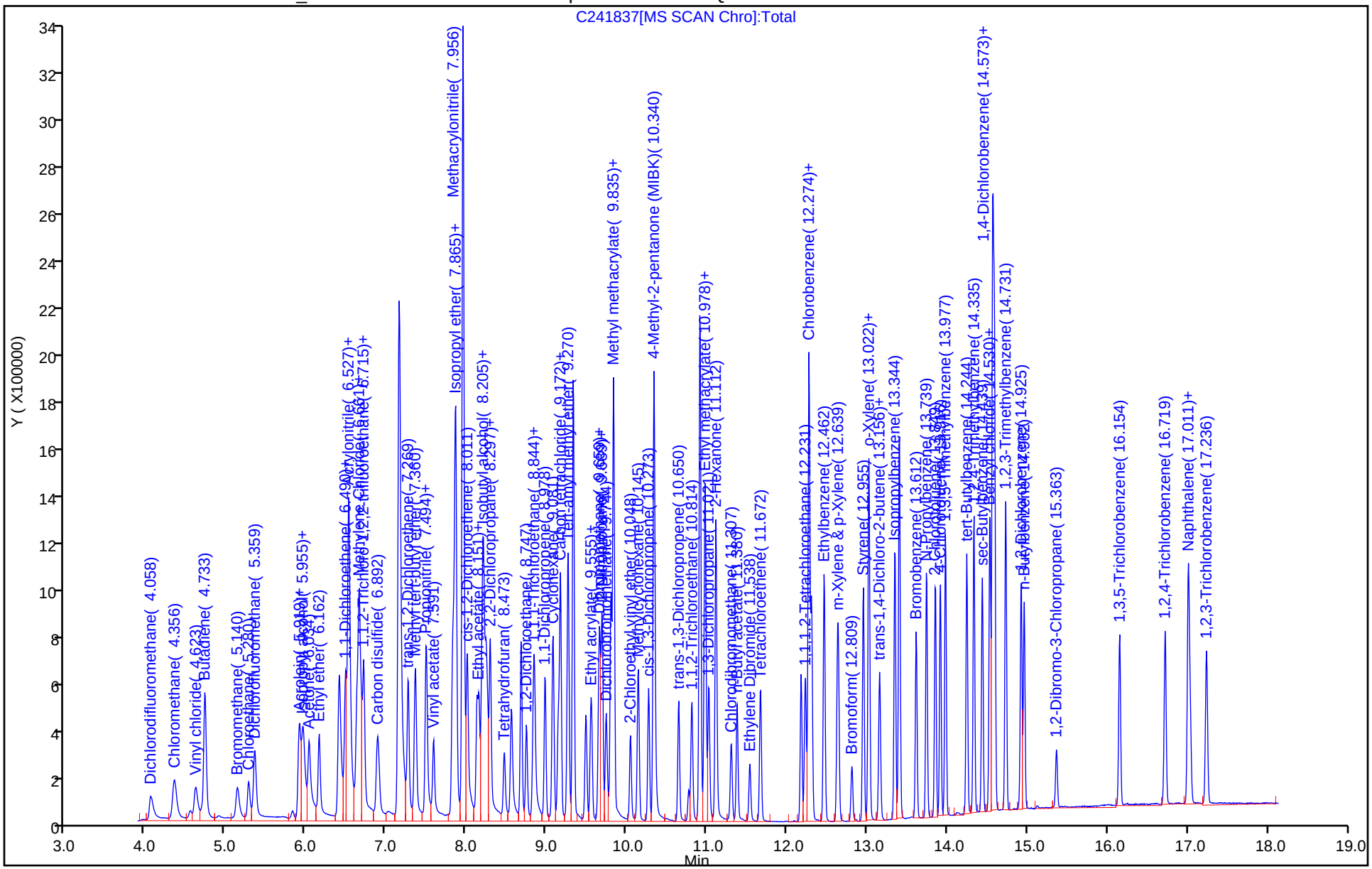
VOAMasterMix_00018	Amount Added: 20.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 26-Mar-2018 13:50:01 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241837.D

Injection Date:	25-Mar-2018 07:07:30	Instrument ID:	SEA102	Operator ID:	JSM
Lims ID:	CCVC			Worklist Smp#:	13
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	37
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



Manual Integration/User Assign Peak Report

TestAmerica Seattle

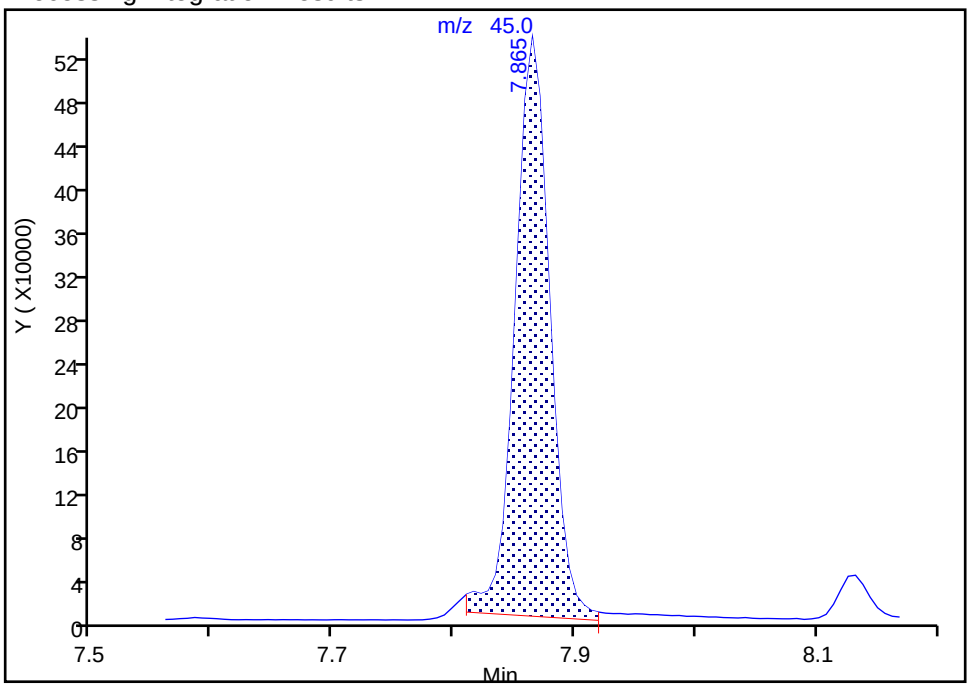
Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241837.D
Injection Date: 25-Mar-2018 07:07:30 Instrument ID: SEA102
Lims ID: CCVC
Client ID:
Operator ID: JSM ALS Bottle#: 37 Worklist Smp#: 13
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Column: Detector MS SCAN

33 Isopropyl ether, CAS: 108-20-3

Signal: 1

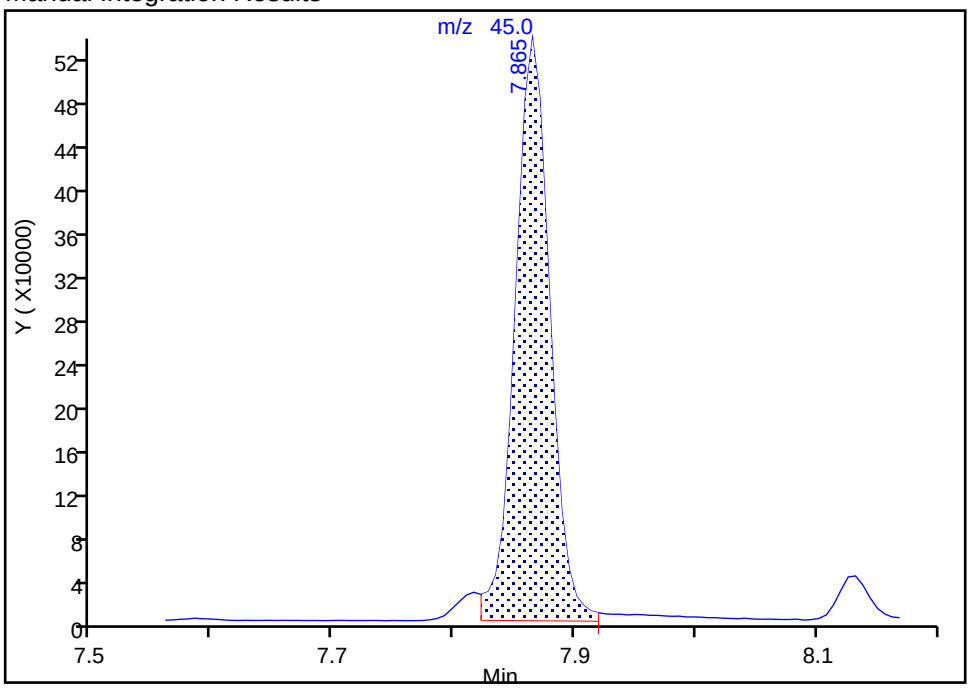
Processing Integration Results

RT: 7.86
Area: 1079968
Amount: 31.339496
Amount Units: ug/L



Manual Integration Results

RT: 7.86
Area: 1086407
Amount: 31.526349
Amount Units: ug/L



Reviewer: pimtongp, 26-Mar-2018 12:53:59
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6827.D
Lims ID: BFB
Client ID:
Sample Type: BFB
Inject. Date: 05-Mar-2018 06:53:30 ALS Bottle#: 100 Worklist Smp#: 1
Injection Vol: 1.0 uL Dil. Factor: 1.0000
Sample Info: BFB
Operator ID: DOBRANSKYM Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 05-Mar-2018 11:25:44 Calib Date: 05-Mar-2018 09:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6835.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK015

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 4 BFB	95	4.235	4.235	0.000	0	107837	NR	NR	7

QC Flag Legend

Processing Flags
NR - Missing Quant Standard
7 - Failed Limit of Detection

Reagents:

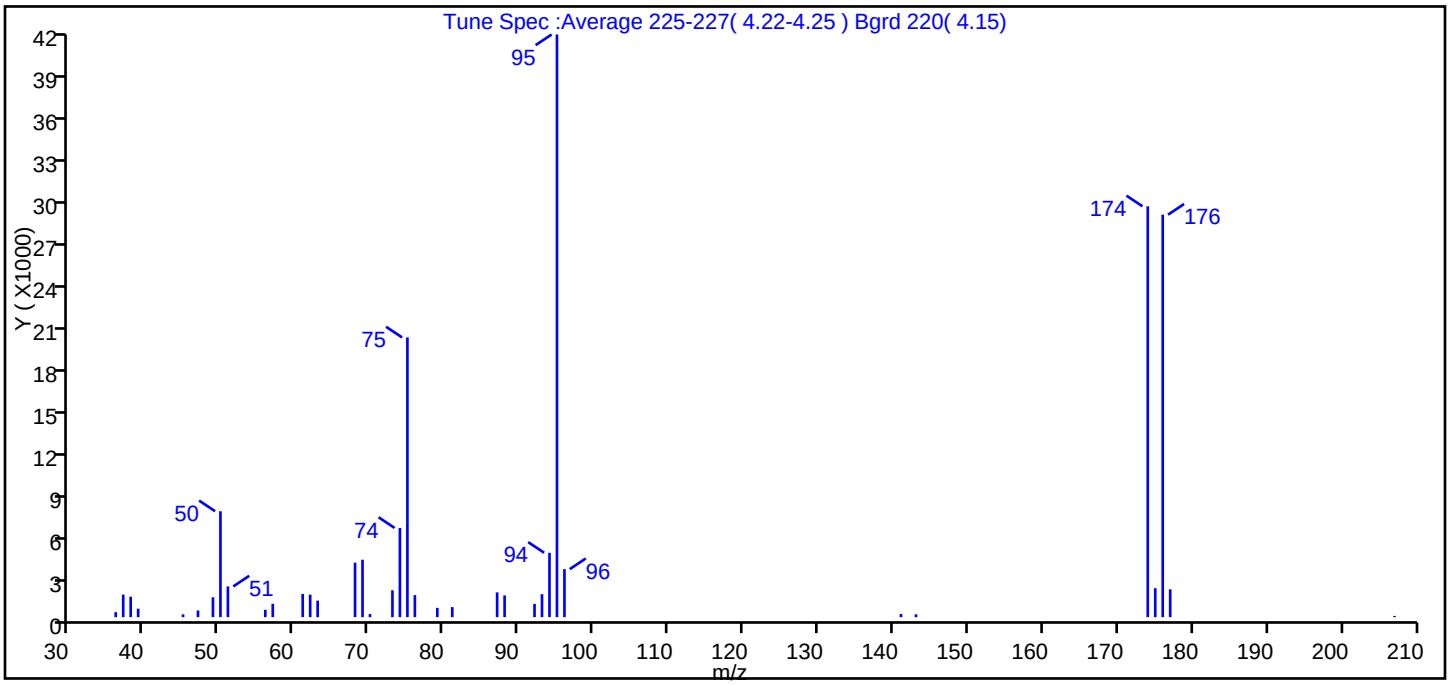
MV-BFB_00025 Amount Added: 1.00 Units: uL

MS Tune Report

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6827.D
Injection Date: 05-Mar-2018 06:53:30 Instrument ID: VMS_R1
Lims ID: BFB
Client ID:
Operator ID: DOBRANSKYM ALS Bottle#: 100 Worklist Smp#: 1
Injection Vol: 1.0 uL Dil. Factor: 1.0000
Method: AQ_VMSR1_8260 Limit Group: MSV - 8260B Water and Solid
Tune Method: BFB Method 8260

$ 4 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	18.2
75	30 to 60% of m/z 95	48.0
96	5 to 9% of m/z 95	8.2
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	70.5
175	5 to 9% of m/z 174	5.0 (7.0)
176	Greater than 95% but less than 101% of m/z 174	69.1 (98.0)
177	5 to 9% of m/z 176	4.8 (6.9)

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6827.D\AQ_VMSR1_8260.rslt\spectra.d
Injection Date: 05-Mar-2018 06:53:30
Spectrum: Tune Spec :Average 225-227(4.22-4.25) Bgrd 220(4.15)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 37

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	359	57.00	956	76.00	1579	141.00	224
37.00	1619	61.00	1663	79.00	666	143.00	202
38.00	1465	62.00	1615	81.00	721	174.00	29456
39.00	607	63.00	1186	87.00	1775	175.00	2076
45.00	202	68.00	3906	88.00	1556	176.00	28856
47.00	479	69.00	4119	92.00	952	177.00	1994
49.00	1425	70.00	222	93.00	1648	207.00	87
50.00	7593	73.00	1925	94.00	4615		
51.00	2201	74.00	6396	95.00	41776		
56.00	529	75.00	20056	96.00	3442		

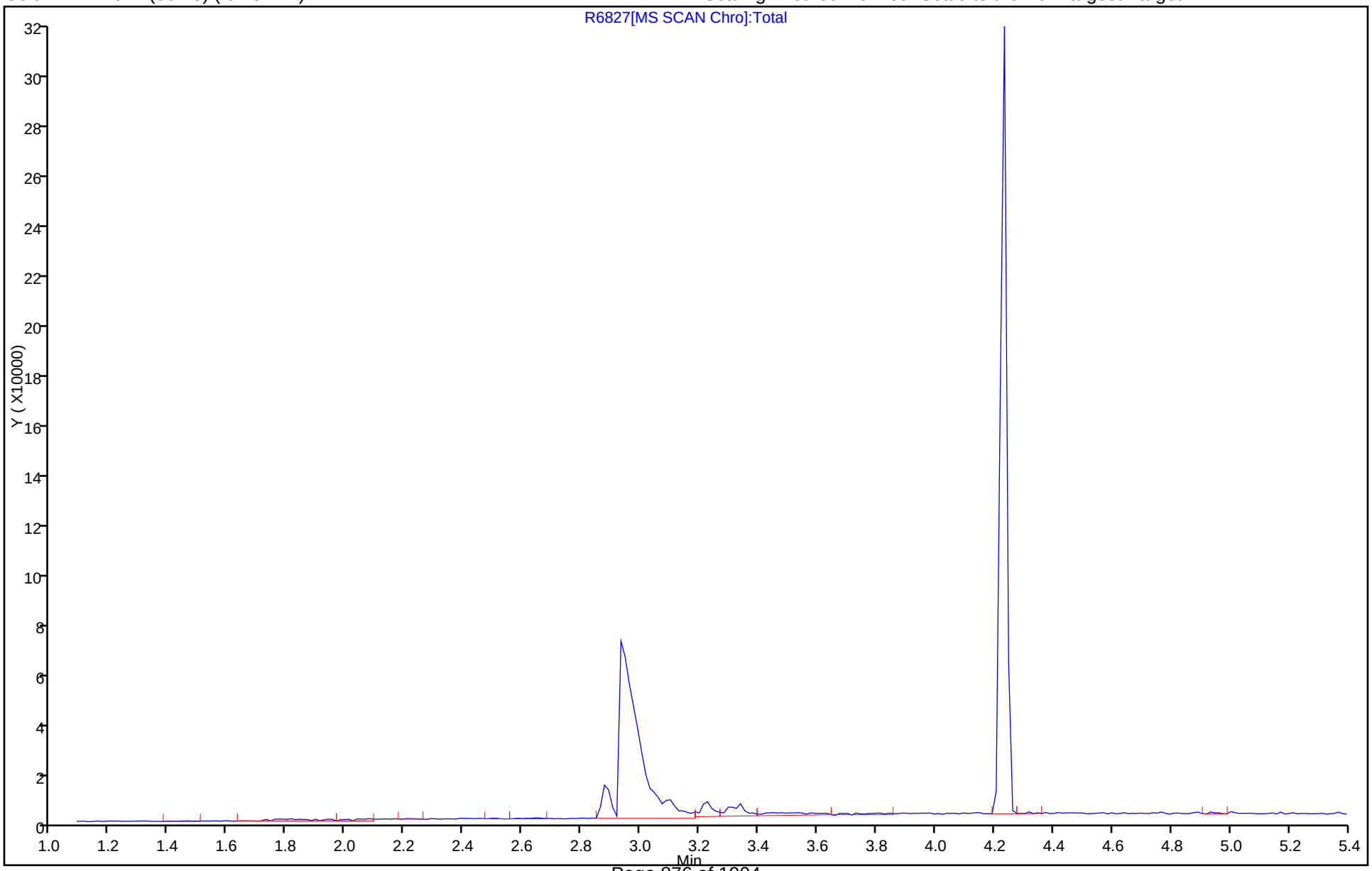
Report Date: 05-Mar-2018 11:25:45 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180305-67707.b\R6827.D

Injection Date:	05-Mar-2018 06:53:30	Instrument ID:	VMS_R1	Operator ID:	DOBRANSKYM
Lims ID:	BFB			Worklist Smp#:	1
Client ID:					
Injection Vol:	1.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	100
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7050.D
Lims ID: BFB
Client ID:
Sample Type: BFB
Inject. Date: 08-Mar-2018 18:35:30 ALS Bottle#: 100 Worklist Smp#: 1
Injection Vol: 1.0 uL Dil. Factor: 1.0000
Sample Info: BFB
Operator ID: LINESJ Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 09-Mar-2018 16:54:48 Calib Date: 08-Mar-2018 21:08:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7058.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: newcomer Date: 09-Mar-2018 16:54:48

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 4 BFB	95	4.235	4.235	0.000	0	148640	NR	NR	7

QC Flag Legend

Processing Flags
NR - Missing Quant Standard
7 - Failed Limit of Detection

Reagents:

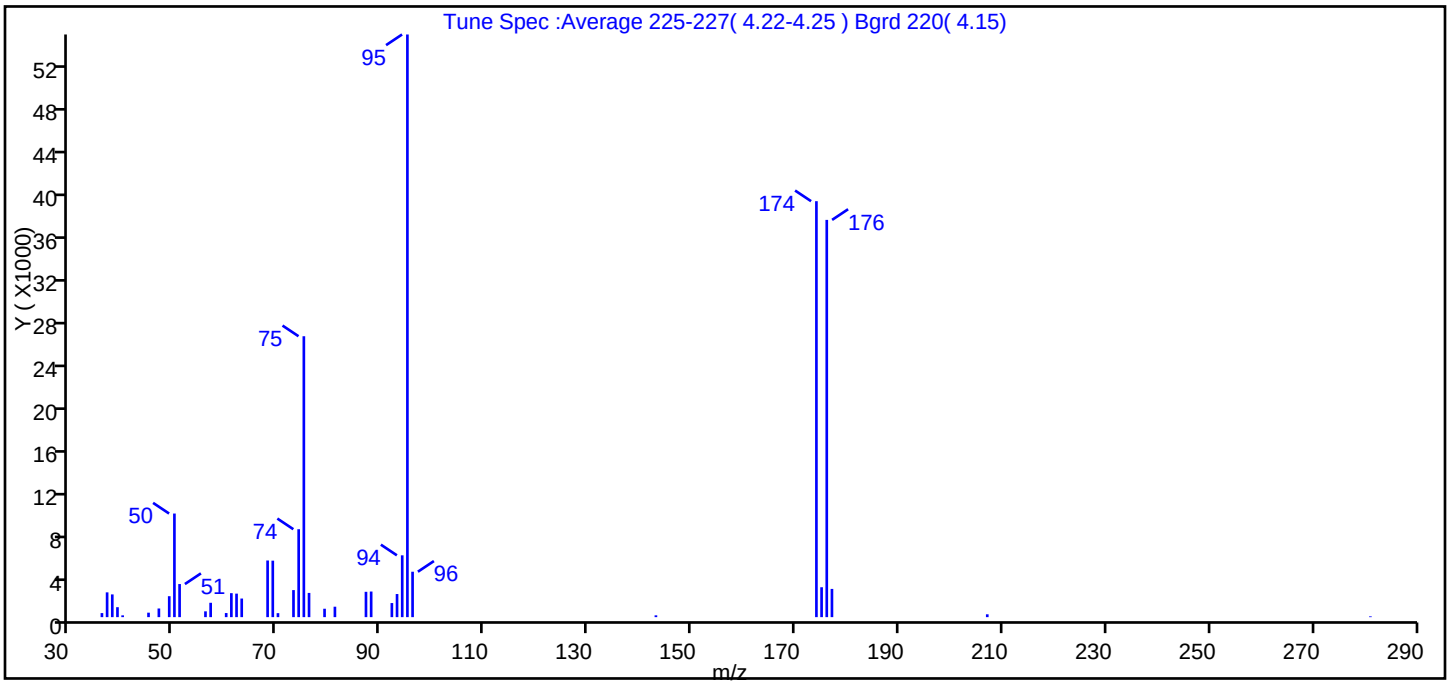
MV-BFB_00025 Amount Added: 1.00 Units: uL

MS Tune Report

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7050.D
Injection Date: 08-Mar-2018 18:35:30 Instrument ID: VMS_R1
Lims ID: BFB
Client ID:
Operator ID: LINESJ ALS Bottle#: 100 Worklist Smp#: 1
Injection Vol: 1.0 uL Dil. Factor: 1.0000
Method: AQ_VMSR1_8260 Limit Group: MSV - 8260B Water and Solid
Tune Method: BFB Method 8260

$ 4 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	17.8
75	30 to 60% of m/z 95	48.2
96	5 to 9% of m/z 95	7.8
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	71.4
175	5 to 9% of m/z 174	5.1 (7.2)
176	Greater than 95% but less than 101% of m/z 174	68.2 (95.5)
177	5 to 9% of m/z 176	4.8 (7.1)

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7050.D\AQ_VMSR1_8260.rslt\spectra.d
Injection Date: 08-Mar-2018 18:35:30
Spectrum: Tune Spec :Average 225-227(4.22-4.25) Bgrd 220(4.15)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 39

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	378	56.00	541	74.00	8198	95.00	54328
37.00	2311	57.00	1339	75.00	26192	96.00	4235
38.00	2120	60.00	383	76.00	2259	143.00	169
39.00	928	61.00	2236	79.00	784	174.00	38784
40.00	168	62.00	2192	81.00	973	175.00	2788
45.00	416	63.00	1735	87.00	2362	176.00	37040
47.00	807	68.00	5283	88.00	2388	177.00	2632
49.00	1953	69.00	5266	92.00	1314	207.00	265
50.00	9660	70.00	372	93.00	2155	281.00	71
51.00	3086	73.00	2522	94.00	5764		

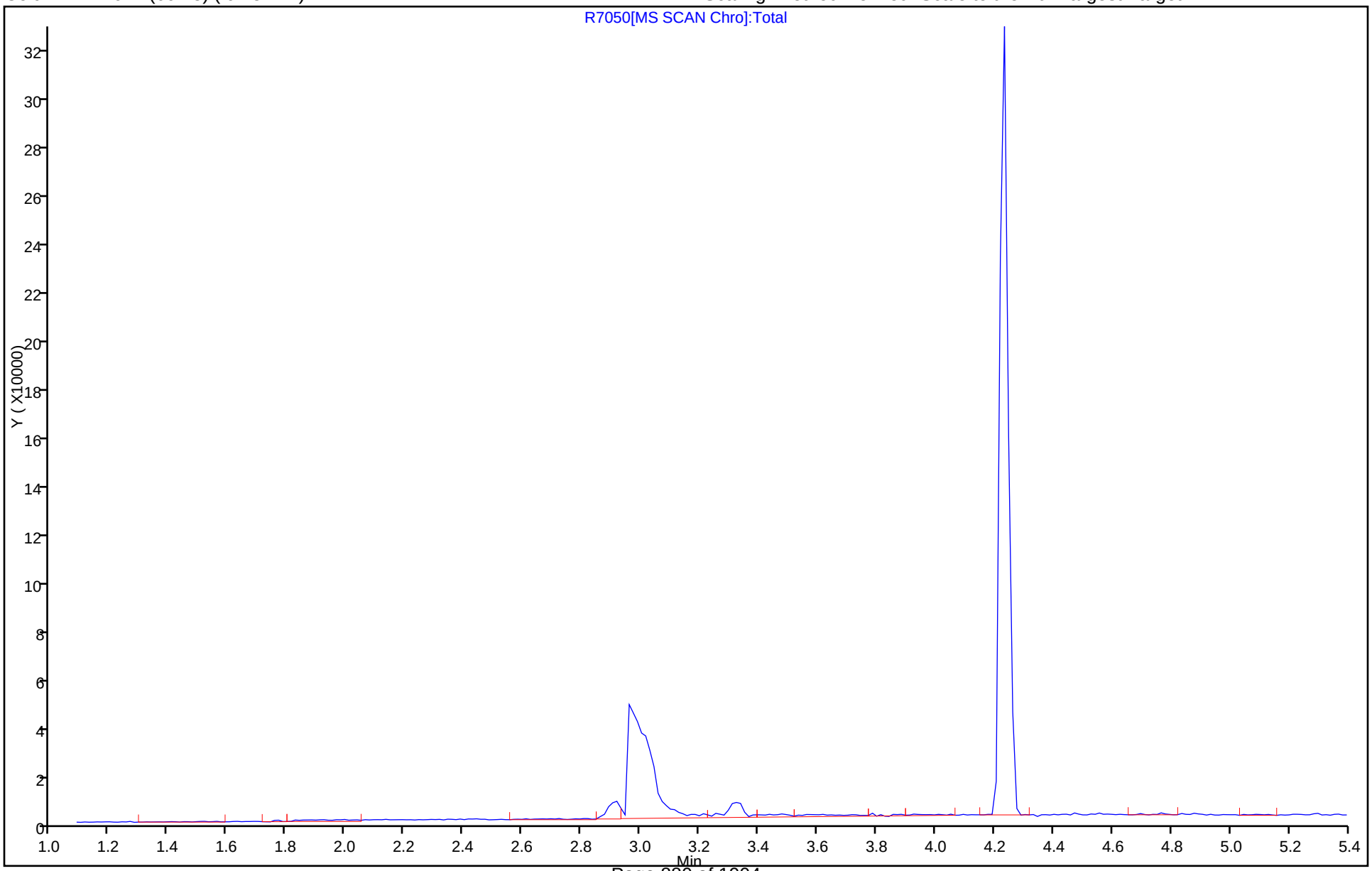
Report Date: 09-Mar-2018 16:54:48 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b\R7050.D

Injection Date:	08-Mar-2018 18:35:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	BFB			Worklist Smp#:	1
Client ID:					
Injection Vol:	1.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	100
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7378.D
Lims ID: BFB
Client ID:
Sample Type: BFB
Inject. Date: 15-Mar-2018 17:35:30 ALS Bottle#: 100 Worklist Smp#: 1
Injection Vol: 1.0 uL Dil. Factor: 1.0000
Sample Info: BFB
Operator ID: LINESJ Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 16-Mar-2018 00:35:06 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK025

First Level Reviewer: newcomer Date: 16-Mar-2018 00:35:06

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 4 BFB	95	4.235	4.235	0.000	0	163069	NR	NR	7

QC Flag Legend

Processing Flags
NR - Missing Quant Standard
7 - Failed Limit of Detection

Reagents:

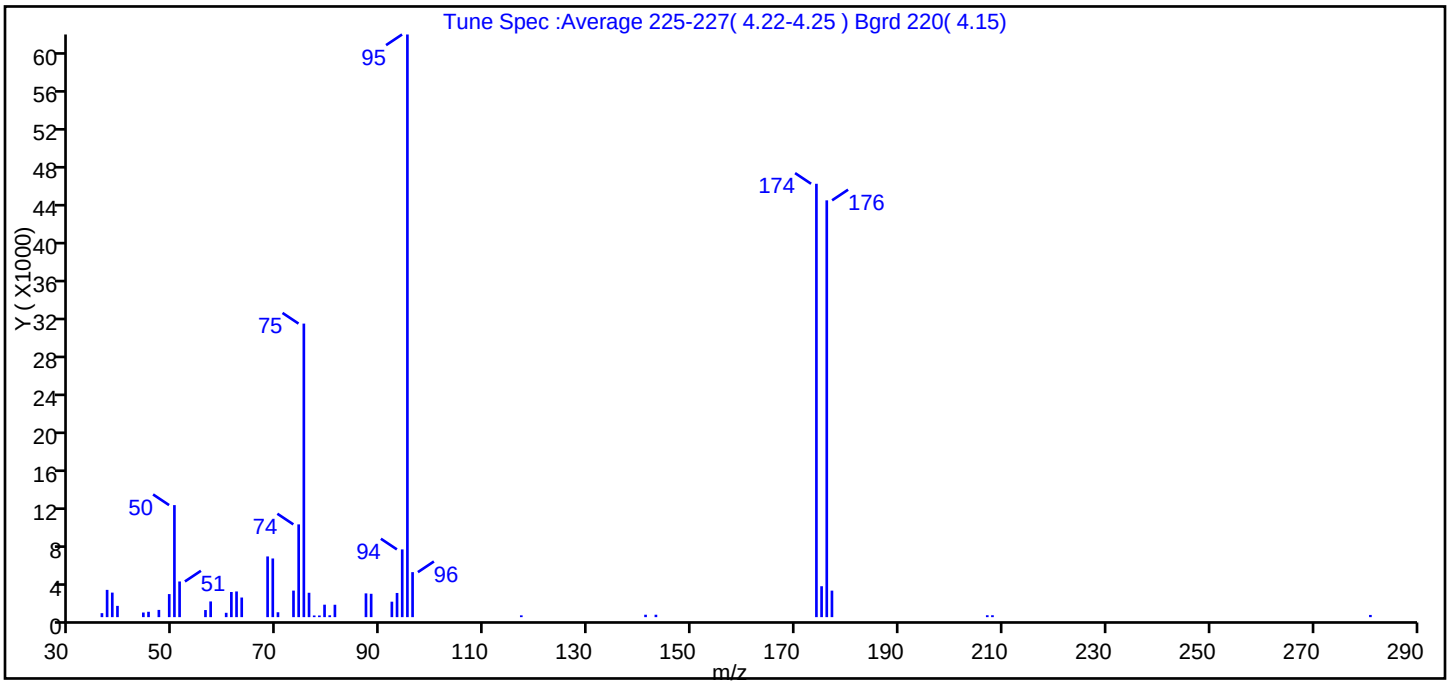
MV-BFB_00025 Amount Added: 1.00 Units: uL

MS Tune Report

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7378.D
Injection Date: 15-Mar-2018 17:35:30 Instrument ID: VMS_R1
Lims ID: BFB
Client ID:
Operator ID: LINESJ ALS Bottle#: 100 Worklist Smp#: 1
Injection Vol: 1.0 uL Dil. Factor: 1.0000
Method: AQ_VMSR1_8260 Limit Group: MSV - 8260B Water and Solid
Tune Method: BFB Method 8260

$ 4 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	19.2
75	30 to 60% of m/z 95	50.4
96	5 to 9% of m/z 95	7.7
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	74.4
175	5 to 9% of m/z 174	5.3 (7.1)
176	Greater than 95% but less than 101% of m/z 174	71.5 (96.2)
177	5 to 9% of m/z 176	4.6 (6.4)

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7378.D\AQ_VMSR1_8260.rslt\spectra.d
Injection Date: 15-Mar-2018 17:35:30
Spectrum: Tune Spec :Average 225-227(4.22-4.25) Bgrd 220(4.15)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 45

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	418	60.00	455	78.00	174	141.00	254
37.00	2858	61.00	2637	79.00	1306	143.00	254
38.00	2572	62.00	2692	80.00	194	174.00	45424
39.00	1181	63.00	2057	81.00	1299	175.00	3241
44.00	486	68.00	6363	87.00	2491	176.00	43688
45.00	562	69.00	6149	88.00	2448	177.00	2779
47.00	759	70.00	512	92.00	1620	207.00	200
49.00	2417	73.00	2782	93.00	2534	208.00	200
50.00	11743	74.00	9722	94.00	7100	281.00	231
51.00	3739	75.00	30768	95.00	61072		
56.00	744	76.00	2556	96.00	4717		
57.00	1646	77.00	173	117.00	188		

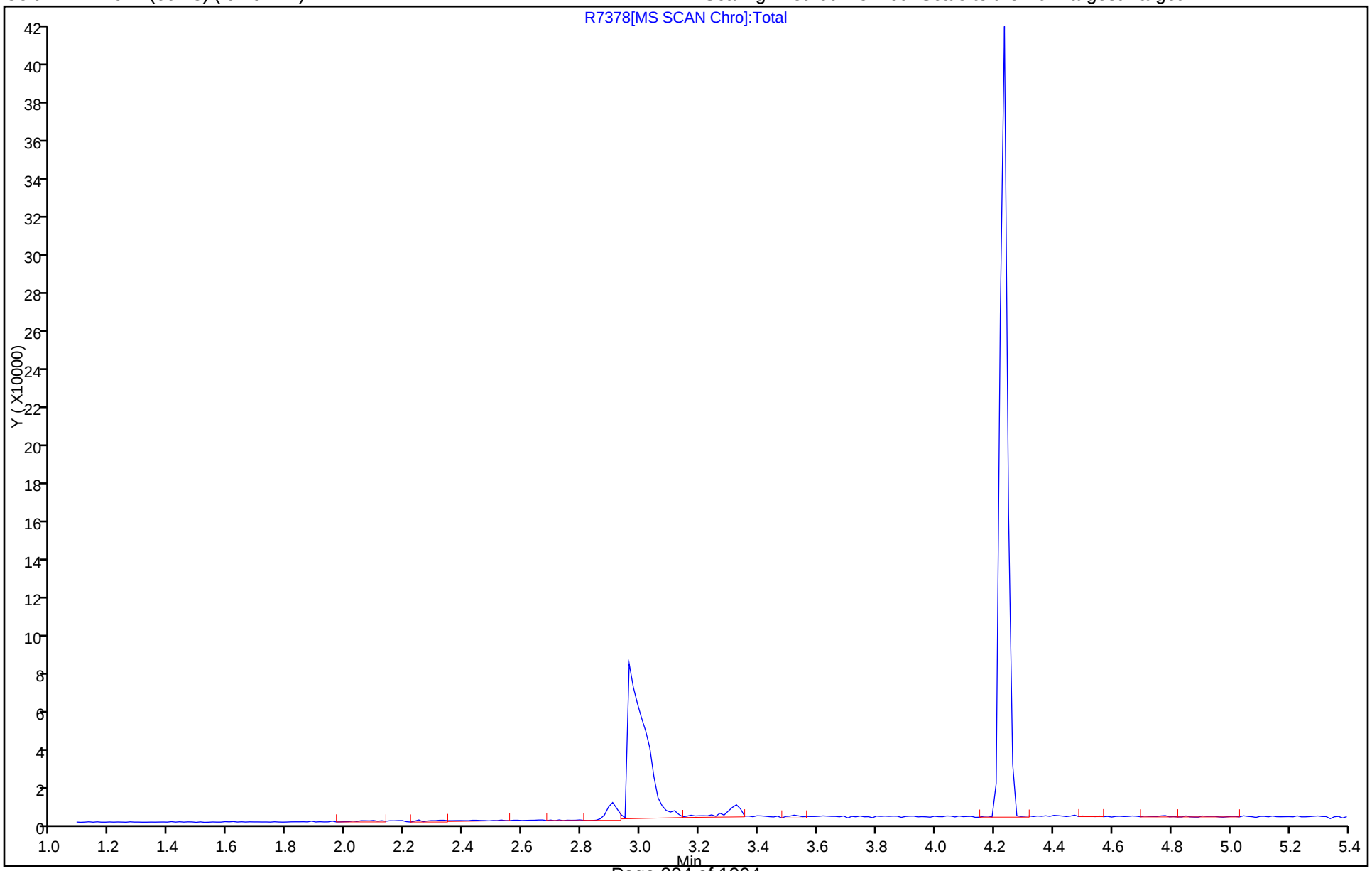
Report Date: 16-Mar-2018 00:35:07 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7378.D

Injection Date:	15-Mar-2018 17:35:30	Instrument ID:	VMS_R1	Operator ID:	LINESJ
Lims ID:	BFB			Worklist Smp#:	1
Client ID:					
Injection Vol:	1.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	100
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7858.D
Lims ID: BFB
Client ID:
Sample Type: BFB
Inject. Date: 27-Mar-2018 06:23:30 ALS Bottle#: 100 Worklist Smp#: 1
Injection Vol: 1.0 uL Dil. Factor: 1.0000
Sample Info: BFB
Operator ID: wickhamt Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 27-Mar-2018 14:15:02 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK022

First Level Reviewer: wickhamt Date: 27-Mar-2018 07:26:25

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 4 BFB	95	4.235	4.235	0.000	0	95830	NR	NR	7

QC Flag Legend

Processing Flags
NR - Missing Quant Standard
7 - Failed Limit of Detection

Reagents:

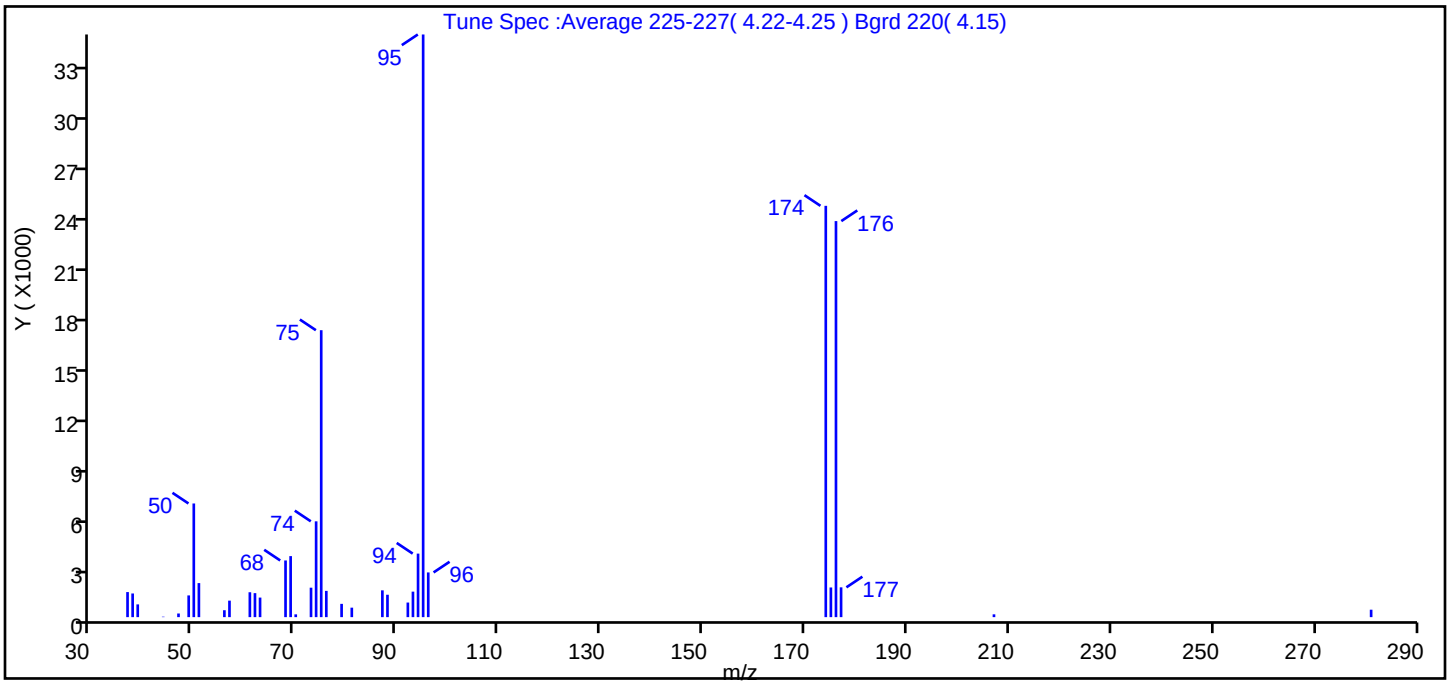
MV-BFB_00025 Amount Added: 1.00 Units: uL

MS Tune Report

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7858.D
Injection Date: 27-Mar-2018 06:23:30 Instrument ID: VMS_R1
Lims ID: BFB
Client ID:
Operator ID: wickhamt ALS Bottle#: 100 Worklist Smp#: 1
Injection Vol: 1.0 uL Dil. Factor: 1.0000
Method: AQ_VMSR1_8260 Limit Group: MSV - 8260B Water and Solid
Tune Method: BFB Method 8260

$ 4 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	19.5
75	30 to 60% of m/z 95	49.2
96	5 to 9% of m/z 95	7.7
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	70.6
175	5 to 9% of m/z 174	5.1 (7.2)
176	Greater than 95% but less than 101% of m/z 174	68.0 (96.3)
177	5 to 9% of m/z 176	5.1 (7.5)

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7858.D\AQ_VMSR1_8260.rslt\spectra.d
Injection Date: 27-Mar-2018 06:23:30
Spectrum: Tune Spec :Average 225-227(4.22-4.25) Bgrd 220(4.15)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 35

m/z	Y	m/z	Y	m/z	Y	m/z	Y
37.00	1485	57.00	978	75.00	17000	95.00	34520
38.00	1402	61.00	1475	76.00	1556	96.00	2649
39.00	756	62.00	1422	79.00	787	174.00	24368
44.00	26	63.00	1159	81.00	562	175.00	1758
47.00	216	68.00	3358	87.00	1588	176.00	23464
49.00	1287	69.00	3616	88.00	1327	177.00	1766
50.00	6734	70.00	166	92.00	865	207.00	167
51.00	2017	73.00	1745	93.00	1511	281.00	441
56.00	410	74.00	5677	94.00	3764		

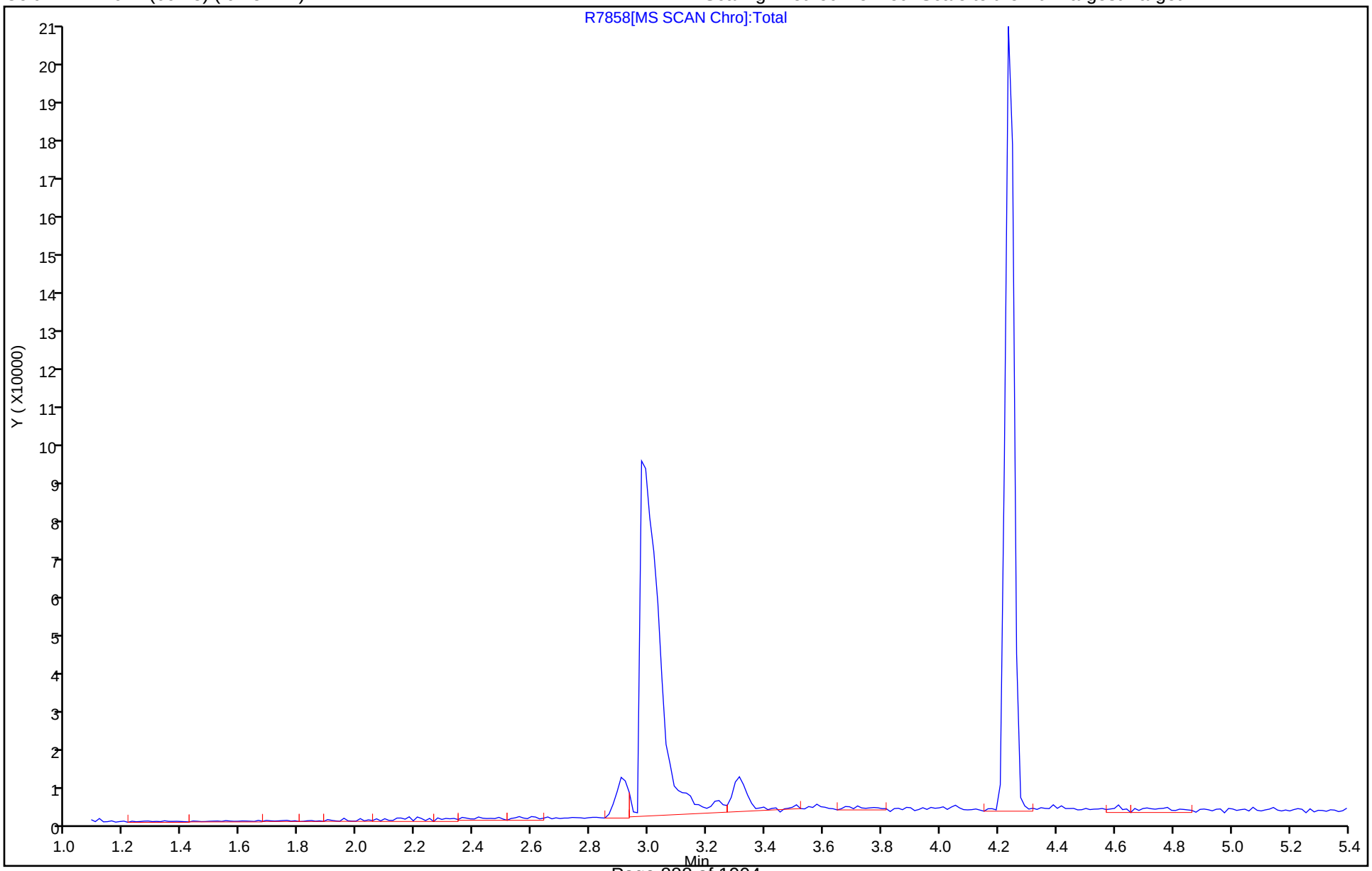
Report Date: 27-Mar-2018 14:15:02 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7858.D

Injection Date:	27-Mar-2018 06:23:30	Instrument ID:	VMS_R1	Operator ID:	wickhamt
Lims ID:	BFB			Worklist Smp#:	1
Client ID:					
Injection Vol:	1.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	100
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211802.D
Lims ID: BFB
Client ID:
Sample Type: BFB
Inject. Date: 21-Mar-2018 11:40:30 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 5.0 mL Dil. Factor: 1.0000
Sample Info: BFB
Operator ID: RSB Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 22-Mar-2018 15:22:10 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK048

First Level Reviewer: brennanr Date: 22-Mar-2018 09:55:57

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
* 16 TBA-d9 (IS)	65	6.411	6.411	0.000	0	1184633	975.0	975.0	
$ 43 Dibromofluoromethane (Surr	113	8.296	8.296	0.000	94	371184	48.8	49.5	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.685	8.685	0.000	0	463942	48.8	50.5	
* 54 Fluorobenzene (IS)	96	9.336	9.336	0.000	98	1408409	48.8	48.8	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.835	0.000	90	735522	50.0	50.8	
$ 73 Toluene-d8 (Surr)	98	10.917	10.917	0.000	94	1280947	48.8	48.8	
* 85 Chlorobenzene-d5	82	12.273	12.273	0.000	87	579099	48.8	48.8	
$ 97 4-Bromofluorobenzene (Surr	95	13.404	13.404	0.000	92	566591	48.8	50.4	
* 109 1,4-Dichlorobenzene-d4	152	14.572	14.572	0.000	96	750027	48.8	48.8	
$ 125 BFB	95	13.404	13.404	0.000	91	566591	NR	NR	

QC Flag Legend

Processing Flags
NR - Missing Quant Standard

Reagents:

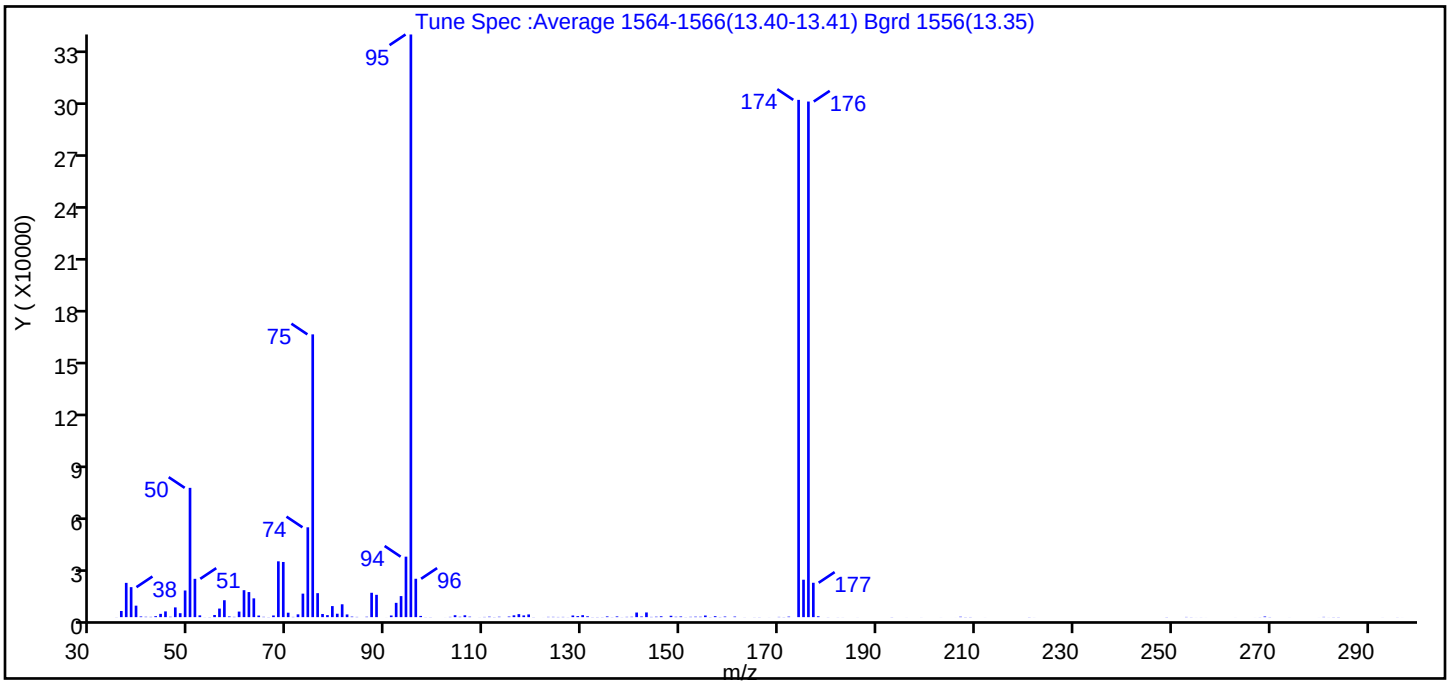
BFB_00002 Amount Added: 1.00 Units: uL
SURR/IS/TFT_00100 Amount Added: 1.00 Units: uL Run Reagent

MS Tune Report

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211802.D
Injection Date: 21-Mar-2018 11:40:30 Instrument ID: SEA102
Lims ID: BFB
Client ID:
Operator ID: RSB ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 5.0 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Tune Method: BFB Method 8260

$ 125 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	22.2
75	30 to 60% of m/z 95	48.5
96	5 to 9% of m/z 95	6.6
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	88.8
175	5 to 9% of m/z 174	6.4 (7.2)
176	Greater than 95% but less than 101% of m/z 174	88.5 (99.7)
177	5 to 9% of m/z 176	5.9 (6.7)

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211802.D\8260MeOHSoil_SEA102B.rslt\spe
Injection Date: 21-Mar-2018 11:40:30
Spectrum: Tune Spec :Average 1564-1566(13.40-13.41) Bgrd 1556(13.35)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 167

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	43	77.00	1824	126.00	136	175.00	21576
36.00	3551	78.00	1159	127.00	44	176.00	297216
37.00	19760	79.00	6370	128.00	952	177.00	19816
38.00	17288	80.00	1972	129.00	588	178.00	464
39.00	6619	81.00	7415	130.00	1140	179.00	4
40.00	396	82.00	1558	131.00	480	180.00	50
41.00	216	83.00	300	132.00	70	182.00	38
42.00	161	84.00	136	133.00	90	183.00	27
43.00	563	86.00	227	134.00	70	186.00	20
44.00	1888	87.00	14047	135.00	427	193.00	70
45.00	3317	88.00	12869	136.00	59	196.00	17
46.00	224	90.00	17	137.00	426	199.00	23
47.00	5614	91.00	944	138.00	46	203.00	19
48.00	2275	92.00	8245	139.00	164	205.00	4
49.00	15372	93.00	12137	140.00	220	206.00	10
50.00	74536	94.00	34864	141.00	2659	207.00	237
51.00	22088	95.00	335872	142.00	367	208.00	80
52.00	1029	96.00	22120	143.00	2706	209.00	88
53.00	34	97.00	709	144.00	138	212.00	18
54.00	83	98.00	53	145.00	255	221.00	71
55.00	1238	99.00	67	146.00	489	222.00	22
56.00	4943	102.00	19	148.00	792	249.00	81
57.00	9744	103.00	147	149.00	213	253.00	124
58.00	396	104.00	1106	150.00	387	254.00	61
59.00	164	105.00	208	151.00	55	255.00	17
60.00	3208	106.00	1069	152.00	182	256.00	30
61.00	15534	107.00	266	153.00	272	257.00	12
62.00	14454	109.00	31	154.00	228	263.00	17
63.00	10830	110.00	123	155.00	928	267.00	16
64.00	925	111.00	266	156.00	75	268.00	44
65.00	182	112.00	75	157.00	554	269.00	364
66.00	74	113.00	229	158.00	93	270.00	87
67.00	957	115.00	345	159.00	352	274.00	17

Report Date: 22-Mar-2018 15:22:12 Chrom Revision: 2.2 13-Mar-2018 08:45:20
Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211802.D\8260MeOHSoil_SEA102B.rslt\spe
Injection Date: 21-Mar-2018 11:40:30
Spectrum: Tune Spec :Average 1564-1566(13.40-13.41) Bgrd 1556(13.35)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 167

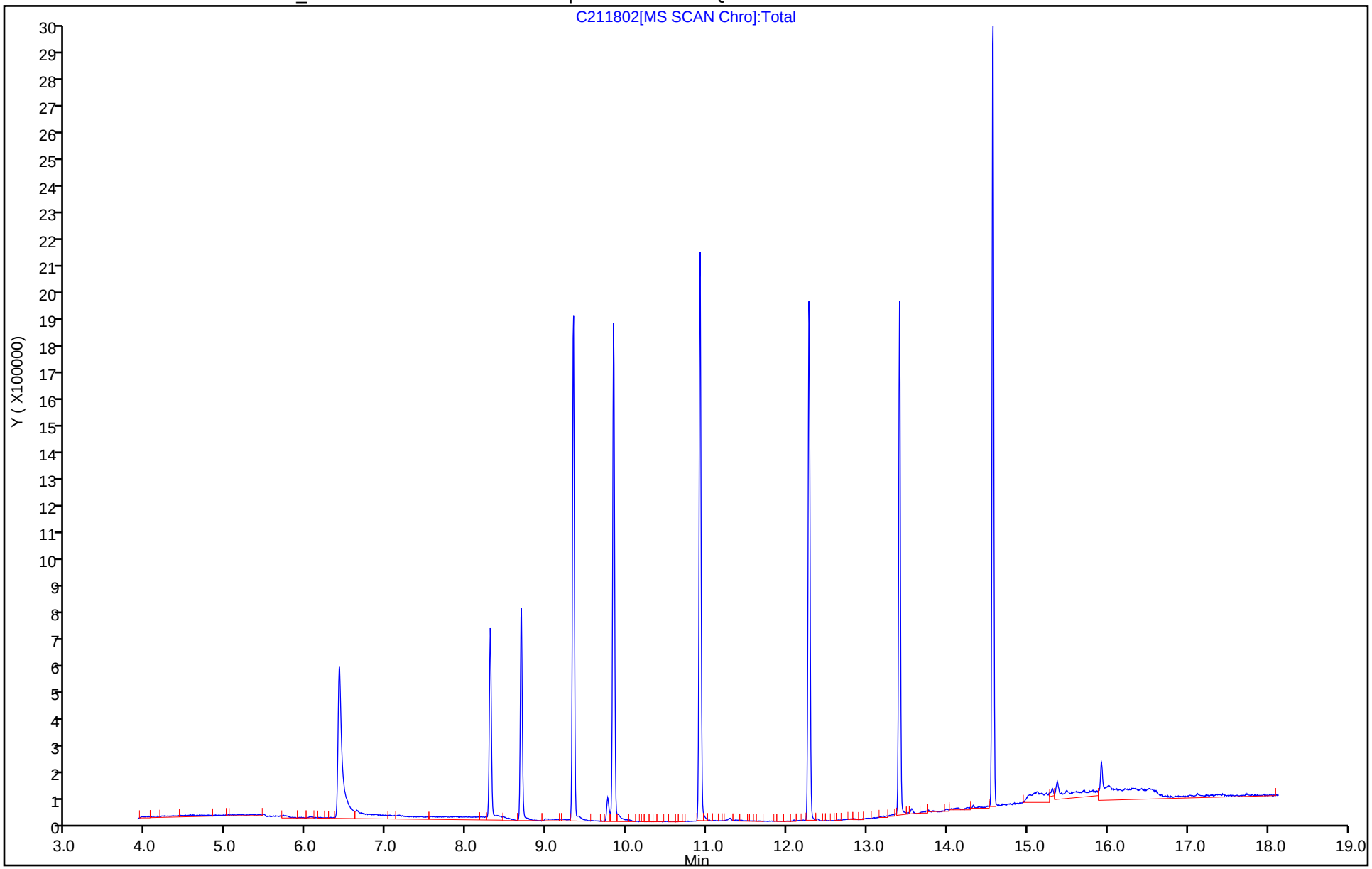
m/z	Y	m/z	Y	m/z	Y	m/z	Y
68.00	32176	116.00	1047	161.00	337	280.00	16
69.00	31800	117.00	1723	163.00	38	281.00	144
70.00	2556	118.00	1001	165.00	46	282.00	25
71.00	138	119.00	1567	166.00	62	283.00	76
72.00	1608	120.00	63	168.00	22	284.00	85
73.00	13553	122.00	12	170.00	139	293.00	20
74.00	51784	123.00	154	171.00	72	296.00	40
75.00	163008	124.00	162	172.00	299	297.00	11
76.00	13827	125.00	110	174.00	298176		

Report Date: 22-Mar-2018 15:22:12 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180321-57941.b\C211802.D

Injection Date:	21-Mar-2018 11:40:30	Instrument ID:	SEA102	Operator ID:	RSB
Lims ID:	BFB			Worklist Smp#:	2
Client ID:					
Injection Vol:	5.0 mL	Dil. Factor:	1.0000	ALS Bottle#:	2
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



Report Date: 26-Mar-2018 11:17:05 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241827.D
Lims ID: BFB
Client ID:
Sample Type: BFB
Inject. Date: 25-Mar-2018 02:23:30 ALS Bottle#: 27 Worklist Smp#: 2
Injection Vol: 5.0 mL Dil. Factor: 1.0000
Sample Info: BFB
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 11:17:02 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:17:02

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
* 16 TBA-d9 (IS)	65	6.411	6.411	0.000	0	1036003	975.0	975.0	
$ 43 Dibromofluoromethane (Surr	113	8.296	8.296	0.000	93	346700	48.8	47.4	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.680	8.680	0.000	0	448099	48.8	50.1	
* 54 Fluorobenzene (IS)	96	9.336	9.336	0.000	98	1371936	48.8	48.8	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.835	0.000	90	705512	50.0	50.1	
$ 73 Toluene-d8 (Surr)	98	10.918	10.918	0.000	95	1302978	48.8	48.9	
* 85 Chlorobenzene-d5	82	12.274	12.274	0.000	88	588743	48.8	48.8	
$ 97 4-Bromofluorobenzene (Surr	95	13.405	13.405	0.000	91	535518	48.8	46.9	
* 109 1,4-Dichlorobenzene-d4	152	14.566	14.566	0.000	97	618491	48.8	48.8	
$ 125 BFB	95	13.405	13.405	0.000	91	535518	NR	NR	

QC Flag Legend

Processing Flags
NR - Missing Quant Standard

Reagents:

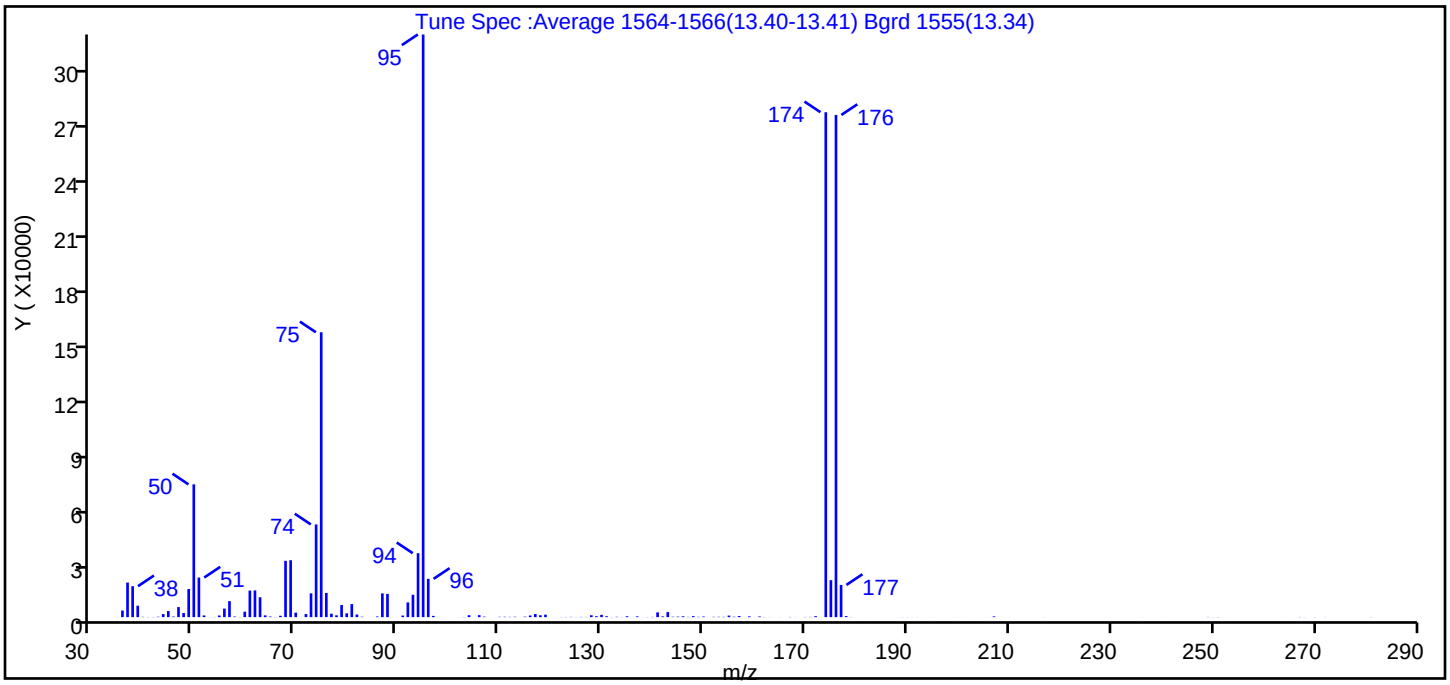
BFB_00002 Amount Added: 1.00 Units: uL
SURR/IS/TFT_00100 Amount Added: 1.00 Units: uL Run Reagent

MS Tune Report

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241827.D
Injection Date: 25-Mar-2018 02:23:30 Instrument ID: SEA102
Lims ID: BFB
Client ID:
Operator ID: JSM ALS Bottle#: 27 Worklist Smp#: 2
Injection Vol: 5.0 mL Dil. Factor: 1.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Tune Method: BFB Method 8260

$ 125 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	22.8
75	30 to 60% of m/z 95	48.9
96	5 to 9% of m/z 95	6.6
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	86.7
175	5 to 9% of m/z 174	6.3 (7.3)
176	Greater than 95% but less than 101% of m/z 174	86.2 (99.5)
177	5 to 9% of m/z 176	5.5 (6.4)

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241827.D\8260MeOHSoil_SEA102B.rslt\spe
Injection Date: 25-Mar-2018 02:23:30
Spectrum: Tune Spec :Average 1564-1566(13.40-13.41) Bgrd 1555(13.34)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 161

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	35	76.00	12956	127.00	112	170.00	103
36.00	3542	77.00	1849	128.00	1006	171.00	123
37.00	18512	78.00	987	129.00	498	172.00	519
38.00	16560	79.00	6489	130.00	1223	174.00	270208
39.00	6116	80.00	2054	131.00	473	175.00	19784
40.00	154	81.00	6983	132.00	66	176.00	268736
41.00	82	82.00	1429	133.00	177	177.00	17248
42.00	98	83.00	209	134.00	59	178.00	563
43.00	215	85.00	19	135.00	473	179.00	61
44.00	1638	86.00	356	136.00	23	183.00	21
45.00	3250	87.00	12709	137.00	406	188.00	20
46.00	318	88.00	12429	138.00	19	189.00	55
47.00	5382	91.00	847	139.00	71	190.00	41
48.00	2205	92.00	7879	140.00	119	191.00	25
49.00	15065	93.00	11978	141.00	2555	192.00	29
50.00	71056	94.00	34232	142.00	379	194.00	19
51.00	21200	95.00	311808	143.00	2716	195.00	18
52.00	920	96.00	20496	144.00	208	199.00	19
53.00	38	97.00	673	145.00	280	200.00	18
54.00	63	98.00	41	146.00	454	201.00	17
55.00	873	99.00	17	147.00	148	205.00	19
56.00	4579	102.00	19	148.00	538	206.00	21
57.00	8562	103.00	80	149.00	173	207.00	404
58.00	313	104.00	1029	150.00	338	210.00	21
59.00	79	106.00	1072	151.00	6	217.00	29
60.00	2921	107.00	266	152.00	166	236.00	23
61.00	14218	110.00	171	153.00	188	240.00	20
62.00	14296	111.00	212	154.00	151	249.00	97
63.00	10644	112.00	149	155.00	836	250.00	39
64.00	949	113.00	220	156.00	220	251.00	80
65.00	327	115.00	253	157.00	591	252.00	18
66.00	84	116.00	888	159.00	424	253.00	9
67.00	741	117.00	1679	160.00	17	264.00	17

Report Date: 26-Mar-2018 11:17:05 Chrom Revision: 2.2 13-Mar-2018 08:45:20
Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241827.D\8260MeOHSoil_SEA102B.rslt\spe
Injection Date: 25-Mar-2018 02:23:30
Spectrum: Tune Spec :Average 1564-1566(13.40-13.41) Bgrd 1555(13.34)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 161

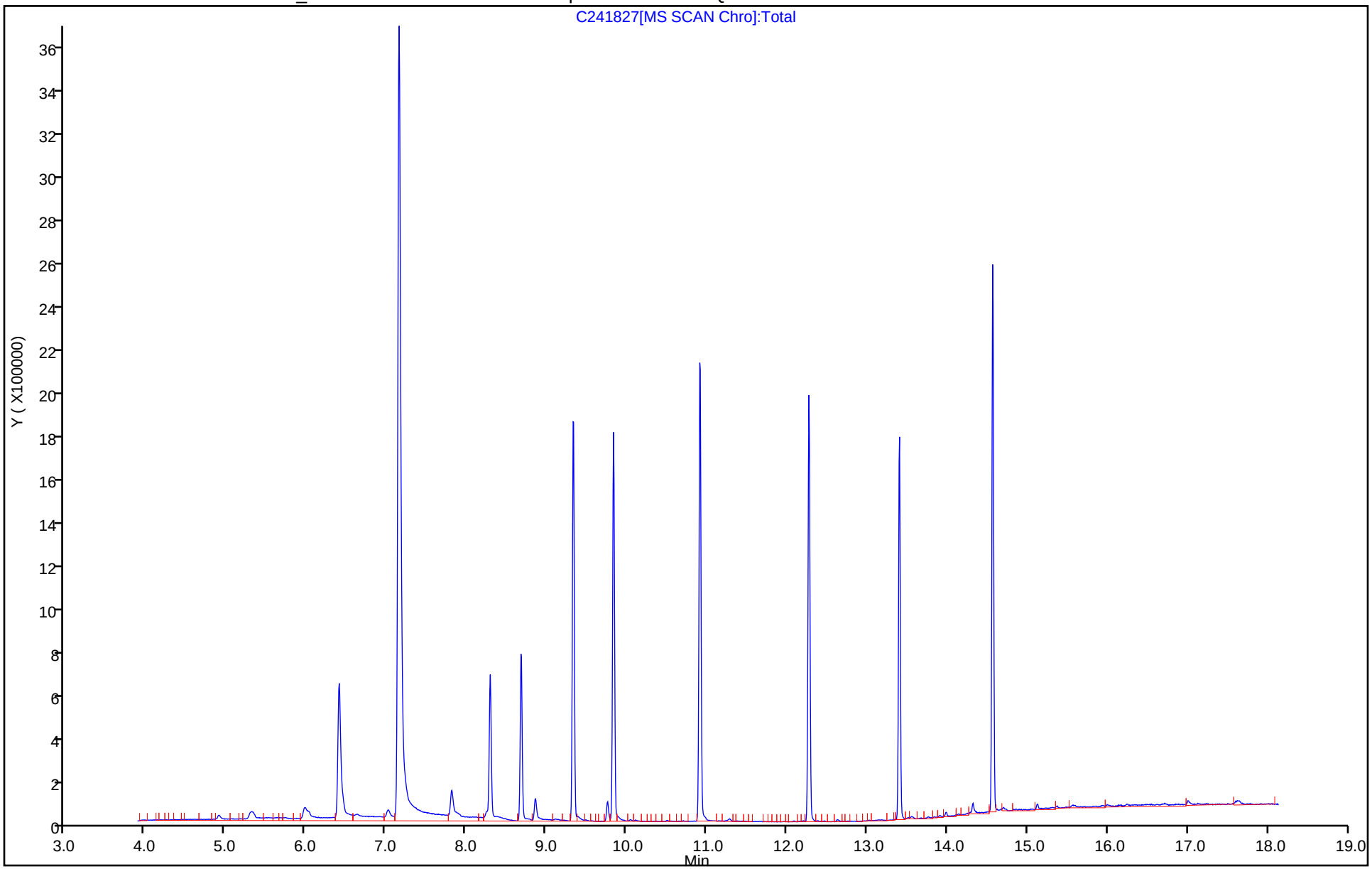
m/z	Y	m/z	Y	m/z	Y	m/z	Y
68.00	30144	118.00	1015	161.00	361	267.00	85
69.00	30456	119.00	1304	162.00	57	268.00	40
70.00	2412	121.00	21	163.00	42	270.00	59
71.00	27	122.00	64	164.00	4	272.00	36
72.00	1642	123.00	89	165.00	31	281.00	63
73.00	12741	124.00	143	167.00	112		
74.00	49624	125.00	50	168.00	42		
75.00	152448	126.00	124	169.00	5		

Report Date: 26-Mar-2018 11:17:05 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241827.D

Injection Date:	25-Mar-2018 02:23:30	Instrument ID:	SEA102	Operator ID:	JSM
Lims ID:	BFB			Worklist Smp#:	2
Client ID:					
Injection Vol:	5.0 mL	Dil. Factor:	1.0000	ALS Bottle#:	27
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: LB3 280-408888/1-A

Matrix: Water (TCLP) | Lab File ID: R7875.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 2(mL) | Date Analyzed: 03/27/2018 12:40

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 (60.25) ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 409141 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
71-43-2	Benzene	0.0040	U	0.010	0.0040	0.0016
78-93-3	2-Butanone (MEK)	0.040	U	0.10	0.040	0.018
56-23-5	Carbon tetrachloride	0.0040	U	0.010	0.0040	0.0019
108-90-7	Chlorobenzene	0.0040	U	0.010	0.0040	0.0017
67-66-3	Chloroform	0.0040	U	0.010	0.0040	0.0016
107-06-2	1,2-Dichloroethane	0.0040	U	0.010	0.0040	0.0013
75-35-4	1,1-Dichloroethene	0.0080	U	0.010	0.0080	0.0023
127-18-4	Tetrachloroethene	0.0040	U	0.010	0.0040	0.0020
79-01-6	Trichloroethene	0.0040	U	0.010	0.0040	0.0016
75-01-4	Vinyl chloride	0.0020	U	0.010	0.0020	0.0010

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	100		78-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	86		64-129
460-00-4	4-Bromofluorobenzene (Surr)	102		78-121
1868-53-7	Dibromofluoromethane (Surr)	95		79-119

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7875.D
Lims ID: LB3 280-408888/1-A
Client ID:
Sample Type: LB3
Inject. Date: 27-Mar-2018 12:40:30 ALS Bottle#: 26 Worklist Smp#: 22
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: LB3 280-408888/1-A 2ml af
Operator ID: wickhamt Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 27-Mar-2018 14:03:00 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK022

First Level Reviewer: wickhamt Date: 27-Mar-2018 13:20:11

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	145732	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.154	0.000	99	1891184	12.5	12.5	
* 149 1,4-Dioxane-d8	96		8.013					ND	
* 2 Chlorobenzene-d5	119	9.453	9.453	0.000	87	405557	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	544295	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.609	-0.007	93	428092	11.3	10.7	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.889	6.896	-0.007	0	362622	11.3	9.69	
$ 7 Toluene-d8 (Surr)	98	8.378	8.386	-0.008	93	2187801	11.3	11.3	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	86	699182	11.3	11.5	
$ 152 Trifluorotoluene (Surr)	1		0.000					ND	
$ 4 BFB	95		4.235					ND	
22 Chlorotrifluoroethene	116		3.559					ND	
23 Dichlorodifluoromethane	85		3.615					ND	
24 1,2-Dichloro-1,1,2,2-tetra	85		3.755					ND	
26 Chloromethane	50		3.839					ND	
27 Vinyl chloride	62		3.965					ND	
25 2-Chloro-1,1,1-Trifluoroet	118		3.979					ND	
28 Ethylene oxide	43		4.231					ND	
29 Bromomethane	94		4.300					ND	
30 Chloroethane	64		4.342					ND	
31 Dichlorofluoromethane	67		4.482					ND	
32 Trichlorofluoromethane	101		4.552					ND	
33 Ethanol	45		4.580					ND	
36 1,2-Dichloro-1,1,2-trifluo	117		4.706					ND	
35 Ethyl ether	59	4.720	4.734	-0.014	89	6781		0.3092	
37 1,1,1-Trifluoro-2,2-dichlo	83		4.734					ND	
38 Propene oxide	58		4.818					ND	
39 Acrolein	56		4.846					ND	
41 Acetone	43	4.944	4.958	-0.014	96	7651		0.8241	
42 Isopropyl alcohol	45		4.972					ND	U
43 1,1-Dichloroethene	96		4.986					ND	
40 1,1,2-Trichloro-1,2,2-trif	151		4.986					ND	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
44 Iodomethane	142		5.154					ND	
46 Acetonitrile	41		5.168					ND	
45 Methyl acetate	43		5.182					ND	
47 3-Chloro-1-propene	41		5.238					ND	
48 Carbon disulfide	76		5.252					ND	
49 2-Methyl-2-propanol	59		5.294					ND	
50 Methylene Chloride	84	5.322	5.322	0.000	93	59077		1.23	
52 Acrylonitrile	53		5.462					ND	
51 Methyl tert-butyl ether	73		5.518					ND	
53 trans-1,2-Dichloroethene	96		5.546					ND	
54 Hexane	57		5.714					ND	
55 Vinyl acetate	43		5.798					ND	
56 Isopropyl ether	87		5.826					ND	
57 1,1-Dichloroethane	63		5.853					ND	
58 2-Chloro-1,3-butadiene	53		5.924					ND	
59 Tert-butyl ethyl ether	59		6.101					ND	
61 2-Butanone (MEK)	43		6.222					ND	
60 Ethyl acetate	43		6.222					ND	
62 sec-Butyl Alcohol	45		6.272					ND	
65 Propionitrile	54		6.273					ND	
63 cis-1,2-Dichloroethene	96		6.280					ND	
64 2,2-Dichloropropane	77		6.315					ND	
66 Methacrylonitrile	41		6.394					ND	
67 Chlorobromomethane	128		6.466					ND	
68 Chloroform	83		6.480					ND	
69 Tetrahydrofuran	42		6.509					ND	
70 Isobutyl alcohol	41		6.681					ND	
71 1,1,1-Trichloroethane	97		6.702					ND	
72 Cyclohexane	56		6.781					ND	
73 1,1-Dichloropropene	75		6.810					ND	
74 Carbon tetrachloride	117		6.845					ND	
76 1,2-Dichloroethane	62		6.953					ND	
77 Benzene	78		6.982					ND	
75 Tert-amyl methyl ether	73		6.982					ND	
14 n-Heptane	43		7.082					ND	
78 n-Butanol	56		7.182					ND	U
79 Trichloroethene	95		7.447					ND	
80 2-Pentanone	43		7.483					ND	
81 Methyl methacrylate	100		7.583					ND	
83 1,2-Dichloropropane	63		7.626					ND	
82 Methylcyclohexane	55		7.648					ND	
84 1,4-Dioxane	88		7.684					ND	
85 Dibromomethane	93		7.727					ND	
86 Dichlorobromomethane	83		7.805					ND	
88 2-Nitropropane	41		7.942					ND	
87 2-Chloroethyl vinyl ether	63		7.963					ND	
89 cis-1,3-Dichloropropene	75		8.142					ND	
90 4-Methyl-2-pentanone (MIBK	43		8.206					ND	
91 Toluene	91		8.436					ND	
93 trans-1,3-Dichloropropene	75		8.529					ND	
92 Ethyl methacrylate	69		8.529					ND	
94 1,1,2-Trichloroethane	97		8.686					ND	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
95 2-Hexanone	43		8.815					ND	
96 1,3-Dichloropropane	76		8.830					ND	
97 Tetrachloroethene	164		8.865					ND	
98 Chlorodibromomethane	129		9.016					ND	
99 Tetrahydrothiophene	60		9.059					ND	
100 Ethylene Dibromide	107		9.138					ND	
101 1-Chlorohexane	91		9.374					ND	
102 Chlorobenzene	112		9.474					ND	
104 1,1,1,2-Tetrachloroethane	131		9.510					ND	
103 Ethylbenzene	106		9.517					ND	
105 m-Xylene & p-Xylene	106		9.589					ND	
106 Styrene	104		9.897					ND	
107 o-Xylene	106		9.897					ND	
108 Bromoform	173		10.083					ND	
109 Isopropylbenzene	105		10.155					ND	
110 cis-1,4-Dichloro-2-butene	53		10.169					ND	
111 Cyclohexanone	55		10.262					ND	U
112 1,1,2,2-Tetrachloroethane	83		10.341					ND	
113 trans-1,4-Dichloro-2-buten	53		10.377					ND	
114 1,2,3-Trichloropropane	110		10.405					ND	
116 Bromobenzene	156		10.448					ND	
115 N-Propylbenzene	120		10.463					ND	
117 1,3,5-Trimethylbenzene	105		10.570					ND	
118 2-Chlorotoluene	126		10.570					ND	
119 4-Chlorotoluene	126		10.649					ND	
120 tert-Butylbenzene	119		10.857					ND	
121 1,2,4-Trimethylbenzene	105		10.885					ND	
122 sec-Butylbenzene	134		11.029					ND	
123 4-Isopropyltoluene	119		11.115					ND	
124 1,3-Dichlorobenzene	146		11.172					ND	
126 1,4-Dichlorobenzene	146		11.236					ND	
125 1,2,3-Trimethylbenzene	105		11.244					ND	
127 n-Butylbenzene	91		11.458					ND	
128 1,2-Dichlorobenzene	146		11.573					ND	
129 1,2-Dibromo-3-Chloropropan	157		12.261					ND	
16 1,3,5-Trichlorobenzene	180		12.476					ND	
130 1,2,4-Trichlorobenzene	180		13.149					ND	
131 Hexachlorobutadiene	225		13.299					ND	
132 Naphthalene	128		13.478					ND	
133 1,2,3-Trichlorobenzene	180		13.772					ND	
13 2,2-Dimethylpentane	1		0.000					ND	
9 2,4-Dimethylpentane	1		0.000					ND	
11 2,3-Dimethylpentane	1		0.000					ND	
17 3-Ethylpentane	1		0.000					ND	
12 2,2,3-Trimethylbutane	1		0.000					ND	
20 2-Methylhexane	1		0.000					ND	
18 3,3-Dimethylpentane	1		0.000					ND	
143 Pentachloroethane	167		0.000					ND	
10 n-Nonyl Aldehyde	1		0.000					ND	
15 Dimethyl disulfide	1		0.000					ND	
19 3-Methylhexane	1		0.000					ND	
34 Propene oxide TIC	58		5.334					ND	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
S 140 1,2-Dichloroethene, Total	96		2.000				ND		
S 136 Total BTEX	1		0.000				ND		
S 137 1,3-Dichloropropene, Total	1		0.000				ND		
S 134 Trihalomethanes, Total	1		0.000				ND		
S 139 Xylenes, Total	106		0.000				ND		
S 156 TAH	1				0			0	
S 135 Xylenes, Total (URS)	1		0.000				ND		
S 138 1,2-Dichloroethene, Total	1		0.000				ND		
T 141 Dichloroacetonitrile TIC	74		1.000				ND		
T 163 Methyl cyclohexane TIC	1		0.000				ND		
T 142 2,3-dichloro-1-propene TIC	75		0.000				ND		
T 161 n-Nonane TIC	1		0.000				ND		
T 157 Propene TIC	1		0.000				ND		
T 158 Dicyclopentadiene TIC	1		0.000				ND		
T 164 Cyclohexane TIC	1		0.000				ND		
T 162 1-Chlorohexane TIC	1		0.000				ND		
T 160 1,3-Butadiene TIC	1		0.000				ND		
T 159 4-Ethyltoluene TIC	1		0.000				ND		
T 21 2-Butoxyethanol TIC	1		0.000				ND		

QC Flag Legend

Review Flags

U - Marked Undetected

Reagents:

MV-568718-D_00014	Amount Added:	1.00	Units: uL	Run Reagent
MV-ARCH SS A_00091	Amount Added:	0.90	Units: uL	Run Reagent

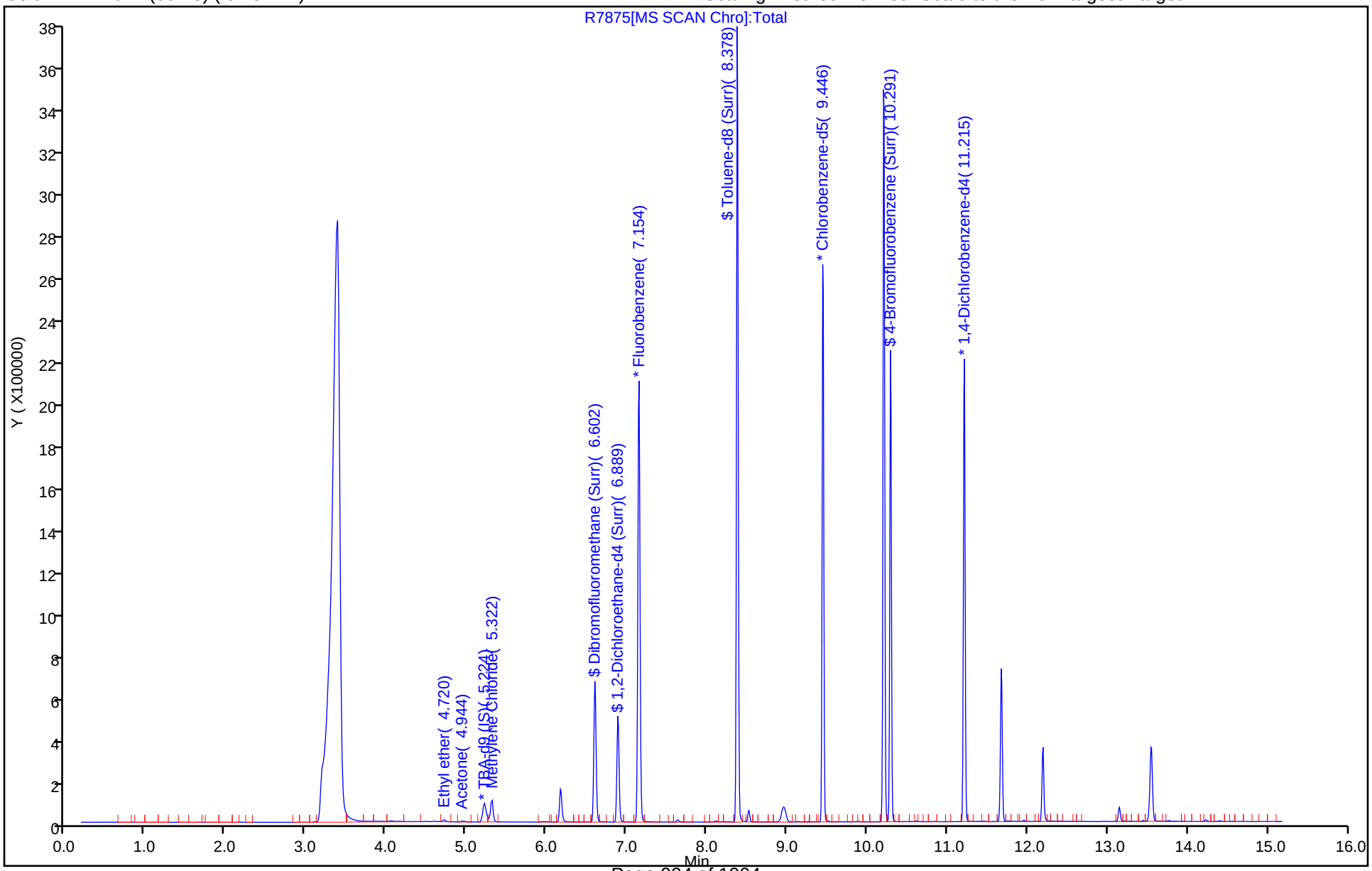
Report Date: 27-Mar-2018 14:14:30 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7875.D

Injection Date:	27-Mar-2018 12:40:30	Instrument ID:	VMS_R1	Operator ID:	wickhamt
Lims ID:	LB3 280-408888/1-A			Worklist Smp#:	22
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	26
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7875.D
Lims ID: LB3 280-408888/1-A
Client ID:
Sample Type: LB3
Inject. Date: 27-Mar-2018 12:40:30 ALS Bottle#: 26 Worklist Smp#: 22
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: LB3 280-408888/1-A 2ml af
Operator ID: wickhamt Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 27-Mar-2018 14:03:00 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK022

First Level Reviewer: wickhamt Date: 27-Mar-2018 13:20:11

Compound	Amount Added	Amount Recovered	% Rec.
$ 5 Dibromofluoromethane (Surr)	11.3	10.7	95.21
$ 6 1,2-Dichloroethane-d4 (Surr)	11.3	9.69	86.13
$ 7 Toluene-d8 (Surr)	11.3	11.3	100.13
$ 8 4-Bromofluorobenzene (Surr)	11.3	11.5	102.47

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 580-269508/1-A

Matrix: Solid (TCLP) | Lab File ID: C241830.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 03/25/2018 03:49

Soil Aliquot Vol: | Dilution Factor: 100

Soil Extract Vol.: | GC Column: DB-VRX ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269828 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
71-43-2	Benzene	200	U M	300	200	53
78-93-3	2-Butanone (MEK)	1000	U	2000	1000	470
56-23-5	Carbon tetrachloride	100	U	300	100	30
108-90-7	Chlorobenzene	100	U	200	100	44
67-66-3	Chloroform	100	U	500	100	50
107-06-2	1,2-Dichloroethane	200	U	200	200	53
75-35-4	1,1-Dichloroethene	200	U	400	200	78
127-18-4	Tetrachloroethene	100	U	300	100	41
79-01-6	Trichloroethene	200	U	300	200	85
75-01-4	Vinyl chloride	50	U	100	50	22

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	101		80-122
17060-07-0	1,2-Dichloroethane-d4 (Surr)	103		80-126
460-00-4	4-Bromofluorobenzene (Surr)	95		75-125
1868-53-7	Dibromofluoromethane (Surr)	98		77-120

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241830.D
Lims ID: MB 580-269508/1-A
Client ID:
Sample Type: MB
Inject. Date: 25-Mar-2018 03:49:30 ALS Bottle#: 30 Worklist Smp#: 6
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Sample Info: mb 580-269508/1-a
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 11:28:00 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:28:00

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
14 Isopropyl alcohol	45	5.985	5.985	0.025	26	77234		92.4	M
8 Ethanol	45	5.985	5.998	-0.013	79	123302		NC	
13 Acetone	43	6.040	6.040	0.007	98	34974		8.35	M
* 16 TBA-d9 (IS)	65	6.411	6.411	0.000	0	1086004	975.0	975.0	
22 Methyl acetate	43	6.660	6.660	0.000	92	2411		0.2493	M
32 Hexane	57	7.822	7.846	-0.024	37	5277		0.5270	
34 2-Butanone (MEK)	72	7.864	7.864	0.000	97	1262		1.24	
41 Isobutyl alcohol	43	8.248	8.248	0.007	94	13195		16.0	M
$ 43 Dibromofluoromethane (Surr	113	8.296	8.296	0.000	94	340041	48.8	47.6	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.679	8.680	-0.001	0	440562	48.8	50.4	
46 1,2-Dichloroethane	62	8.746	8.746	0.000	90	2379		0.2089	
49 n-Butanol	56	8.862	8.849	0.013	94	58242		149.6	
* 54 Fluorobenzene (IS)	96	9.336	9.336	0.000	98	1340120	48.8	48.8	
57 n-Heptane	43	9.561	9.560	0.001	95	1149		0.1483	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.835	0.000	90	688745	50.0	50.0	
S 70 Xylenes, Total	106				0			0.0479	
$ 73 Toluene-d8 (Surr)	98	10.911	10.918	-0.007	95	1252759	48.8	49.1	
76 Toluene	92	10.978	10.984	-0.006	98	1567		0.0878	
* 85 Chlorobenzene-d5	82	12.273	12.274	-0.001	88	562755	48.8	48.8	
87 Ethylbenzene	106	12.468	12.467	0.001	95	627		0.0600	
88 m-Xylene & p-Xylene	91	12.632	12.638	-0.006	71	2989		0.1136	
91 o-Xylene	106	13.027	13.021	0.006	95	648		0.0479	
$ 97 4-Bromofluorobenzene (Surr	95	13.405	13.405	0.000	91	506541	48.8	46.4	
99 N-Propylbenzene	120	13.745	13.744	0.001	98	407		0.0554	
102 1,3,5-Trimethylbenzene	105	13.976	13.976	-0.006	51	1225		0.0503	M
104 tert-Butylbenzene	119	14.238	14.238	-0.005	49	792		0.0412	M
105 1,2,4-Trimethylbenzene	105	14.335	14.335	0.001	54	1668		0.0637	M
106 sec-Butylbenzene	105	14.444	14.438	0.006	84	1383		0.0509	
* 109 1,4-Dichlorobenzene-d4	152	14.566	14.566	0.000	97	589641	48.8	48.8	
110 4-Isopropyltoluene	119	14.584	14.584	-0.006	50	2963		0.1816	M
118 1,2,4-Trichlorobenzene	180	16.725	16.725	0.001	45	962		0.0737	M
119 Naphthalene	128	17.011	17.010	0.001	98	11119		0.2401	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
120 Hexachlorobutadiene	190	17.029	17.029	-0.005	47	923		0.5060	M
121 1,2,3-Trichlorobenzene	180	17.236	17.235	0.001	66	1896		0.0965	
$ 125 BFB	95	13.405	13.405	0.000	91	505923		NR	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

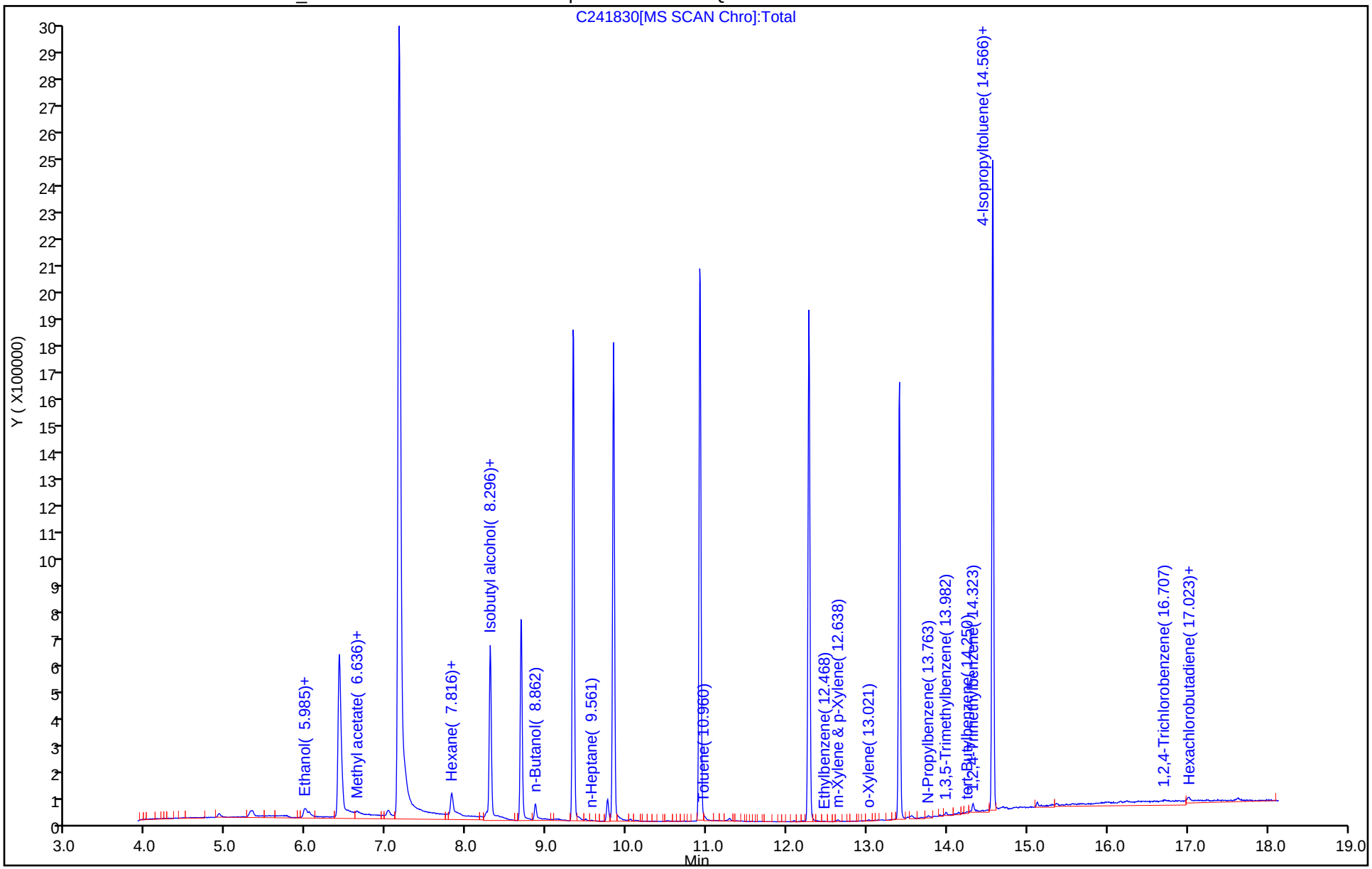
SURR/IS/TFT_00100 Amount Added: 1.00 Units: uL Run Reagent

Report Date: 26-Mar-2018 11:28:00 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241830.D

Injection Date:	25-Mar-2018 03:49:30	Instrument ID:	SEA102	Operator ID:	JSM
Lims ID:	MB 580-269508/1-A			Worklist Smp#:	6
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	100.0000	ALS Bottle#:	30
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



TestAmerica Seattle
Recovery Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241830.D
Lims ID: MB 580-269508/1-A
Client ID:
Sample Type: MB
Inject. Date: 25-Mar-2018 03:49:30 ALS Bottle#: 30 Worklist Smp#: 6
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Sample Info: mb 580-269508/1-a
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 11:28:00 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:28:00

Compound	Amount Added	Amount Recovered	% Rec.
$ 43 Dibromofluoromethane (Surr)	48.8	47.6	97.69
$ 45 1,2-Dichloroethane-d4 (Surr)	48.8	50.4	103.45
$ 64 Trifluorotoluene (Surr)	50.0	50.0	100.12
$ 73 Toluene-d8 (Surr)	48.8	49.1	100.80
$ 97 4-Bromofluorobenzene (Surr)	48.8	46.4	95.19
$ 125 BFB	0	0	0.00

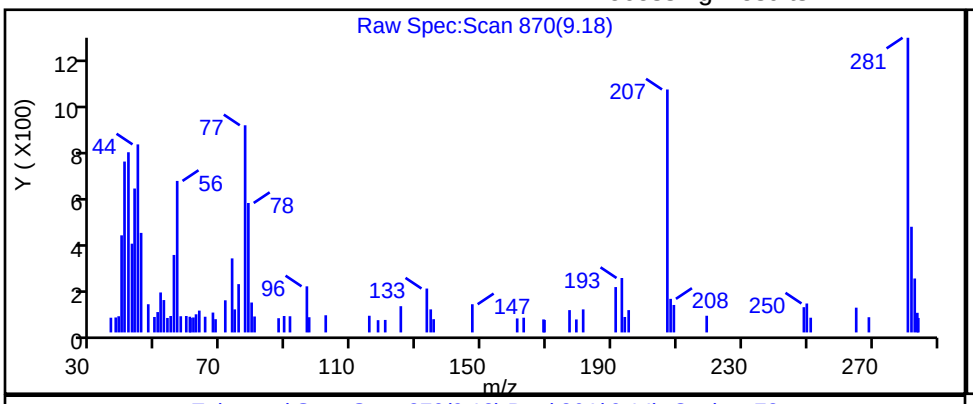
User Disabled Compound Report

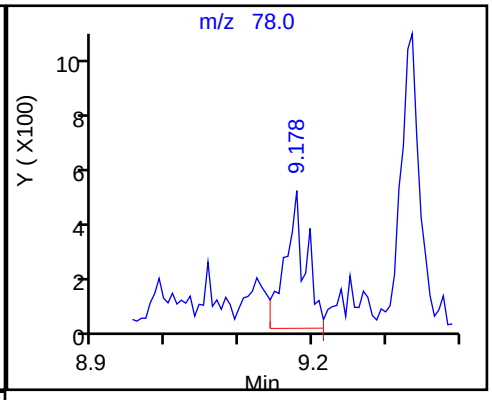
TestAmerica Seattle

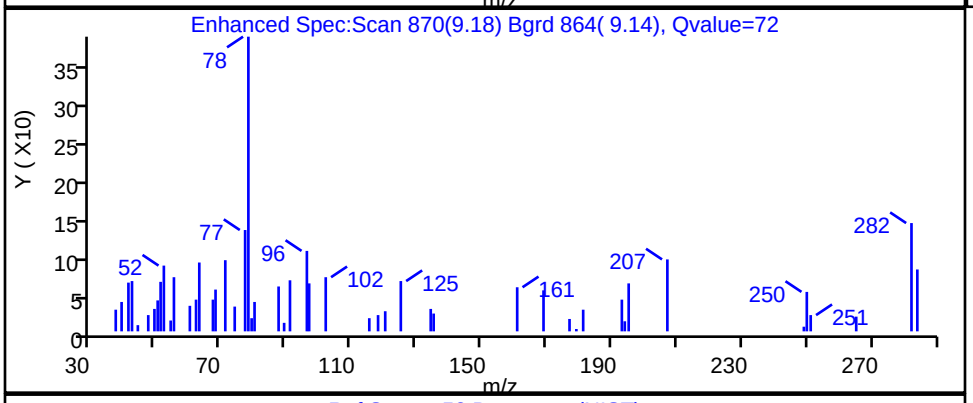
Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241830.D
Injection Date: 25-Mar-2018 03:49:30 Instrument ID: SEA102
Lims ID: MB 580-269508/1-A
Client ID:
Operator ID: JSM ALS Bottle#: 30 Worklist Smp#: 6
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Method: 8260MeOHSoil_SEA102B Limit Group: 8260B QSM 5.0
Column: Detector MS SCAN

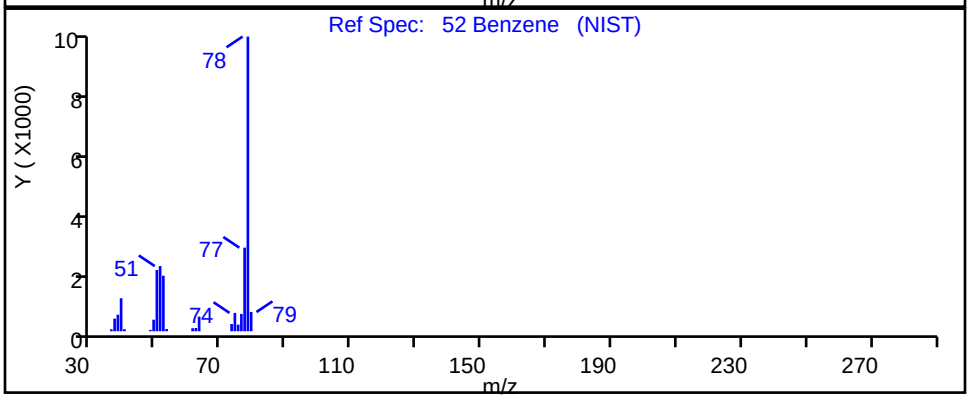
52 Benzene, CAS: 71-43-2

Processing Results









RT	Mass	Response	Amount
9.18	78.00	928	0.030900

Reviewer: pimtongp, 26-Mar-2018 11:28:00
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-408888/2-A

Matrix: Water (TCLP) | Lab File ID: R7874.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 2(mL) | Date Analyzed: 03/27/2018 12:21

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 (60.25) ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 409141 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
71-43-2	Benzene	0.0458		0.010	0.0040	0.0016
78-93-3	2-Butanone (MEK)	0.163		0.10	0.040	0.018
56-23-5	Carbon tetrachloride	0.0480		0.010	0.0040	0.0019
108-90-7	Chlorobenzene	0.0458		0.010	0.0040	0.0017
67-66-3	Chloroform	0.0452		0.010	0.0040	0.0016
107-06-2	1,2-Dichloroethane	0.0418		0.010	0.0040	0.0013
75-35-4	1,1-Dichloroethene	0.0447		0.010	0.0080	0.0023
127-18-4	Tetrachloroethene	0.0469		0.010	0.0040	0.0020
79-01-6	Trichloroethene	0.0440		0.010	0.0040	0.0016
75-01-4	Vinyl chloride	0.0551		0.010	0.0020	0.0010

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	100		78-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	84		64-129
460-00-4	4-Bromofluorobenzene (Surr)	97		78-121
1868-53-7	Dibromofluoromethane (Surr)	95		79-119

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7874.D
Lims ID: LCS 280-408888/2-A
Client ID:
Sample Type: LCS
Inject. Date: 27-Mar-2018 12:21:30 ALS Bottle#: 25 Worklist Smp#: 21
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: LCS 280-408888/2-A 2ml af
Operator ID: wickhamt Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 27-Mar-2018 14:03:00 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK022

First Level Reviewer: wickhamt Date: 27-Mar-2018 13:18:49

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
* 150 TBA-d9 (IS)	65	5.224	5.224	0.000	0	154706	250.0	250.0	
* 1 Fluorobenzene	96	7.154	7.154	0.000	99	2020733	12.5	12.5	
* 2 Chlorobenzene-d5	119	9.446	9.453	-0.007	87	438067	12.5	12.5	
* 3 1,4-Dichlorobenzene-d4	152	11.215	11.215	0.000	96	618423	12.5	12.5	
$ 5 Dibromofluoromethane (Surr	111	6.602	6.609	-0.007	93	455738	11.3	10.7	
$ 6 1,2-Dichloroethane-d4 (Sur	65	6.889	6.896	-0.008	0	379090	11.3	9.48	
$ 7 Toluene-d8 (Surr)	98	8.378	8.386	-0.008	93	2350164	11.3	11.2	
$ 8 4-Bromofluorobenzene (Surr	95	10.291	10.291	0.000	86	753743	11.3	10.9	
23 Dichlorodifluoromethane	85	3.601	3.615	-0.014	99	345704	5.00	5.64	
26 Chloromethane	50	3.839	3.839	0.000	99	254532	5.00	5.47	
27 Vinyl chloride	62	3.965	3.965	0.000	98	283090	5.00	5.51	
29 Bromomethane	94	4.300	4.300	0.000	90	207513	5.00	5.65	
30 Chloroethane	64	4.342	4.342	0.000	99	170304	5.00	5.20	
31 Dichlorofluoromethane	67	4.482	4.482	0.000	96	471926	5.00	5.94	
32 Trichlorofluoromethane	101	4.552	4.552	0.000	98	449703	5.00	5.87	
35 Ethyl ether	59	4.734	4.734	0.000	87	85568	5.00	3.65	
39 Acrolein	56	4.846	4.846	0.000	100	98801	50.0	41.0	
41 Acetone	43	4.958	4.958	0.000	100	74085	20.0	18.2	
43 1,1-Dichloroethene	96	4.986	4.986	0.000	96	219958	5.00	4.47	
40 1,1,2-Trichloro-1,2,2-trif	151	4.972	4.986	-0.014	95	183826	5.00	4.70	
44 Iodomethane	142	5.154	5.154	0.000	99	317153	5.00	4.60	
45 Methyl acetate	43	5.182	5.182	0.000	98	199799	25.0	19.3	
47 3-Chloro-1-propene	41	5.238	5.238	0.000	83	388650	5.00	4.44	
48 Carbon disulfide	76	5.252	5.252	0.000	99	973338	5.00	4.54	
49 2-Methyl-2-propanol	59	5.294	5.294	0.000	92	45429	50.0	40.5	
50 Methylene Chloride	84	5.322	5.322	0.000	93	251685	5.00	5.65	
52 Acrylonitrile	53	5.462	5.462	0.000	99	208067	50.0	40.5	
51 Methyl tert-butyl ether	73	5.518	5.518	0.000	95	274710	5.00	4.12	
53 trans-1,2-Dichloroethene	96	5.546	5.546	0.000	98	251843	5.00	4.76	
54 Hexane	57	5.714	5.714	0.000	91	421777	5.00	4.32	
55 Vinyl acetate	43	5.798	5.798	0.000	97	325033	10.0	8.44	
57 1,1-Dichloroethane	63	5.854	5.853	0.001	96	427801	5.00	4.51	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
61 2-Butanone (MEK)	43	6.222	6.222	0.000	99	101866	20.0	16.3	
62 sec-Butyl Alcohol	45	6.272	6.272	0.000	94	94059	150.0	131.6	
63 cis-1,2-Dichloroethene	96	6.280	6.280	0.000	80	237776	5.00	4.52	
64 2,2-Dichloropropane	77	6.315	6.315	0.000	92	335774	5.00	5.01	
67 Chlorobromomethane	128	6.466	6.466	0.000	95	68959	5.00	4.47	
68 Chloroform	83	6.480	6.480	0.000	93	368029	5.00	4.52	
69 Tetrahydrofuran	42	6.509	6.509	0.000	86	27498	10.0	6.94	
70 Isobutyl alcohol	41	6.681	6.681	0.000	93	37320	125.0	115.9	
71 1,1,1-Trichloroethane	97	6.702	6.702	0.000	99	367910	5.00	4.79	
72 Cyclohexane	56	6.781	6.781	0.000	91	481605	5.00	4.47	
73 1,1-Dichloropropene	75	6.803	6.810	-0.007	98	371992	5.00	4.71	
74 Carbon tetrachloride	117	6.846	6.845	0.001	96	309772	5.00	4.80	
76 1,2-Dichloroethane	62	6.946	6.953	-0.007	98	176753	5.00	4.18	
77 Benzene	78	6.982	6.982	0.000	95	984960	5.00	4.58	
14 n-Heptane	43	7.075	7.082	-0.007	91	427268	5.00	4.32	
79 Trichloroethene	95	7.440	7.447	-0.007	99	239174	5.00	4.40	
80 2-Pentanone	43	7.476	7.483	-0.007	99	140655	20.0	7.26	
83 1,2-Dichloropropane	63	7.619	7.626	-0.007	96	206550	5.00	4.34	
82 Methylcyclohexane	55	7.648	7.648	0.000	92	389386	5.00	4.39	
84 1,4-Dioxane	88	7.684	7.684	0.000	89	9854	100.0	74.3	
85 Dibromomethane	93	7.719	7.727	-0.008	96	63451	5.00	4.30	
86 Dichlorobromomethane	83	7.798	7.805	-0.007	99	205453	5.00	4.31	
87 2-Chloroethyl vinyl ether	63	7.956	7.963	-0.007	91	21566	5.00	2.02	
89 cis-1,3-Dichloropropene	75	8.142	8.142	0.000	95	240964	5.00	4.07	
90 4-Methyl-2-pentanone (MIBK	43	8.199	8.206	-0.007	96	228244	20.0	15.9	
91 Toluene	91	8.436	8.436	0.000	99	1057727	5.00	4.55	
93 trans-1,3-Dichloropropene	75	8.529	8.529	0.000	98	173071	5.00	3.90	
92 Ethyl methacrylate	69	8.529	8.529	0.000	62	95276	5.00	3.68	
94 1,1,2-Trichloroethane	97	8.686	8.686	0.000	92	97049	5.00	4.38	
95 2-Hexanone	43	8.808	8.815	-0.007	96	148474	20.0	15.5	
96 1,3-Dichloropropane	76	8.823	8.830	-0.007	94	182661	5.00	4.11	
97 Tetrachloroethene	164	8.858	8.865	-0.007	97	205135	5.00	4.69	
98 Chlorodibromomethane	129	9.016	9.016	0.000	90	105637	5.00	4.16	
100 Ethylene Dibromide	107	9.138	9.138	0.000	97	82619	5.00	4.24	
101 1-Chlorohexane	91	9.374	9.374	0.000	98	371637	5.00	4.46	
102 Chlorobenzene	112	9.474	9.474	0.000	94	631794	5.00	4.58	
104 1,1,1,2-Tetrachloroethane	131	9.503	9.510	-0.007	94	176427	5.00	4.73	
103 Ethylbenzene	106	9.517	9.517	0.000	98	397351	5.00	4.61	
105 m-Xylene & p-Xylene	106	9.589	9.589	0.000	0	482386	5.00	4.62	
106 Styrene	104	9.897	9.897	0.000	84	598421	5.00	4.23	
107 o-Xylene	106	9.897	9.897	0.000	89	443574	5.00	4.69	
108 Bromoform	173	10.076	10.083	-0.007	95	40066	5.00	3.81	
109 Isopropylbenzene	105	10.155	10.155	0.000	96	1230248	5.00	4.67	
111 Cyclohexanone	55	10.262	10.262	0.000	91	78334	200.0	165.1	
112 1,1,2,2-Tetrachloroethane	83	10.341	10.341	0.000	95	93254	5.00	4.20	
113 trans-1,4-Dichloro-2-buten	53	10.377	10.377	0.000	85	21268	5.00	4.21	
114 1,2,3-Trichloropropane	110	10.406	10.405	0.001	84	25653	5.00	4.33	
116 Bromobenzene	156	10.449	10.448	0.001	96	208922	5.00	4.65	
115 N-Propylbenzene	120	10.463	10.463	0.000	99	349317	5.00	4.75	
117 1,3,5-Trimethylbenzene	105	10.570	10.570	0.000	89	1010296	5.00	4.75	
118 2-Chlorotoluene	126	10.570	10.570	0.000	91	272401	5.00	4.84	
119 4-Chlorotoluene	126	10.649	10.649	0.000	98	267348	5.00	4.73	

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
120 tert-Butylbenzene	119	10.850	10.857	-0.007	93	1001678	5.00	4.64	
121 1,2,4-Trimethylbenzene	105	10.878	10.885	-0.007	98	988591	5.00	4.67	
122 sec-Butylbenzene	134	11.022	11.029	-0.007	94	274509	5.00	4.66	
123 4-Isopropyltoluene	119	11.115	11.115	0.000	97	1131004	5.00	4.65	
124 1,3-Dichlorobenzene	146	11.172	11.172	0.000	97	462940	5.00	4.62	
126 1,4-Dichlorobenzene	146	11.236	11.236	0.000	95	448517	5.00	4.64	
127 n-Butylbenzene	91	11.459	11.458	0.001	98	1109859	5.00	4.61	
128 1,2-Dichlorobenzene	146	11.573	11.573	0.000	97	356938	5.00	4.54	
129 1,2-Dibromo-3-Chloropropan	157	12.261	12.261	0.000	79	10940	5.00	4.27	
130 1,2,4-Trichlorobenzene	180	13.149	13.149	0.000	94	232005	5.00	4.32	
131 Hexachlorobutadiene	225	13.299	13.299	0.000	97	192345	5.00	4.66	
132 Naphthalene	128	13.479	13.478	0.000	97	253633	5.00	3.78	
133 1,2,3-Trichlorobenzene	180	13.772	13.772	0.000	95	177541	5.00	4.40	
S 140 1,2-Dichloroethene, Total	96				0		10.0	9.28	
S 137 1,3-Dichloropropene, Total	1				0		10.0	7.97	
S 134 Trihalomethanes, Total	1				0		20.0	16.8	
S 139 Xylenes, Total	106				0		10.0	9.31	
S 135 Xylenes, Total (URS)	1				0		10.0	9.31	
S 138 1,2-Dichloroethene, Total	1				0		5.00	9.28	

Reagents:

MV-Main B_00020	Amount Added:	2.50	Units: uL		
MV-Gas/Ket B_00041	Amount Added:	2.50	Units: uL		
MV-SS 2-Cleve_00042	Amount Added:	2.50	Units: uL		
MV-568718-D_00014	Amount Added:	1.00	Units: uL	Run Reagent	
MV-ARCH SS A_00091	Amount Added:	0.90	Units: uL	Run Reagent	

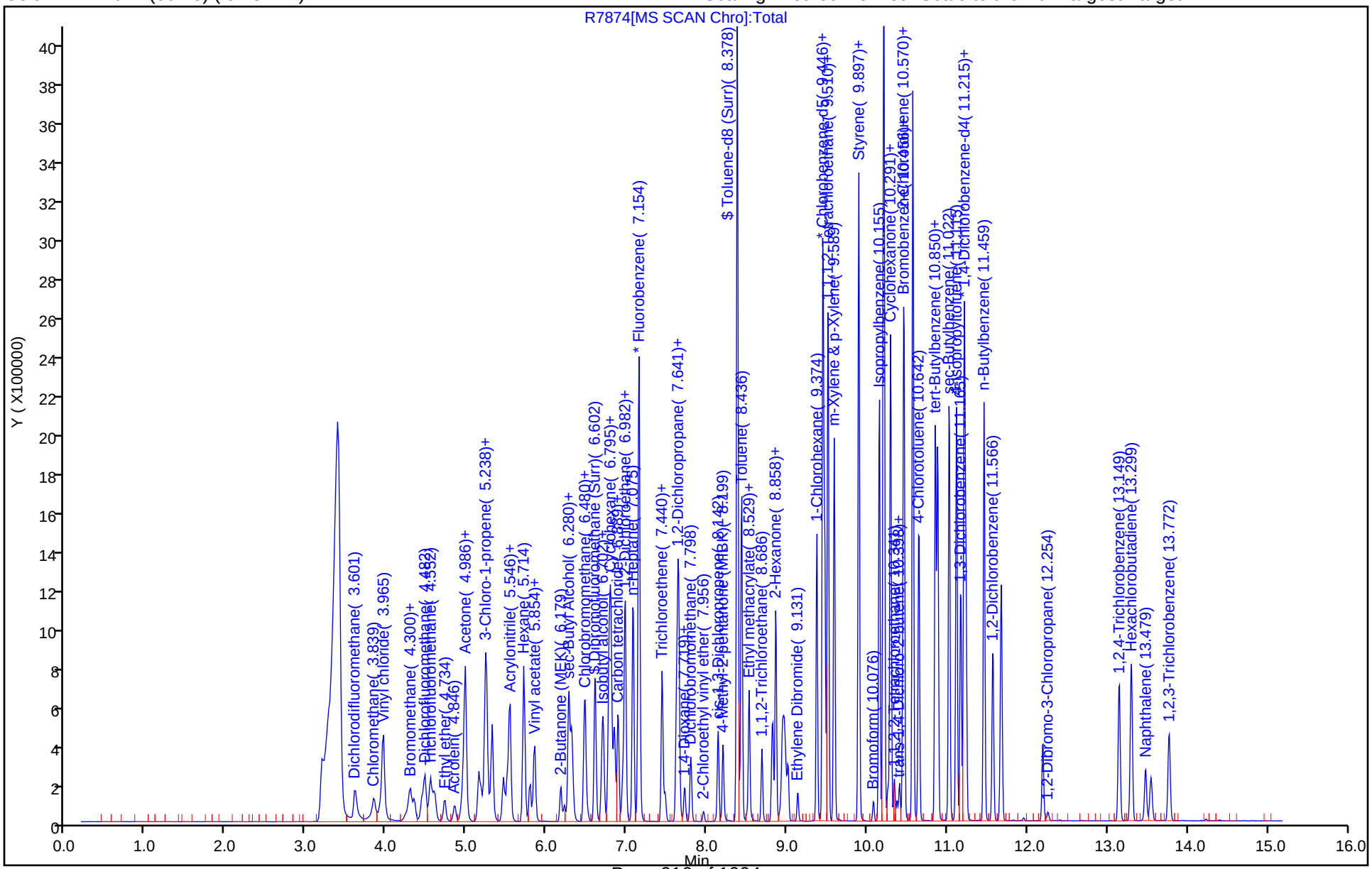
Report Date: 27-Mar-2018 14:14:25 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7874.D

Injection Date:	27-Mar-2018 12:21:30	Instrument ID:	VMS_R1	Operator ID:	wickhamt
Lims ID:	LCS 280-408888/2-A			Worklist Smp#:	21
Client ID:					
Purge Vol:	20.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	25
Method:	AQ_VMSR1_8260	Limit Group:	MSV - 8260B Water and Solid		

Column: DB-624 (60.25) (0.25 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\R7874.D
Lims ID: LCS 280-408888/2-A
Client ID:
Sample Type: LCS
Inject. Date: 27-Mar-2018 12:21:30 ALS Bottle#: 25 Worklist Smp#: 21
Purge Vol: 20.000 mL Dil. Factor: 1.0000
Sample Info: LCS 280-408888/2-A 2ml af
Operator ID: wickhamt Instrument ID: VMS_R1

Method: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b\AQ_VMSR1_8260.m
Limit Group: MSV - 8260B Water and Solid
Last Update: 27-Mar-2018 14:03:00 Calib Date: 15-Mar-2018 20:09:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b\R7386.D

Column 1 : DB-624 (60.25) (0.25 mm) Det: MS SCAN
Process Host: XAWRK022

First Level Reviewer: wickhamt Date: 27-Mar-2018 13:18:49

Compound	Amount Added	Amount Recovered	% Rec.
$ 5 Dibromofluoromethane (Surr)	11.3	10.7	94.86
$ 6 1,2-Dichloroethane-d4 (Surr)	11.3	9.48	84.24
$ 7 Toluene-d8 (Surr)	11.3	11.2	99.57
$ 8 4-Bromofluorobenzene (Surr)	11.3	10.9	97.22

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 580-269508/2-A

Matrix: Solid (TCLP) | Lab File ID: C241831.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 03/25/2018 04:17

Soil Aliquot Vol: | Dilution Factor: 100

Soil Extract Vol.: | GC Column: DB-VRX ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269828 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
71-43-2	Benzene	1090	D	300	200	53
78-93-3	2-Butanone (MEK)	6150	D	2000	1000	470
56-23-5	Carbon tetrachloride	1190	D	300	100	30
108-90-7	Chlorobenzene	1040	D	200	100	44
67-66-3	Chloroform	1040	D	500	100	50
107-06-2	1,2-Dichloroethane	1070	D	200	200	53
75-35-4	1,1-Dichloroethene	1150	D	400	200	78
127-18-4	Tetrachloroethene	1000	D	300	100	41
79-01-6	Trichloroethene	1040	D	300	200	85
75-01-4	Vinyl chloride	1370	D	100	50	22

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	103		80-122
17060-07-0	1,2-Dichloroethane-d4 (Surr)	102		80-126
460-00-4	4-Bromofluorobenzene (Surr)	97		75-125
1868-53-7	Dibromofluoromethane (Surr)	98		77-120

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241831.D
Lims ID: LCS 580-269508/2-A
Client ID:
Sample Type: LCS
Inject. Date: 25-Mar-2018 04:17:30 ALS Bottle#: 31 Worklist Smp#: 7
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Sample Info: lcs 580-269508/2-a
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 12:51:15 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:29:03

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
	1 Dichlorodifluoromethane	85	4.061	4.057	0.004	100	104937	10.0	20.9	
	2 Chloromethane	50	4.353	4.349	0.004	100	200606	10.0	17.2	
	3 Vinyl chloride	62	4.626	4.616	0.010	99	135428	10.0	13.7	
	4 Butadiene	39	4.736	4.732	0.004	99	194297	10.0	18.0	
	5 Bromomethane	94	5.137	5.139	-0.002	90	73309	10.0	11.4	
	6 Chloroethane	64	5.283	5.279	0.004	98	78653	10.0	13.5	
	7 Dichlorofluoromethane	67	5.356	5.352	0.004	99	175138	10.0	12.0	
	10 Acrolein	56	5.903	5.906	-0.003	97	97800	60.0	43.6	
	12 Acetonitrile	41	5.915	5.918	-0.003	100	251156	125.0	156.6	
	11 Trichlorofluoromethane	101	5.958	5.960	-0.002	100	138606	10.0	12.2	
	14 Isopropyl alcohol	45	5.964	5.960	0.004	29	232087	100.0	281.7	
	13 Acetone	43	6.037	6.033	0.004	98	228331	50.0	77.9	
	15 Ethyl ether	59	6.159	6.161	-0.002	96	89395	10.0	11.0	
*	16 TBA-d9 (IS)	65	6.408	6.410	-0.002	0	1156049	975.0	975.0	
	17 1,1-Dichloroethene	96	6.493	6.489	0.004	93	82006	10.0	11.5	
	19 2-Methyl-2-propanol	59	6.493	6.495	-0.002	98	135627	100.0	112.3	
	18 Acrylonitrile	52	6.530	6.526	0.004	98	426380	100.0	110.9	
	20 Iodomethane	142	6.548	6.544	0.004	98	153118	10.0	10.9	
	21 Methylene Chloride	84	6.633	6.635	-0.002	95	94432	10.0	10.9	
	22 Methyl acetate	43	6.657	6.660	-0.003	100	537948	50.0	55.3	
	23 1,1,2-Trichloro-1,2,2-trif	151	6.688	6.684	0.004	91	67131	10.0	12.1	
	9 3-Chloro-1-propene	76	6.718	6.714	0.004	90	46881	10.0	10.4	
	24 Carbon disulfide	76	6.888	6.891	-0.003	100	302107	10.0	11.9	
	25 trans-1,2-Dichloroethene	96	7.272	7.274	-0.002	94	82260	10.0	11.6	
	26 Methyl tert-butyl ether	73	7.363	7.359	0.004	99	271562	10.0	10.9	
	29 Propionitrile	54	7.491	7.493	-0.002	99	237728	125.0	144.7	
	28 1,1-Dichloroethane	63	7.497	7.499	-0.002	97	169177	10.0	10.9	
	30 Vinyl acetate	86	7.588	7.590	-0.002	100	48449	25.0	29.3	
	31 2-Chloro-1,3-butadiene	53	7.825	7.827	-0.002	94	166625	10.0	13.0	
	32 Hexane	57	7.843	7.846	-0.003	82	101833	10.0	10.1	
	34 2-Butanone (MEK)	72	7.862	7.864	-0.002	95	63913	50.0	61.5	
	33 Isopropyl ether	45	7.868	7.868	0.004	87	573136	12.5	16.6	M

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
35 Methacrylonitrile	66	7.959	7.955	0.004	98	151904	100.0	109.6	
36 cis-1,2-Dichloroethene	96	8.007	8.010	-0.003	85	91730	10.0	10.4	
40 Ethyl acetate	43	8.129	8.131	-0.002	99	251215	20.0	23.2	
37 Chlorobromomethane	128	8.153	8.156	-0.003	91	43457	10.0	10.2	
38 Chloroform	83	8.190	8.192	-0.002	95	143314	10.0	10.4	
39 Tert-butyl ethyl ether	59	8.208	8.210	-0.002	99	406566	12.5	13.6	
41 Isobutyl alcohol	43	8.239	8.241	-0.002	93	270401	250.0	307.9	
42 2,2-Dichloropropane	77	8.263	8.259	0.004	91	90795	10.0	8.86	
$ 43 Dibromofluoromethane (Surr	113	8.293	8.296	-0.003	94	343485	48.8	47.8	
44 Tetrahydrofuran	42	8.470	8.472	-0.002	93	87540	20.0	22.6	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.682	8.685	-0.003	0	435682	48.8	49.6	
46 1,2-Dichloroethane	62	8.749	8.746	0.003	96	122910	10.0	10.7	
47 1,1,1-Trichloroethane	97	8.835	8.837	-0.002	98	127722	10.0	11.3	
49 n-Butanol	56	8.853	8.849	0.004	95	165674	250.0	405.1	
48 1,1-Dichloropropene	75	8.980	8.983	-0.003	92	109860	10.0	10.9	
50 Cyclohexane	84	9.078	9.080	-0.002	97	113149	10.0	11.5	
51 Carbon tetrachloride	119	9.145	9.147	-0.002	98	101136	10.0	11.9	
52 Benzene	78	9.175	9.171	0.004	98	334846	10.0	10.9	
53 Tert-amyl methyl ether	73	9.266	9.269	-0.003	94	332894	12.5	13.4	
* 54 Fluorobenzene (IS)	96	9.333	9.335	-0.002	98	1347371	48.8	48.8	
56 Ethyl acrylate	55	9.546	9.548	-0.002	98	138809	10.0	11.2	
57 n-Heptane	43	9.558	9.560	-0.002	97	63937	10.0	8.21	
58 Dibromomethane	93	9.649	9.646	0.003	93	54239	10.0	10.6	
59 1,2-Dichloropropane	63	9.662	9.664	-0.002	94	96068	10.0	10.7	
60 2-Nitropropane	43	9.680	9.682	-0.002	98	67720	20.0	21.5	
61 Trichloroethene	130	9.692	9.694	-0.002	94	83774	10.0	10.4	
62 Dichlorobromomethane	83	9.741	9.743	-0.002	98	101490	10.0	10.8	
63 Methyl methacrylate	41	9.801	9.804	-0.003	92	217293	20.0	23.7	
$ 64 Trifluorotoluene (Surr)	146	9.838	9.834	0.004	90	701470	50.0	50.7	
65 2-Chloroethyl vinyl ether	43	10.045	10.047	-0.002	91	50108	10.0	11.0	
66 Methylcyclohexane	83	10.142	10.144	-0.002	98	93961	10.0	10.3	
67 cis-1,3-Dichloropropene	75	10.276	10.272	0.004	91	125153	10.0	11.1	
68 4-Methyl-2-pentanone (MIBK	43	10.343	10.339	0.004	98	669645	50.0	60.6	
69 trans-1,3-Dichloropropene	75	10.647	10.649	-0.002	98	112071	10.0	10.2	
71 1,1,2-Trichloroethane	97	10.811	10.813	-0.002	93	70517	10.0	10.8	
S 70 Xylenes, Total	106				0		20.0	10.2	
$ 73 Toluene-d8 (Surr)	98	10.914	10.917	-0.003	95	1305228	48.8	50.0	
75 Ethyl methacrylate	69	10.969	10.971	-0.002	95	104980	10.0	11.6	
76 Toluene	92	10.981	10.984	-0.003	98	197046	10.0	10.8	
77 1,3-Dichloropropane	76	11.024	11.026	-0.002	98	132518	10.0	11.2	
78 2-Hexanone	58	11.115	11.111	0.004	99	201166	50.0	57.0	
79 Chlorodibromomethane	129	11.304	11.306	-0.002	91	74863	10.0	10.9	
80 n-Butyl acetate	43	11.377	11.379	-0.002	96	177203	10.0	11.6	
81 Ethylene Dibromide	107	11.535	11.537	-0.002	98	77551	10.0	10.7	
82 Tetrachloroethene	164	11.668	11.671	-0.003	98	58872	10.0	10.0	
84 1,1,1,2-Tetrachloroethane	131	12.228	12.230	-0.002	90	81593	10.0	9.90	
* 85 Chlorobenzene-d5	82	12.270	12.273	-0.003	89	576095	48.8	48.8	
86 Chlorobenzene	112	12.307	12.309	-0.002	93	214010	10.0	10.4	
87 Ethylbenzene	106	12.465	12.467	-0.002	99	109691	10.0	10.3	
88 m-Xylene & p-Xylene	91	12.635	12.638	-0.003	68	267992	10.0	9.95	
89 Bromoform	173	12.812	12.814	-0.002	97	47711	10.0	11.9	
90 Styrene	104	12.952	12.954	-0.002	95	210997	10.0	10.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
91 o-Xylene	106	13.025	13.021	0.004	99	141834	10.0	10.2	
92 1,1,2,2-Tetrachloroethane	83	13.025	13.027	-0.002	95	110803	10.0	11.8	
93 trans-1,4-Dichloro-2-buten	53	13.152	13.148	0.004	78	17423	10.0	6.83	
94 1,2,3-Trichloropropane	110	13.158	13.161	-0.003	89	32204	10.0	11.6	
96 Isopropylbenzene	105	13.347	13.349	-0.002	96	330884	10.0	10.0	
$ 97 4-Bromofluorobenzene (Surr	95	13.402	13.404	-0.002	90	526395	48.8	47.1	
98 Bromobenzene	156	13.614	13.617	-0.003	95	96879	10.0	10.9	
99 N-Propylbenzene	120	13.742	13.744	-0.002	99	81713	10.0	10.7	
100 2-Chlorotoluene	126	13.852	13.854	-0.002	96	80850	10.0	10.5	
101 4-Chlorotoluene	91	13.912	13.915	-0.003	98	242475	10.0	10.9	
102 1,3,5-Trimethylbenzene	105	13.979	13.982	-0.003	95	272289	10.0	10.7	
104 tert-Butylbenzene	119	14.247	14.243	0.004	95	218342	10.0	10.9	
105 1,2,4-Trimethylbenzene	105	14.332	14.334	-0.002	98	286561	10.0	10.5	
106 sec-Butylbenzene	105	14.435	14.438	-0.003	95	295274	10.0	10.5	
107 Benzyl chloride	91	14.527	14.529	-0.002	98	132722	10.0	6.79	
108 1,3-Dichlorobenzene	146	14.533	14.535	-0.002	99	165075	10.0	9.06	
* 109 1,4-Dichlorobenzene-d4	152	14.569	14.571	-0.002	96	613319	48.8	48.8	
110 4-Isopropyltoluene	119	14.587	14.590	-0.003	97	254179	10.0	9.95	
111 1,4-Dichlorobenzene	146	14.594	14.596	-0.002	96	177611	10.0	10.3	
112 1,2,3-Trimethylbenzene	105	14.733	14.730	0.003	99	320276	10.0	10.6	
113 1,2-Dichlorobenzene	146	14.922	14.924	-0.002	98	179247	10.0	10.3	
114 n-Butylbenzene	91	14.958	14.961	-0.003	98	199455	10.0	9.55	
116 1,2-Dibromo-3-Chloropropan	157	15.366	15.362	0.004	83	28042	10.0	10.9	
117 1,3,5-Trichlorobenzene	180	16.150	16.153	-0.003	97	106121	10.0	8.89	
118 1,2,4-Trichlorobenzene	180	16.722	16.724	-0.002	94	110385	10.0	8.26	
119 Naphthalene	128	17.008	17.010	-0.002	97	366546	10.0	10.9	
120 Hexachlorobutadiene	190	17.032	17.034	-0.002	97	16528	10.0	8.69	
121 1,2,3-Trichlorobenzene	180	17.239	17.235	0.004	96	105379	10.0	9.57	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

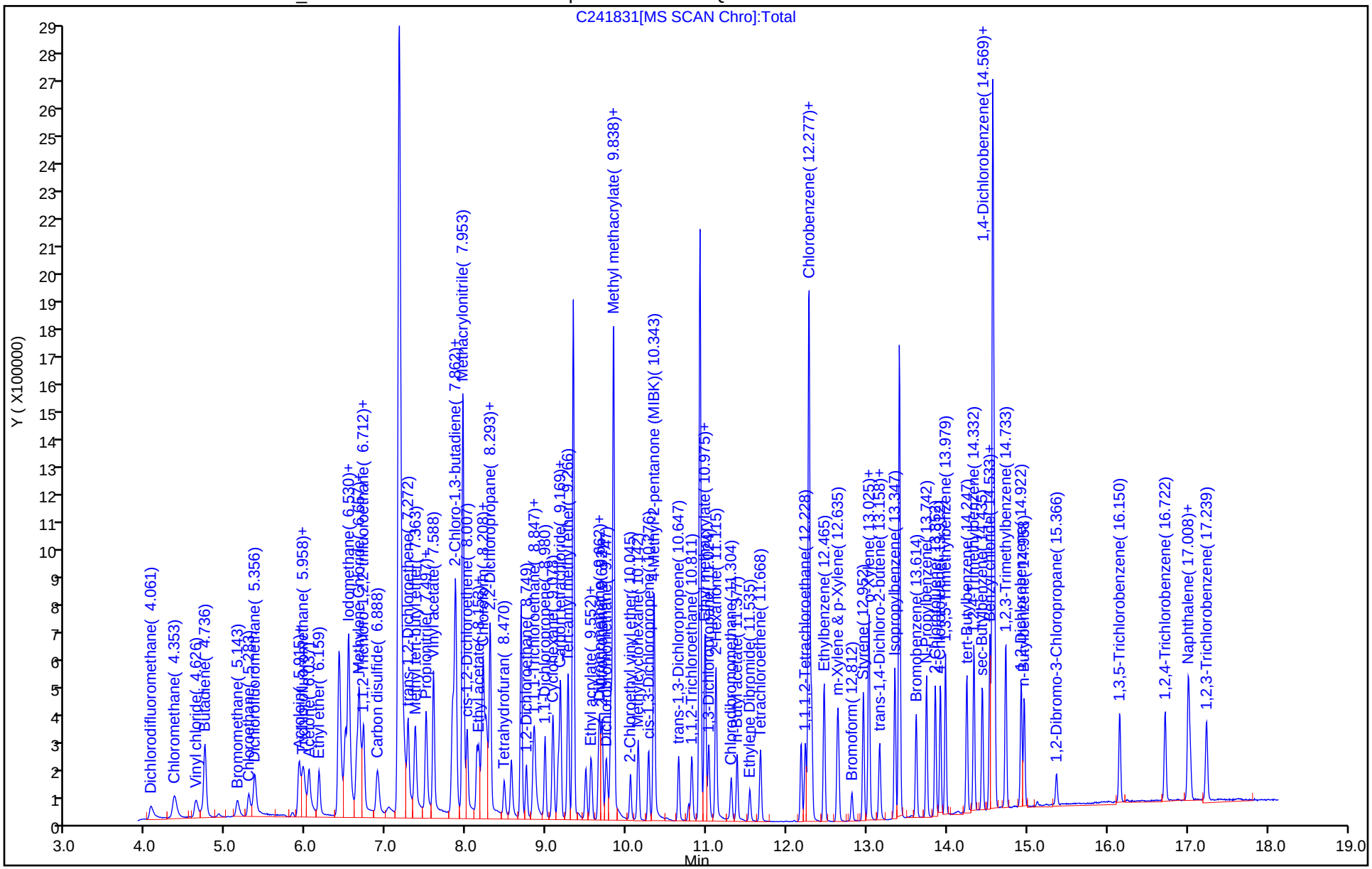
VOAMasterMix_00018	Amount Added: 10.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 26-Mar-2018 12:51:17 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241831.D

Injection Date:	25-Mar-2018 04:17:30	Instrument ID:	SEA102	Operator ID:	JSM
Lims ID:	LCS 580-269508/2-A			Worklist Smp#:	7
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	100.0000	ALS Bottle#:	31
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



TestAmerica Seattle
Recovery Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241831.D
Lims ID: LCS 580-269508/2-A
Client ID:
Sample Type: LCS
Inject. Date: 25-Mar-2018 04:17:30 ALS Bottle#: 31 Worklist Smp#: 7
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Sample Info: lcs 580-269508/2-a
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 12:51:15 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:29:03

Compound	Amount Added	Amount Recovered	% Rec.
$ 43 Dibromofluoromethane (Surr)	48.8	47.8	98.15
$ 45 1,2-Dichloroethane-d4 (Surr)	48.8	49.6	101.75
$ 64 Trifluorotoluene (Surr)	50.0	50.7	101.42
$ 73 Toluene-d8 (Surr)	48.8	50.0	102.59
$ 97 4-Bromofluorobenzene (Surr)	48.8	47.1	96.63
$ 125 BFB	0.0	0	0.00

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Seattle | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 580-269508/3-A

Matrix: Solid (TCLP) | Lab File ID: C241832.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 03/25/2018 04:45

Soil Aliquot Vol: | Dilution Factor: 100

Soil Extract Vol.: | GC Column: DB-VRX ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269828 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
71-43-2	Benzene	1200	D	300	200	53
78-93-3	2-Butanone (MEK)	5840	D	2000	1000	470
56-23-5	Carbon tetrachloride	1220	D	300	100	30
108-90-7	Chlorobenzene	1100	D	200	100	44
67-66-3	Chloroform	1120	D	500	100	50
107-06-2	1,2-Dichloroethane	1110	D	200	200	53
75-35-4	1,1-Dichloroethene	1230	D	400	200	78
127-18-4	Tetrachloroethene	1070	D	300	100	41
79-01-6	Trichloroethene	1100	D	300	200	85
75-01-4	Vinyl chloride	1520	Q D	100	50	22

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	102		80-122
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		80-126
460-00-4	4-Bromofluorobenzene (Surr)	96		75-125
1868-53-7	Dibromofluoromethane (Surr)	98		77-120

Report Date: 26-Mar-2018 12:52:59 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle
Target Compound Quantitation Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241832.D
Lims ID: LCSD 580-269508/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 25-Mar-2018 04:45:30 ALS Bottle#: 32 Worklist Smp#: 8
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Sample Info: lcsd 580-269508/3-a
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 12:52:58 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:30:01

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
	1 Dichlorodifluoromethane	85	4.058	4.057	0.001	99	111440	10.0	23.3	
	2 Chloromethane	50	4.350	4.349	0.001	100	204390	10.0	17.6	
	3 Vinyl chloride	62	4.617	4.616	0.001	98	143067	10.0	15.2	
	4 Butadiene	39	4.733	4.733	0.001	99	203298	10.0	19.0	
	5 Bromomethane	94	5.134	5.139	-0.005	90	75241	10.0	12.2	
	6 Chloroethane	64	5.280	5.279	0.001	98	79817	10.0	13.8	
	7 Dichlorofluoromethane	67	5.353	5.353	0.001	99	180321	10.0	12.4	
	10 Acrolein	56	5.901	5.906	-0.005	98	108114	60.0	48.4	
	12 Acetonitrile	41	5.919	5.918	0.001	99	258264	125.0	162.0	
	11 Trichlorofluoromethane	101	5.955	5.960	-0.005	98	145996	10.0	13.5	
	14 Isopropyl alcohol	45	5.968	5.961	0.008	29	195149	100.0	238.5	
	13 Acetone	43	6.034	6.033	0.001	98	227885	50.0	78.2	
	15 Ethyl ether	59	6.162	6.162	0.001	95	89290	10.0	11.0	
*	16 TBA-d9 (IS)	65	6.411	6.410	0.001	0	1068799	975.0	975.0	
	17 1,1-Dichloroethene	96	6.490	6.489	0.001	93	83904	10.0	12.3	
	19 2-Methyl-2-propanol	59	6.497	6.495	0.002	98	140033	100.0	116.6	
	18 Acrylonitrile	52	6.527	6.526	0.001	97	443322	100.0	115.9	
	20 Iodomethane	142	6.545	6.544	0.001	98	162564	10.0	11.7	
	21 Methylene Chloride	84	6.636	6.635	0.001	95	102059	10.0	11.9	
	22 Methyl acetate	43	6.661	6.660	0.001	100	553085	50.0	57.2	
	23 1,1,2-Trichloro-1,2,2-trif	151	6.685	6.684	0.001	91	72879	10.0	14.0	
	9 3-Chloro-1-propene	76	6.716	6.716	0.002	90	47219	10.0	10.9	
	24 Carbon disulfide	76	6.892	6.891	0.001	100	319188	10.0	12.7	
	25 trans-1,2-Dichloroethene	96	7.275	7.274	0.001	94	86150	10.0	12.2	
	26 Methyl tert-butyl ether	73	7.360	7.359	0.001	99	275651	10.0	11.2	
	29 Propionitrile	54	7.494	7.494	0.001	99	243550	125.0	149.1	
	28 1,1-Dichloroethane	63	7.500	7.499	0.001	97	174995	10.0	11.8	
	30 Vinyl acetate	86	7.591	7.590	0.001	100	47166	25.0	28.6	
	31 2-Chloro-1,3-butadiene	53	7.828	7.829	0.001	94	171260	10.0	14.2	
	32 Hexane	57	7.847	7.846	0.001	87	108562	10.0	10.8	
	34 2-Butanone (MEK)	72	7.865	7.864	0.001	95	57837	50.0	58.4	
	33 Isopropyl ether	45	7.865	7.865	0.001	86	549840	12.5	16.0	M

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
35 Methacrylonitrile	66	7.956	7.956	0.001	98	153397	100.0	111.3	
36 cis-1,2-Dichloroethene	96	8.011	8.010	0.001	84	96816	10.0	11.6	
40 Ethyl acetate	43	8.132	8.133	0.001	99	247731	20.0	23.0	
37 Chlorobromomethane	128	8.157	8.156	0.001	91	45298	10.0	10.7	
38 Chloroform	83	8.187	8.192	-0.005	95	147081	10.0	11.2	
39 Tert-butyl ethyl ether	59	8.212	8.210	0.002	98	424224	12.5	14.3	
41 Isobutyl alcohol	43	8.242	8.241	0.001	94	259983	250.0	297.6	
42 2,2-Dichloropropane	77	8.260	8.259	0.001	86	93429	10.0	9.17	
$ 43 Dibromofluoromethane (Surr	113	8.297	8.296	0.001	94	339582	48.8	47.6	
44 Tetrahydrofuran	42	8.473	8.473	0.001	94	90244	20.0	23.4	
$ 45 1,2-Dichloroethane-d4 (Sur	65	8.680	8.685	-0.005	0	429414	48.8	49.2	
46 1,2-Dichloroethane	62	8.747	8.746	0.001	96	126313	10.0	11.1	
47 1,1,1-Trichloroethane	97	8.832	8.837	-0.005	98	130691	10.0	11.6	
49 n-Butanol	56	8.850	8.849	0.001	96	142681	250.0	351.5	
48 1,1-Dichloropropene	75	8.984	8.983	0.001	92	115265	10.0	11.5	
50 Cyclohexane	84	9.081	9.080	0.001	97	119062	10.0	12.7	
51 Carbon tetrachloride	119	9.148	9.147	0.001	98	103612	10.0	12.2	
52 Benzene	78	9.172	9.171	0.001	98	350152	10.0	12.0	
53 Tert-amyl methyl ether	73	9.270	9.269	0.001	94	338670	12.5	13.7	
* 54 Fluorobenzene (IS)	96	9.337	9.335	0.002	98	1340049	48.8	48.8	
56 Ethyl acrylate	55	9.549	9.550	0.001	98	138887	10.0	11.3	
57 n-Heptane	43	9.562	9.562	0.002	97	67483	10.0	8.71	
58 Dibromomethane	93	9.647	9.646	0.001	93	57505	10.0	11.3	
59 1,2-Dichloropropane	63	9.659	9.664	-0.005	92	97726	10.0	11.4	
60 2-Nitropropane	43	9.677	9.684	-0.005	95	69962	20.0	22.3	
61 Trichloroethene	130	9.695	9.694	0.001	96	84659	10.0	11.0	
62 Dichlorobromomethane	83	9.744	9.743	0.001	98	102556	10.0	11.5	
63 Methyl methacrylate	41	9.805	9.805	0.001	93	214796	20.0	23.5	
$ 64 Trifluorotoluene (Surr)	146	9.835	9.834	0.001	91	675756	50.0	49.1	
65 2-Chloroethyl vinyl ether	43	10.048	10.047	0.001	90	50167	10.0	11.6	
66 Methylcyclohexane	83	10.145	10.144	0.001	98	100332	10.0	11.5	
67 cis-1,3-Dichloropropene	75	10.273	10.272	0.001	91	125382	10.0	11.8	
68 4-Methyl-2-pentanone (MIBK	43	10.340	10.339	0.001	98	664089	50.0	63.1	
69 trans-1,3-Dichloropropene	75	10.650	10.649	0.001	98	107160	10.0	10.3	
71 1,1,2-Trichloroethane	97	10.814	10.813	0.001	93	71653	10.0	11.5	
S 70 Xylenes, Total	106				0		20.0	10.8	
$ 73 Toluene-d8 (Surr)	98	10.912	10.917	-0.005	95	1236163	48.8	49.7	
75 Ethyl methacrylate	69	10.972	10.972	0.001	96	99173	10.0	11.5	
76 Toluene	92	10.979	10.984	-0.005	98	201530	10.0	11.6	
77 1,3-Dichloropropane	76	11.027	11.026	0.001	98	131175	10.0	11.7	
78 2-Hexanone	58	11.112	11.111	0.001	99	186190	50.0	55.4	
79 Chlorodibromomethane	129	11.307	11.306	0.001	91	73866	10.0	11.3	
80 n-Butyl acetate	43	11.380	11.380	0.001	97	172186	10.0	11.8	
81 Ethylene Dibromide	107	11.538	11.537	0.001	100	75422	10.0	10.9	
82 Tetrachloroethene	164	11.672	11.671	0.001	99	62753	10.0	10.7	
84 1,1,1,2-Tetrachloroethane	131	12.231	12.226	0.001	92	81768	10.0	10.4	
* 85 Chlorobenzene-d5	82	12.274	12.273	0.001	88	548795	48.8	48.8	
86 Chlorobenzene	112	12.310	12.305	0.001	93	214908	10.0	11.0	
87 Ethylbenzene	106	12.462	12.463	-0.005	99	110350	10.0	10.8	
88 m-Xylene & p-Xylene	91	12.633	12.633	-0.005	68	267326	10.0	10.4	
89 Bromoform	173	12.809	12.810	-0.005	96	46893	10.0	12.3	
90 Styrene	104	12.955	12.949	0.001	96	206389	10.0	10.4	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/L	OnCol Amt ug/L	Flags
91 o-Xylene	106	13.022	13.016	0.001	98	142239	10.0	10.8	
92 1,1,2,2-Tetrachloroethane	83	13.028	13.022	0.001	95	110419	10.0	12.5	
93 trans-1,4-Dichloro-2-buten	53	13.150	13.144	0.002	93	17222	10.0	7.16	
94 1,2,3-Trichloropropane	110	13.162	13.156	0.001	89	30873	10.0	11.8	
96 Isopropylbenzene	105	13.350	13.345	0.001	96	340316	10.0	10.8	
$ 97 4-Bromofluorobenzene (Surr	95	13.405	13.399	0.001	90	495700	48.8	46.6	
98 Bromobenzene	156	13.612	13.612	-0.005	96	96609	10.0	11.5	
99 N-Propylbenzene	120	13.739	13.740	-0.005	99	81343	10.0	11.3	
100 2-Chlorotoluene	126	13.849	13.849	-0.005	96	85126	10.0	11.8	
101 4-Chlorotoluene	91	13.916	13.910	0.001	98	245226	10.0	11.7	
102 1,3,5-Trimethylbenzene	105	13.977	13.977	-0.005	95	278146	10.0	11.6	
104 tert-Butylbenzene	119	14.244	14.238	0.001	95	223928	10.0	11.9	
105 1,2,4-Trimethylbenzene	105	14.335	14.329	0.001	98	293033	10.0	11.4	
106 sec-Butylbenzene	105	14.439	14.433	0.001	95	307167	10.0	11.5	
107 Benzyl chloride	91	14.530	14.524	0.001	99	137197	10.0	7.46	
108 1,3-Dichlorobenzene	146	14.536	14.530	0.001	98	175873	10.0	9.71	
* 109 1,4-Dichlorobenzene-d4	152	14.567	14.571	-0.005	97	578632	48.8	48.8	
110 4-Isopropyltoluene	119	14.585	14.585	-0.005	97	263963	10.0	10.9	
111 1,4-Dichlorobenzene	146	14.591	14.591	-0.005	96	178559	10.0	11.0	
112 1,2,3-Trimethylbenzene	105	14.731	14.725	0.001	99	330786	10.0	11.6	
113 1,2-Dichlorobenzene	146	14.925	14.919	0.001	97	181965	10.0	11.1	
114 n-Butylbenzene	91	14.962	14.956	0.001	98	213819	10.0	10.9	
116 1,2-Dibromo-3-Chloropropan	157	15.363	15.357	0.001	82	28082	10.0	11.6	
117 1,3,5-Trichlorobenzene	180	16.154	16.147	0.001	98	113674	10.0	10.1	
118 1,2,4-Trichlorobenzene	180	16.719	16.719	-0.005	94	115729	10.0	9.09	
119 Naphthalene	128	17.011	17.004	0.001	97	379484	10.0	12.0	
120 Hexachlorobutadiene	190	17.036	17.029	0.002	97	18376	10.0	10.2	
121 1,2,3-Trichlorobenzene	180	17.236	17.229	0.001	96	107736	10.0	10.4	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

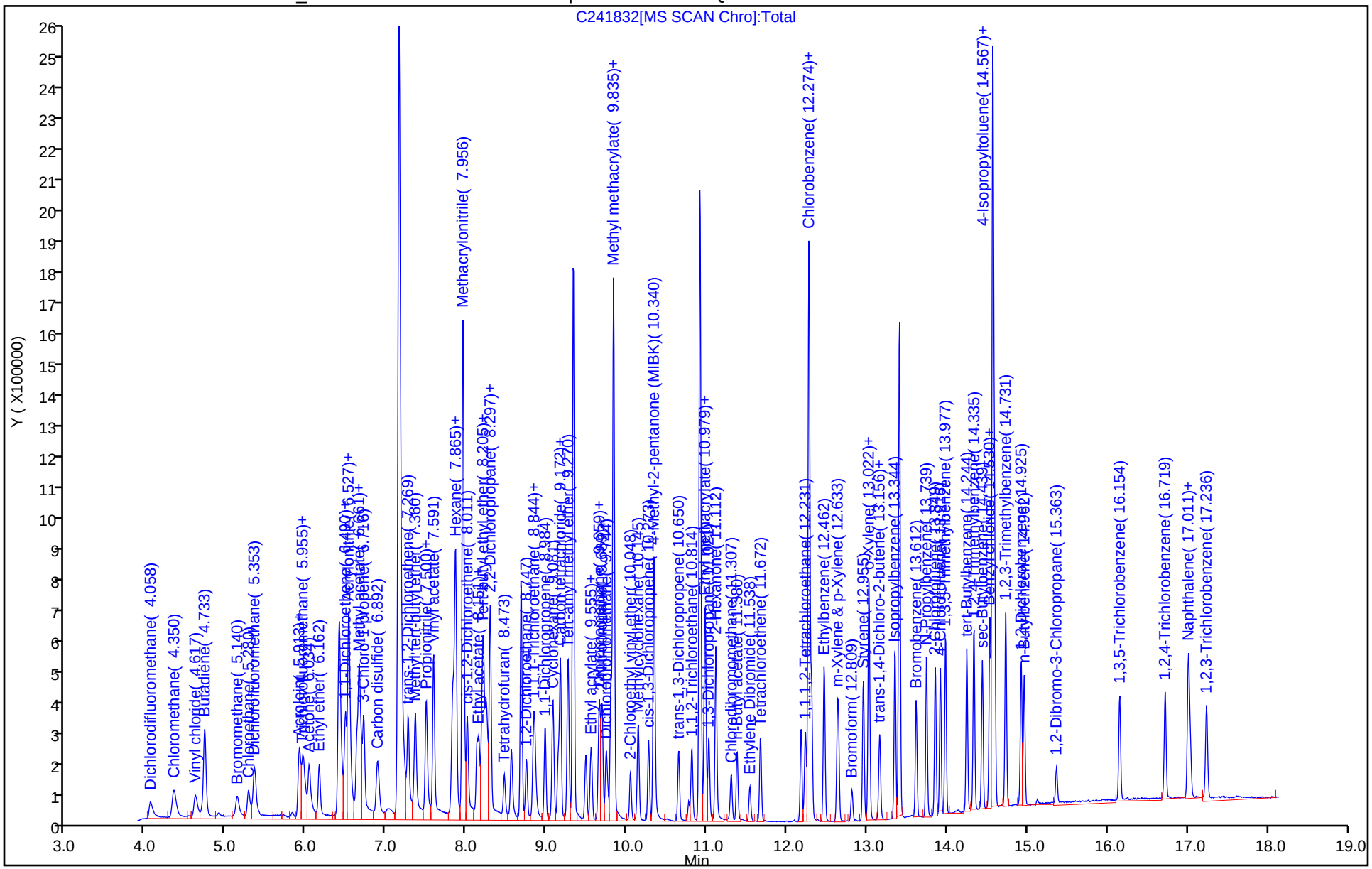
VOAMasterMix_00018	Amount Added: 10.00	Units: uL	
SURR/IS/TFT_00100	Amount Added: 1.00	Units: uL	Run Reagent

Report Date: 26-Mar-2018 12:52:59 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Seattle

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241832.D

Injection Date:	25-Mar-2018 04:45:30	Instrument ID:	SEA102	Operator ID:	JSM
Lims ID:	LCSD 580-269508/3-A			Worklist Smp#:	8
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	100.0000	ALS Bottle#:	32
Method:	8260MeOHSoil_SEA102B	Limit Group:	8260B QSM 5.0		



TestAmerica Seattle
Recovery Report

Data File: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\C241832.D
Lims ID: LCSD 580-269508/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 25-Mar-2018 04:45:30 ALS Bottle#: 32 Worklist Smp#: 8
Purge Vol: 5.000 mL Dil. Factor: 100.0000
Sample Info: lcsd 580-269508/3-a
Operator ID: JSM Instrument ID: SEA102

Method: \\Chromna\Seattle\ChromData\SEA102\20180324-57994.b\8260MeOHSoil_SEA102B.m
Limit Group: 8260B QSM 5.0
Last Update: 26-Mar-2018 12:52:58 Calib Date: 21-Mar-2018 15:30:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Seattle\ChromData\SEA102\20180321-57941.b\C211810.D

Column 1 : Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: pimtongp Date: 26-Mar-2018 11:30:01

Compound	Amount Added	Amount Recovered	% Rec.
$ 43 Dibromofluoromethane (Surr)	48.8	47.6	97.56
$ 45 1,2-Dichloroethane-d4 (Surr)	48.8	49.2	100.84
$ 64 Trifluorotoluene (Surr)	50.0	49.1	98.24
$ 73 Toluene-d8 (Surr)	48.8	49.7	101.99
$ 97 4-Bromofluorobenzene (Surr)	48.8	46.6	95.52
$ 125 BFB	0.0	0	0.00

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Instrument ID: VMS_R1 Start Date: 03/05/2018 06:53

Analysis Batch Number: 406767 End Date: 03/05/2018 16:48

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 280-406767/1		03/05/2018 06:53	1	R6827.D	DB-624 (60.25) 0.25(mm)
CCV 280-406767/2		03/05/2018 07:25	1		DB-624 (60.25) 0.25(mm)
STD 280-406767/10 IC		03/05/2018 07:47	1	R6830.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 07:47	1		DB-624 (60.25) 0.25(mm)
STD 280-406767/11 IC		03/05/2018 08:06	1	R6831.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 08:06	1		DB-624 (60.25) 0.25(mm)
STD 280-406767/12 IC		03/05/2018 08:25	1	R6832.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 08:25	1		DB-624 (60.25) 0.25(mm)
ICIS 280-406767/13		03/05/2018 08:44	1	R6833.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 08:44	1		DB-624 (60.25) 0.25(mm)
STD 280-406767/14 IC		03/05/2018 09:03	1	R6834.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 09:03	1		DB-624 (60.25) 0.25(mm)
STD 280-406767/15 IC		03/05/2018 09:22	1	R6835.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 09:22	1		DB-624 (60.25) 0.25(mm)
ICV 280-406767/16		03/05/2018 09:41	1	R6836.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 10:00	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 10:19	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 11:02	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 11:21	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 11:41	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 12:00	20		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 12:19	4		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 12:38	200		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 12:58	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 13:17	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 13:36	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 13:55	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 14:14	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 14:34	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 14:53	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/05/2018 15:12	1		DB-624 (60.25) 0.25(mm)
280-106990-A-7 MDLV		03/05/2018 15:31	1		DB-624 (60.25) 0.25(mm)
280-106990-A-8 MDLV		03/05/2018 15:50	1		DB-624 (60.25) 0.25(mm)
280-106990-A-9 MDLV		03/05/2018 16:10	1		DB-624 (60.25) 0.25(mm)
280-106990-A-10 MDLV		03/05/2018 16:29	1		DB-624 (60.25) 0.25(mm)
280-106990-A-11 MDLV		03/05/2018 16:48	1		DB-624 (60.25) 0.25(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Instrument ID: VMS_R1 Start Date: 03/08/2018 18:35

Analysis Batch Number: 407291 End Date: 03/09/2018 05:12

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 280-407291/1		03/08/2018 18:35	1	R7050.D	DB-624 (60.25) 0.25(mm)
STD003 280-407291/11 IC		03/08/2018 19:13	1	R7052.D	DB-624 (60.25) 0.25(mm)
STD01 280-407291/12 IC		03/08/2018 19:33	1	R7053.D	DB-624 (60.25) 0.25(mm)
STD02 280-407291/13 IC		03/08/2018 19:52	1	R7054.D	DB-624 (60.25) 0.25(mm)
STD05 280-407291/14 IC		03/08/2018 20:11	1	R7055.D	DB-624 (60.25) 0.25(mm)
ICIS 280-407291/15		03/08/2018 20:30	1	R7056.D	DB-624 (60.25) 0.25(mm)
STD30 280-407291/16 IC		03/08/2018 20:49	1	R7057.D	DB-624 (60.25) 0.25(mm)
STD60 280-407291/17 IC		03/08/2018 21:08	1	R7058.D	DB-624 (60.25) 0.25(mm)
ICV 280-407291/18		03/08/2018 21:47	1	R7060.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/08/2018 22:07	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/08/2018 22:26	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/08/2018 22:49	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/08/2018 23:09	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/08/2018 23:28	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/08/2018 23:47	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 00:06	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 00:25	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 00:44	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 01:03	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 01:23	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 01:42	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 02:01	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 02:20	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 02:39	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 02:58	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 03:17	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 03:36	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 03:55	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 04:14	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 04:34	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/09/2018 04:53	1		DB-624 (60.25) 0.25(mm)
CCVC 280-407291/38		03/09/2018 05:12	1		DB-624 (60.25) 0.25(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Instrument ID: VMS_R1 Start Date: 03/15/2018 17:35

Analysis Batch Number: 408044 End Date: 03/16/2018 04:00

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 280-408044/1		03/15/2018 17:35	1	R7378.D	DB-624 (60.25) 0.25(mm)
CCV 280-408044/2		03/15/2018 18:11	1		DB-624 (60.25) 0.25(mm)
CCV 280-408044/3		03/15/2018 18:30	1		DB-624 (60.25) 0.25(mm)
STD2 280-408044/10 IC		03/15/2018 18:53	1	R7382.D	DB-624 (60.25) 0.25(mm)
STD5 280-408044/11 IC		03/15/2018 19:12	1	R7383.D	DB-624 (60.25) 0.25(mm)
STD10 280-408044/12 IC		03/15/2018 19:31	1	R7384.D	DB-624 (60.25) 0.25(mm)
STD30 280-408044/13 IC		03/15/2018 19:50	1	R7385.D	DB-624 (60.25) 0.25(mm)
STD60 280-408044/14 IC		03/15/2018 20:09	1	R7386.D	DB-624 (60.25) 0.25(mm)
ICV 280-408044/15		03/15/2018 20:28	1	R7387.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 20:52	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 21:11	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 21:56	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 22:15	2		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 22:35	20		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 22:54	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 23:13	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 23:32	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/15/2018 23:51	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 00:10	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 00:29	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 00:48	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 01:07	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 01:27	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 01:46	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 02:05	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 02:24	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 02:44	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 03:03	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 03:22	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/16/2018 03:41	1		DB-624 (60.25) 0.25(mm)
CCVC 280-408044/35		03/16/2018 04:00	1		DB-624 (60.25) 0.25(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Instrument ID: VMS_R1 Start Date: 03/27/2018 06:23

Analysis Batch Number: 409141 End Date: 03/27/2018 15:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 280-409141/1		03/27/2018 06:23	1	R7858.D	DB-624 (60.25) 0.25(mm)
CCV 280-409141/2		03/27/2018 07:07	1	R7860.D	DB-624 (60.25) 0.25(mm)
CCV 280-409141/3		03/27/2018 07:26	1	R7861.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 08:50	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 09:09	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 09:28	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 09:47	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 10:07	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 10:26	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 10:45	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 11:04	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 11:23	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 11:42	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 12:02	1		DB-624 (60.25) 0.25(mm)
LCS 280-408888/2-A		03/27/2018 12:21	1	R7874.D	DB-624 (60.25) 0.25(mm)
LB3 280-408888/1-A		03/27/2018 12:40	1	R7875.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 12:59	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 13:18	1		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 13:37	1		DB-624 (60.25) 0.25(mm)
320-36960-26		03/27/2018 13:56	1	R7879.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 14:16	1		DB-624 (60.25) 0.25(mm)
CCVC 280-409141/28		03/27/2018 14:35	1	R7881.D	DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 14:54	2		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 15:13	4		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 15:32	2		DB-624 (60.25) 0.25(mm)
ZZZZZ		03/27/2018 15:51	4		DB-624 (60.25) 0.25(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Instrument ID: SEA102 Start Date: 03/21/2018 11:40

Analysis Batch Number: 269589 End Date: 03/21/2018 16:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 580-269589/2		03/21/2018 11:40	1	C211802.D	DB-VRX 0.25(mm)
IC 580-269589/3		03/21/2018 12:09	1	C211803.D	DB-VRX 0.25(mm)
IC 580-269589/4		03/21/2018 12:37	1	C211804.D	DB-VRX 0.25(mm)
IC 580-269589/5		03/21/2018 13:07	1	C211805.D	DB-VRX 0.25(mm)
IC 580-269589/6		03/21/2018 13:35	1	C211806.D	DB-VRX 0.25(mm)
ICIS 580-269589/7		03/21/2018 14:04	1	C211807.D	DB-VRX 0.25(mm)
IC 580-269589/8		03/21/2018 14:32	1	C211808.D	DB-VRX 0.25(mm)
IC 580-269589/9		03/21/2018 15:01	1	C211809.D	DB-VRX 0.25(mm)
IC 580-269589/10		03/21/2018 15:30	1	C211810.D	DB-VRX 0.25(mm)
ZZZZZ		03/21/2018 15:59	1		DB-VRX 0.25(mm)
ICV 580-269589/12		03/21/2018 16:28	1	C211812.D	DB-VRX 0.25(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Instrument ID: SEA102 Start Date: 03/25/2018 02:23

Analysis Batch Number: 269828 End Date: 03/25/2018 07:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 580-269828/2		03/25/2018 02:23	1	C241827.D	DB-VRX 0.25(mm)
CCVIS 580-269828/3		03/25/2018 02:52	1	C241828.D	DB-VRX 0.25(mm)
CCVL 580-269828/4		03/25/2018 03:20	1		DB-VRX 0.25(mm)
MB 580-269508/1-A		03/25/2018 03:49	100	C241830.D	DB-VRX 0.25(mm)
LCS 580-269508/2-A		03/25/2018 04:17	100	C241831.D	DB-VRX 0.25(mm)
LCSD 580-269508/3-A		03/25/2018 04:45	100	C241832.D	DB-VRX 0.25(mm)
320-36960-21		03/25/2018 05:14	100	C241833.D	DB-VRX 0.25(mm)
CCVC 580-269828/13		03/25/2018 07:07	1	C241837.D	DB-VRX 0.25(mm)

Sequence Name: C:\msdchem\1\sequence\032718am.s
Comment:
Operator: wickhamt
Data Path: C:\MSDCHEM\1\DATA\032718am\
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Test America Denver
Instrument: RI
VMS-0010 (8260B/624) (Circle)
Purge Volume: (20mL/5mL/5g) (Circle)
Tune Time: 06:23 ~ 15:51
Tune Batch: 409141

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

Sequence Barcode Options
( ) On Mismatch, Inject Anyway
( ) On Mismatch, Don't Inject
(X) Barcode Disabled

3-28-18 Tw

Line			Sample Name/Misc Info		
1)	Sample	100	R7858	BFB	BFB 06:23
2)	Sample	10	R7859	8260	blank
3)	Sample	11	R7860	8260	ccv m
4)	Sample	12	R7861	8260	ccv s
5)	Sample	13	R7862	8260	blank
6)	Sample	14	R7863	8260	LCS 280-408502/2-A 2ml af
7)	Sample	15	R7864	8260	LB 280-408502/1-A 2ml af
8)	Sample	16	R7865	8260	280-107461-A-1-A 2ml
9)	Sample	17	R7866	8260	280-107461-A-1-A ms 2ml
10)	Sample	18	R7867	8260	280-107461-A-1-A msd 2ml
11)	Sample	19	R7868	8260	720-85337-E-1-A 2ml
12)	Sample	20	R7869	8260	LCS 280-409096/2-A 2ml af
13)	Sample	21	R7870	8260	LB 280-409096/1-A 2ml af
14)	Sample	22	R7871	8260	280-107722-A-1-A 2ml
15)	Sample	23	R7872	8260	280-107722-A-1-A ms 2ml
16)	Sample	24	R7873	8260	280-107722-A-1-A msd 2ml
17)	Sample	25	R7874	8260	LCS 280-408888/2-A 2ml af
18)	Sample	26	R7875	8260	LB3 280-408888/1-A 2ml af
19)	Sample	27	R7876	8260	280-107674-O-2-A 2ml
20)	Sample	28	R7877	8260	280-107674-O-2-A ms 2ml
21)	Sample	29	R7878	8260	280-107674-O-2-A msd 2ml
22)	Sample	30	R7879	8260	320-36960-A-26-A 2ml
23)	Sample	31	R7880	8260	320-37176-A-18-A 2ml af
24)	Sample	32	R7881	8260	ccvc
25)	Sample	33	R7882	8260	280-107630-AD-1-A 1ml af
26)	Sample	34	R7883	8260	280-107630-AD-1-A 0.5ml
27)	Sample	35	R7884	8260	280-107630-W-3-A 1ml af
28)	Sample	36	R7885	8260	280-107630-W-3-A 0.5ml 15:51
29)	Sample	37	R7886	8260	PRIMER
30)	Sample	38	R7887	BFB	PRIMER

TestAmerica Laboratories
Worklist Report

Worklist Name: 032718am Worklist Number: 68351
Instrument Name: VMS_R1 Chrom Method: AQ_VMSR1_8260
Purge Volume: 20.00 Units: mL
Analysis Type: VOA
Batch Directory: \\ChromNA\Denver\ChromData\VMS_R1\20180327-68351.b
Upload Directory: \\CorpTALSAPP16\280-DN-RawData\Organics\MS\VMS_R1
Run Reagent: MV-568718-D_00014 Amount Added: 1.000, Units: uL
Run Reagent: MV-ARCH SS A_00091 Amount Added: 0.900, Units: uL

Worklist ID	Lims ID	Sample Reagents	Smp Type	Fract	Initial Vol/Wt	Vol/Wt Units	Dil Fact
280-0068351-001	# 1 BFB	MV-BFB_00025	BFB	voaWater	1.000	uL	1.000
280-0068351-002	# 2 CCV	MV-Gas/Ket A_00071 MV-2cleve+AVA_00033 MV-Main A_00034	CCV	voaWater	20.00	mL	1.000
280-0068351-003	# 3 CCV	MV-Supp A_00029 MV-568718-D_00014	CCV	voaWater	20.00	mL	1.000
280-0068351-004	# 4 LCS	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCS	voaWater	20.00	mL	1.000
280-0068351-005	# 5 LCSD	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCSD	voaWater	20.00	mL	1.000
280-0068351-006	# 6 MB		MB	voaWater	20.00	mL	1.000
280-0068351-007	# 7 280-100725-A-1		Client	voaWater	20.00	mL	1.000
280-0068351-008	# 8 280-100725-A-2		Client	voaWater	20.00	mL	1.000
280-0068351-009	# 9 280-100725-A-3		Client	voaWater	20.00	mL	1.000
280-0068351-010	#10 LCS 280-408502/2-A	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCS	voaWater	2.000	mL	1.000
280-0068351-011	#11 LB 280-408502/1-A		LB	voaWater	2.000	mL	1.000
280-0068351-012	#12 280-107461-A-1-A		Client	voaWater	2.000	mL	1.000
280-0068351-013	#13 280-107461-A-1-A MS	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	MS	voaWater	2.000	mL	1.000

Worklist ID	Lims ID	Sample Reagents	Smp Type	Fract	Initial Vol/Wt	Vol/Wt Units	Dil Fact
280-0068351-014	#14 280-107461-A-1-A MSD	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	MSD	voaWater	2.000	mL	1.000
280-0068351-015	#15 720-85337-E-1-A		Client	voaWater	2.000	mL	1.000
280-0068351-016	#16 LCS 280-409096/2-A	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCS	voaWater	2.000	mL	1.000
280-0068351-017	#17 LB 280-409096/1-A		LB	voaWater	2.000	mL	1.000
280-0068351-018	#18 280-107722-A-1-A		Client	voaWater	2.000	mL	1.000
280-0068351-019	#19 280-107722-A-1-A MS	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	MS	voaWater	2.000	mL	1.000
280-0068351-020	#20 280-107722-A-1-A MSD	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	MSD	voaWater	2.000	mL	1.000
280-0068351-021	#21 LCS 280-408888/2-A	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCS	voaWater	2.000	mL	1.000
280-0068351-022	#22 LB3 280-408888/1-A		LB3	voaWater	2.000	mL	1.000
280-0068351-023	#23 280-107674-O-2-A		Client	voaWater	2.000	mL	1.000
280-0068351-024	#24 280-107674-O-2-A MS	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	MS	voaWater	2.000	mL	1.000
280-0068351-025	#25 280-107674-O-2-A MSD	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	MSD	voaWater	2.000	mL	1.000
280-0068351-026	#26 320-36960-A-26-A		Client	voaWater	2.000	mL	1.000
280-0068351-027	#27 320-37176-A-18-A		Client	voaWater	2.000	mL	1.000
280-0068351-028	#28 ccvc	MV-Main A_00034 MV-Gas/Ket A_00071 MV-2cleve+AVA_00033	CCVC	voaWater	20.00	mL	1.000
280-0068351-029	#29 280-107630-AD-1-A		Client	voaWater	2.000	mL	2.000
280-0068351-030	#30 280-107630-AD-1-A		Client	voaWater	2.000	mL	4.000
280-0068351-031	#31 280-107630-W-3-A		Client	voaWater	2.000	mL	2.000

Worklist ID	Lims ID	Sample Reagents	Smp Type	Fract	Initial Vol/Wt	Vol/Wt Units	Dil Fact
280-0068351-032	#32 280-107630-W-3-A		Client	voaWater	2.000	mL	4.000

R1

Sample Request Form: 46970

3-27-18 TAW

den_msvoa_totalbacklog 3/27/2018 9:34:05 AM Assigned to:Wickham, Tom A

Sample	Client Sample ID	Container	Method	Analytical Method	Hold Time	Due	PM	State Code	Storage	Hazard Level
280-107461-1 2	CSL WASTE 031518		8260B	TCLP 8260B	04/03 23:59	03/27/18	SMH	CO	33	Unconfirmed
280-107630-1 1/0.5	T-503 1= 1mL ad		8260B	TCLP 8260B	04/06 23:59	04/02/18	DMH	LA	MS-Strge & 62 & Shared Samples In-Transi & GC-Strge & OP Dpt & Mtls-Strge	Unconfirmed
M DIL3										
280-107630-3 1/0.5	T-503 DUP 1= 1mL ad		8260B	TCLP 8260B	04/06 23:59	04/02/18	DMH	LA	OP Dpt & 62 & Shared Samples In-Transi & GC-Strge & Mtls-Strge & MS-Strge	Unconfirmed
M DIL3										
280-107674-2 2	MW-IDW		8260B_DOD5	TCLP 8260B_DOD5	04/04 23:59	04/12/18	SKR	OK	Shared Samples In-Transi & 65 & WC Dpt & OP Dpt	Unconfirmed
280-107722-1 2	JW-130-1		8260B	TCLP 8260B	04/09 23:59	03/29/18	DFB	CO	73	Unconfirmed
320-36960-26 2	BNA-IDW-W-01		8260B_DOD5	TCLP 8260B_DOD5	04/06 23:59	03/28/18	DRA	TN	OP Dpt & MS-Strge	Unconfirmed
320-37176-18 2	MEM-IDW-W-01 2.5mL ad		8260B_DOD5	TCLP 8260B_DOD5	04/06 23:59	04/01/18	DRA	TN	OP Dpt	Unconfirmed
720-85337-1 2	031518-1#07-08		8260B	TCLP 8260B	04/03 23:59	03/29/18	MAB	CA	171	Unconfirmed

1311_Z Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 280-408502 Analyst: Bourgery, David F Batch Open: 3/20/2018 4:25:00PM

Batch End: 3/21/2018 10:00:00AM

HT 4-3

TCLP Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	LB~280-408502/1 N/A	N/A		2		N/A	N/A	N/A		
2	LCS~280-408502/2 N/A	N/A		2		N/A	N/A	N/A		
3	280-107461-A-1 (8260B)	184160B/CH021.25 (280-107461-1)	Solid	2		3/27/18	8_Days	2		
4	720-85337-E-1 (8260B)	031518-1#07-08 (720-85337-1)	Solid	2		3/29/18	10_Days	2		

3-27-18 TAW

1311_Z Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 280-409096

Analyst: Bourgery, David F

Batch Open: 3/26/2018 3:15:00PM

Batch End: 3/27/2018 7:30:00AM

HT

TCLP Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	LB~280-409096/1 N/A	N/A		2		N/A	N/A	N/A		LB 280-409096/1-A
2	LCS~280-409096/2 N/A	N/A		2		N/A	N/A	N/A		LCS 280-409096/2-A
3	280-107722-A-1 (8260B)	N/A (280-107722-1)	Solid	2		3/29/18	4_Day_RUSH	2		280-107722-A-1-A

3-27-18
TAW

1311_Z Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 280-408888 Analyst: Bourgery, David F Batch Open: 3/23/2018 1:22:00PM

Batch End: 3/23/2018 2:00:00PM

TCLP Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	LB3~280-408888/1 N/A	N/A		2		N/A	N/A	N/A		
2	LCS~280-408888/2 N/A	N/A		2		N/A	N/A	N/A		
3	280-107630-AD-1 (8260B)	N/A (280-107630-1)	Water	1/0.5		4/2/18	8_Day_Rush	2	Used AF too 1=1mL at	
4	280-107630-W-3 (8260B)	N/A (280-107630-1)	Water	1/0.5		4/2/18	8_Day_Rush	2	Used X too 1=1mL at	
5	280-107674-O-2 (8260B_DOD5)	N/A (280-107674-1)	Water	2		4/12/18	15_Days	4	Used P too	
6	320-36960-A-26 (8260B_DOD5)	N/A (320-36960-1)	Water	2		3/28/18	16_Days	4	Used B too	
7	320-37176-A-18 (8260B_DOD5)	Memphis Air National Guard Base (320-37176-1)	Water	2		4/1/18	16_Days	4	Used B too 2.5mL at	

3-27-18 Taw

TestAmerica-*Denver*

Me's/6cs/2-clave

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

GCMS Volatile ICAL Data Review Checklist

LIMS Batch Number: 407291	Worklist #: 67848	ICAL Event #: —	ICIS/ICV Line #s: 15/18	2nd Day ICV Line# —	Instrument ID: A1 3/8
2nd Day Batch/ICV Lines:					
Analyst/1st Reviewer: Date: 3/8/18	Prep Method (circle): 5030 5035-L 5035-H		Analytical Method (circle): 624 (8260B) SIM Other_____		
QC Type (circle): Standard DOD Q4 DoD Q5		QAPP_____		Other_____	
Matrix (circle one): Water Solid			Circle: 5-mL (20-mL) Meth Ext 5 g		

Review Items	NA	Yes	No	2nd Rev	Comments
A. Tune / Calibration					
1. Did BFB meet tune criteria? If CFCs, did autotune meet SOP criteria?		✓		X	
2. Were all standards injected within 12 hours of the BFB? (or 24 hours for 624?)		✓		X	
3. Were ≥ 5 levels of each compound and surrogate analyzed? (624 has minimum of four standards)		✓		X	
4. Was low level standard at or below RL?		✓		X	
5. If calibration points removed, were reasons for removal documented? Did sufficient calibration points remain? (removal from middle of curve not allowed)		✓		X	(Other than those stated in SOP)
6. Do the average RFs meet minimum RF requirements? (624 – not method defined) (8260B-SPCCs = Chloromethane, 1,1-Dichloroethane, Bromoform ≥0.1; Chlorobenzene, 1,1,2,2-Tetrachloroethane ≥0.3)		✓		X	
7. Did the calibration %RSD meet method requirements? (624: ≤35% all cmpds) (8260B: ≤30% for CCCs & ≤15% for all other cmpds/surrogates)		✓	—	X	
8. Was a linear or quadratic regression fit used for analytes that exceeded the %RSD requirements?		✓		X	
9. If regression fit used, is r^2 ≥0.990?		✓		X	
10. At least 6 consecutive points used for quadratic curves?	✓			X	
11. For quadratic – examine plot: Is a tangent's slope to the curve entirely positive or negative and continuous? (does not flatten or recurve within the range of calibration)	✓			X	
12. For quadratic – evaluate curve fitting errors: Does each point fall within criteria when 'read-back' against the curve? (TA requirement – CA-Q-S-005);(recommended limits ±30% low point & ±20% all other points) (Chrom Report = Details of Calibration per Analyte)	✓			X	
13. Is the concentration intercept <|RL| for each cmpd? ("X" intercept in Chrom)		✓		X	
Were manual integrations performed correctly and properly documented?(dated, initialed and reason given) 2nd review of all MIs required	✓			X	
14. Was the high point checked for detector saturation?		✓		X	

Review Items	NA	Yes	No	2nd Rev	Comments
15.Isomeric pairs(checked for elution order/correct peak assignment? • Vinyl Acetate / Isopropyl Ether • 1,2- & 1,3-& 1,4-Dichlorobenzene • Ethylbenzene / m- & p-Xylenes • o-Xylene / Styrene • 1,3,5- & 1,2,4-Trimethylbenzene / Isopropylbenzene / sec-butylbenzene • 2-nitropropane between bromodichloromethane & MIBK • 2- & 4-Chlorotoluene / n-Propylbenzene • MIBK / 2-Hexanone • Methyl Methacrylate / Ethyl Methacrylate • 1,1-Dichloroethene / cis-1,2- & trans-1,2-Dichloroethene • 1,2,3- & 1,2,4-Trichlorobenzene • 1,1-Dichloropropene / cis-1,3- & trans-1,3-Dichloropropene / 1,2,3-Trichloropropane • Chlorobenzene-d5 / 1,1,1,2-Tetrachloroethane • Trichlorofluoromethane / Freon 113 • Hexane / Vinyl Acetate (Chrom: View/Documents/Methods/Isomers)		✓		X	
16. Was the 2nd source initial calibration verification standard (ICV) within required criteria? (624 = QCS method defined/Table5) (8260B = SOP defined) (DoD = ±20%) QAPP specific_____		✓		X	2-Pentanone −39.7
17. Was the ICV Target report printed and elution order of all analytes verified? (attach at L1 Review)		✓		X	**If No, immediate corrective action required**
18. If any criteria from items 1-17 were not met, was a NCM generated and supervisor copied?		✓		X	
19. Are all files and QC linked and processed correctly?		✓		X	□ Files linked properly to calibration levels? □ All points are in the most recent active calibration event? [Calibration Events –'Fix ICAL linkage' if needed] □ Runs linked to BFB? [QC links] □ Checklist & run log scanned, attached & assigned properly?
20. Is the ICAL locked in TALS and Chrom?		✓		X	
21. ICAL Date and Instrument ID verified?		✓		X	

Comments: _____

3/8/18

2nd Reviewer: Rob B Newcon **Review Date:** 3/9/18

Sequence Name: C:\msdchem\1\sequence\030818PM.s
Comment:
Operator: LINESJ
Data Path: C:\MSDCHEM\1\DATA\030818I\
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Test America Denver
Instrument: R1
V-MS-0010 (8260B/624) (Circle)
Purge Volume: (20mL/5mL/5g) (Circle)
Tune Time: 1835-2222
Tune Results: 407291

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

Sequence Barcode Options
( ) On Mismatch, Inject Anyway
( ) On Mismatch, Don't Inject
(X) Barcode Disabled

Line			Sample Name/Misc Info		
1)	Sample	100	R7050	BFB	BFB
2)	Sample	10	R7051	8260	BLK
3)	Sample	11	R7052	8260	STD03
4)	Sample	12	R7053	8260	STD1
5)	Sample	13	R7054	8260	STD2
6)	Sample	14	R7055	8260	STD5
7)	Sample	15	R7056	8260	STD10
8)	Sample	16	R7057	8260	STD30
9)	Sample	17	R7058	8260	STD60
10)	Sample	18	R7059	8260	BLK
11)	Sample	19	R7060	8260	ICV
12)	Sample	20	R7061	8260	LCS
13)	Sample	21	R7062	8260	MB

3/8/18

TestAmerica Laboratories
Worklist Report

Worklist Name: 030818IC Worklist Number: 67848
Instrument Name: VMS_R1 Chrom Method: AQ_VMSR1_8260
Purge Volume: 20.00 Units: mL
Analysis Type: VOA
Batch Directory: \\ChromNA\Denver\ChromData\VMS_R1\20180308-67848.b
Upload Directory: \\CorpTALSAPP16\280-DN-RawData\Organics\MS\VMS_R1
Run Reagent: MV-568718-D_00014 Amount Added: 1.000, Units: uL
Run Reagent: MV-ARCH SS A_00091 Amount Added: 0.900, Units: uL

Worklist ID	Lims ID	Sample Reagents	Smp Type	Cal Lvl	Fract	Initial Vol/Wt	Vol/Wt Units	Dil Fact
280-0067848-001	# 1 BFB	MV-BFB_00025	BFB		voaWater	1.000	uL	1.000
280-0067848-002	# 2 CCV	MV-Gas/Ket A_00071 MV-2cleve+AVA_00033 MV-Main A_00034	CCV		voaWater	20.00	mL	1.000
280-0067848-003	# 3 CCV	MV-568718-D_00014 MV-Supp A_00029	CCV		voaWater	20.00	mL	1.000
280-0067848-005	# 5 LCS	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCS		voaWater	20.00	mL	1.000
280-0067848-006	# 6 LCSD	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCSD		voaWater	20.00	mL	1.000
280-0067848-007	# 7 MB		MB		voaWater	20.00	mL	1.000
280-0067848-008	# 8 280-100725-A-1		Client		voaWater	20.00	mL	1.000
280-0067848-009	# 9 280-100725-A-2		Client		voaWater	20.00	mL	1.000
280-0067848-010	#10 280-100725-A-3		Client		voaWater	20.00	mL	1.000
280-0067848-011	#11 std003	MV-568718-D_00014 MV-Gas/Ket A_00071 MV-Main A_00034 MV-SS 2-Cleve_00042	IC	1	voaWater	20.00	mL	1.000
280-0067848-012	#12 std01	MV-568718-D_00014 MV-Gas/Ket A_00071 MV-Main A_00034 MV-SS 2-Cleve_00042	IC	2	voaWater	20.00	mL	1.000
280-0067848-013	#13 std02	MV-568718-D_00014 MV-Gas/Ket A_00071 MV-Main A_00034 MV-SS 2-Cleve_00042	IC	3	voaWater	20.00	mL	1.000

Worklist ID	Lims ID	Sample Reagents	Smp Type	Cal Lvl	Fract	Initial Vol/Wt	Vol/Wt Units	Dil Fact
280-0067848-014	#14 std05	MV-568718-D_00014 MV-Gas/Ket A_00071 MV-Main A_00034 MV-SS 2-Cleve_00042	IC	4	voaWater	20.00	mL	1.000
280-0067848-015	#15 ICIS	MV-568718-D_00014 MV-Gas/Ket A_00071 MV-Main A_00034 MV-SS 2-Cleve_00042	ICIS	5	voaWater	20.00	mL	1.000
280-0067848-016	#16 std30	MV-568718-D_00014 MV-Gas/Ket A_00071 MV-Main A_00034 MV-SS 2-Cleve_00042	IC	6	voaWater	20.00	mL	1.000
280-0067848-017	#17 std60	MV-568718-D_00014 MV-Gas/Ket A_00071 MV-Main A_00034 MV-SS 2-Cleve_00042	IC	7	voaWater	20.00	mL	1.000
280-0067848-018	#18 icv	MV-568718-D_00014 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042 MV-Main B_00020	ICV		voaWater	20.00	mL	1.000

Sequence Name: C:\msdchem\1\sequence\031518PM.s
Comment:
Operator: LINESJ
Data Path: C:\MSDCHEM\1\DATA\031518PM\
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Test America Denver
Instrument: BJ
DV-MS-0010 (8260B/624) (Circle)
Purge Volume: (20mL/5mL/5g) (Circle)
Tune Time: 1735 - 2028
Lims Batch: 428044
WL: 68042

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

Sequence Barcode Options
( ) On Mismatch, Inject Anyway
( ) On Mismatch, Don't Inject
(X) Barcode Disabled

Line			Sample Name/Misc Info		
1)	Sample	100	R7378	BFB	BFB
2)	Sample	10	R7379	8260	BLK
3)	Sample	11	R7380	8260	CCV M
4)	Sample	12	R7381	8260	CCV S
5)	Sample	13	R7382	8260	STD2
6)	Sample	14	R7383	8260	STD5
7)	Sample	15	R7384	8260	STD10
8)	Sample	16	R7385	8260	STD30
9)	Sample	17	R7386	8260	STD60
10)	Sample	18	R7387	8260	ICV

3/15/18

Surr ICAL

ICV Line: 15

2nd level

Rel & Newcon 3/15/18

Last Modified: Thu Mar 15 18:46:59 2018 Page: 1

TestAmerica Laboratories
Worklist Report

Worklist Name: 031518ICss
Worklist Number: 68042
Instrument Name: VMS_R1
Chrom Method: AQ_VMSR1_8260
Purge Volume: 20.00
Units: mL
Analysis Type: VOA
Batch Directory: \\ChromNA\Denver\ChromData\VMS_R1\20180315-68042.b
Upload Directory: \\CorpTALSAPP16\280-DN-RawData\Organics\MS\VMS_R1
Run Reagent: MV-568718-D_00014 Amount Added: 1.000, Units: uL
Run Reagent: MV-ARCH SS A_00091 Amount Added: 0.900, Units: uL

Worklist ID	Lims ID	Sample Reagents	Smp Type	Cal Lvl	Fract	Initial Vol/Wt	Vol/Wt Units	Dil Fact
280-0068042-001	# 1 BFB	MV-BFB_00025	BFB		voaWater	1.000	uL	1.000
280-0068042-002	# 2 CCV	MV-Gas/Ket A_00071 MV-2cleve+AVA_00033 MV-Main A_00034	CCV		voaWater	20.00	mL	1.000
280-0068042-003	# 3 CCV	MV-Supp A_00029 MV-568718-D_00014	CCV		voaWater	20.00	mL	1.000
280-0068042-004	# 4 LCS	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCS		voaWater	20.00	mL	1.000
280-0068042-005	# 5 LCSD	MV-Main B_00020 MV-Gas/Ket B_00041 MV-SS 2-Cleve_00042	LCSD		voaWater	20.00	mL	1.000
280-0068042-006	# 6 MB		MB		voaWater	20.00	mL	1.000
280-0068042-007	# 7 280-100725-A-1		Client		voaWater	20.00	mL	1.000
280-0068042-008	# 8 280-100725-A-2		Client		voaWater	20.00	mL	1.000
280-0068042-009	# 9 280-100725-A-3		Client		voaWater	20.00	mL	1.000
280-0068042-010	#10 STD2	MV-568718-D_00014 MV-ARCH SS A_00091	IC	0	voaWater	20.00	mL	1.000
280-0068042-011	#11 STD5	MV-568718-D_00014 MV-ARCH SS A_00091	IC	0	voaWater	20.00	mL	1.000
280-0068042-012	#12 STD10	MV-568718-D_00014 MV-ARCH SS A_00091	IC	0	voaWater	20.00	mL	1.000
280-0068042-013	#13 SDT30	MV-568718-D_00014 MV-ARCH SS A_00091	Client		voaWater	20.00	mL	1.000

Worklist ID	Lims ID	Sample Reagents	Smp Type	Cal Lvl	Fract	Initial Vol/Wt	Vol/Wt Units	Dil Fact
280-0068042-014	#14 STD60	MV-568718-D_00014 MV-ARCH SS A_00091	IC	0	voaWater	20.00	mL	1.000
280-0068042-015	#15 ICV	MV-568718-D_00014 MV-ARCH SS A_00091	ICV		voaWater	20.00	mL	1.000
280-0068042-016	#16 Samp 42		Client		voaWater	20.00	mL	1.000
280-0068042-017	#17 Samp 43		Client		voaWater	20.00	mL	1.000
280-0068042-018	#18 Samp 44		Client		voaWater	20.00	mL	1.000
280-0068042-019	#19 Samp 45		Client		voaWater	20.00	mL	1.000
280-0068042-020	#20 Samp 46		Client		voaWater	20.00	mL	1.000

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Batch Number: 406767 Batch Start Date: 03/05/18 06:53 Batch Analyst: Dobransky, Michael E

Batch Method: 8260B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	MV-568718-D 00008	MV-ARCH SS A 00091	MV-BFB 00025	MV-Supp A 00029
BFB 280-406767/1		8260B		1 uL	1 uL			1 uL	
STD 280-406767/10 IC		8260B		20 mL	20 mL	1 uL	0.08 uL		0.5 uL
STD 280-406767/11 IC		8260B		20 mL	20 mL	1 uL	0.16 uL		1 uL
STD 280-406767/12 IC		8260B		20 mL	20 mL	1 uL	0.4 uL		2.5 uL
ICIS 280-406767/13		8260B		20 mL	20 mL	1 uL	0.8 uL		5 uL
STD 280-406767/14 IC		8260B		20 mL	20 mL	1 uL	2.4 uL		15 uL
STD 280-406767/15 IC		8260B		20 mL	20 mL	1 uL	4.8 uL		30 uL
ICV 280-406767/16		8260B		20 mL	20 mL	1 uL	0.8 uL		

Lab Sample ID	Client Sample ID	Method Chain	Basis	MV-Supp B 00020					
BFB 280-406767/1		8260B							
STD 280-406767/10 IC		8260B							
STD 280-406767/11 IC		8260B							
STD 280-406767/12 IC		8260B							
ICIS 280-406767/13		8260B							
STD 280-406767/14 IC		8260B							

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.

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Batch Number: 406767 Batch Start Date: 03/05/18 06:53 Batch Analyst: Dobransky, Michael E

Batch Method: 8260B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	MV-Supp B 00020					
STD 280-406767/15 IC		8260B							
ICV 280-406767/16		8260B		5 uL					

Batch Notes	

Basis	Basis Description

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.

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Batch Number: 407291 Batch Start Date: 03/08/18 18:35 Batch Analyst: Lines, Jeremy N

Batch Method: 8260B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	MV-2cleve+AVA 00033	MV-568718-D 00014	MV-BFB 00025	MV-Gas/Ket A 00071
BFB 280-407291/1		8260B		1 uL	1 uL			1 uL	
STD003 280-407291/11 IC		8260B		20 mL	20 mL	0.15 uL	1 uL		0.15 uL
STD01 280-407291/12 IC		8260B		20 mL	20 mL	0.5 uL	1 uL		0.5 uL
STD02 280-407291/13 IC		8260B		20 mL	20 mL	1 uL	1 uL		1 uL
STD05 280-407291/14 IC		8260B		20 mL	20 mL	2.5 uL	1 uL		2.5 uL
ICIS 280-407291/15		8260B		20 mL	20 mL	5 uL	1 uL		5 uL
STD30 280-407291/16 IC		8260B		20 mL	20 mL	15 uL	1 uL		15 uL
STD60 280-407291/17 IC		8260B		20 mL	20 mL	30 uL	1 uL		30 uL
ICV 280-407291/18		8260B		20 mL	20 mL		1 uL		

Lab Sample ID	Client Sample ID	Method Chain	Basis	MV-Gas/Ket B 00041	MV-Main A 00034	MV-Main B 00020	MV-SS 2-Cleve 00042		
BFB 280-407291/1		8260B							
STD003 280-407291/11 IC		8260B			0.15 uL				
STD01 280-407291/12 IC		8260B			0.5 uL				
STD02 280-407291/13 IC		8260B			1 uL				
STD05 280-407291/14 IC		8260B			2.5 uL				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Batch Number: 407291 Batch Start Date: 03/08/18 18:35 Batch Analyst: Lines, Jeremy N

Batch Method: 8260B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	MV-Gas/Ket B 00041	MV-Main A 00034	MV-Main B 00020	MV-SS 2-Cleve 00042		
ICIS 280-407291/15		8260B			5 uL				
STD30 280-407291/16 IC		8260B			15 uL				
STD60 280-407291/17 IC		8260B			30 uL				
ICV 280-407291/18		8260B		5 uL		5 uL	5 uL		

Batch Notes	

Basis	Basis Description

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.

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Batch Number: 408044 Batch Start Date: 03/15/18 17:35 Batch Analyst: Lines, Jeremy N

Batch Method: 8260B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	MV-568718-D 00014	MV-ARCH SS A 00091	MV-BFB 00025	
BFB 280-408044/1		8260B		1 uL	1 uL			1 uL	
STD2 280-408044/10 IC		8260B		20 mL	20 mL	1 uL	0.16 uL		
STD5 280-408044/11 IC		8260B		20 mL	20 mL	1 uL	0.4 uL		
STD10 280-408044/12 IC		8260B		20 mL	20 mL	1 uL	0.8 uL		
STD30 280-408044/13 IC		8260B		20 mL	20 mL	1 uL	2.4 uL		
STD60 280-408044/14 IC		8260B		20 mL	20 mL	1 uL	4.8 uL		
ICV 280-408044/15		8260B		20 mL	20 mL	1 uL	0.8 uL		

Batch Notes	

Basis	Basis Description

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.

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Batch Number: 408888 Batch Start Date: 03/23/18 13:22 Batch Analyst: Bourgery, David F

Batch Method: 1311 Batch End Date: 03/23/18 14:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
320-36960-A-26	BNA-IDW-W-01	1311, 8260B	P	Used B too					

Batch Notes	
First End time	03/23/18 14:00
First Start time	03/23/18 13:22

Basis	Basis Description
P	TCLP

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.

Analyst: DB

Date: 3.23.18

DV-IP-0012

TCLP/SPLP Worksheet No. 1

Sample Description

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Login No.	107630	107630	107637	107674	320-36960	320-37176	LB3			
Sample No.	1	3	1	2	26	18				
A. Sample Description										
Number of phases	2	2	2	2	2	2				
1. Solid	X	X	X	X	X	X				
2. Liquid	X	X	X	X	X	X				
a. lighter than water										
b. water	X	X	X	X	X	X				
c. heavier than water										
B. Percent Solid Phase										
Balance ID	24950431	24950431	24950431	24950431	NCM	NCM				
1. Weight of filter (g)	1.18	1.14	1.18	1.18						
2. Weight of subsample										
a. gross weight (g)	1572.69	1569.06	1499.40	1543.90						
b. tare weight (g)	521.37	516.01	502.24	520.76						
c. net weight (g)	1051.32	1053.05	997.16	1023.14	0.00	0.00	0.00	0.00	0.00	0.00
3. Weight of filtrate										
a. gross weight (g)	1680.72	1700.48	1049.60	1671.00						
b. tare weight (g)	664.79	658.62	68.73	664.03						
c. net weight (g)	1015.93	1041.86	980.87	1006.97	0.00	0.00	0.00	0.00	0.00	0.00
d. density of filtrate (g/mL)										
4. Total weight wet solids (g)	35.39	11.19	16.29	16.17	0.00	0.00	0.00	0.00	0.00	0.00
5. Weight percent solids (wet) (%)	3.37	1.06	1.63	1.58	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
6. Weight percent solids (dry)										
a. gross dry weight 1 (g)	8.40	7.05	7.68	7.75						
b. gross dry weight 2 (g)	1.30	1.30	1.44	1.19						
c. percent dry solids (%)	0.01	0.02	0.03	0.00						
d. Oven Temp (observed) (^{o}C)	104	104	104	104						
Thermometer Correction Factor	0									
Oven Temp Actual (^{o}C)	104	104	104	104	0	0	0	0	0	0
7. Vol. of initial aqueous filtrate (mL)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
8. Vol. of initial organic filtrate (mL)										

Comments:

$$(\text{Weight percent dry solids, B.6.c}) = 100 \times \frac{(\text{Gross dry weight 2 or 1, B.6.b or B.6.a if B.6.a is blank}) - (\text{Weight of filter, B.1})}{(\text{Weight of subsample .B.2.c})}$$

(Net Weight of Subsample, B.2.c) = (gross weight, B.2.a) - (tare weight, B.2.b)

(Net Weight of Filtrate, B.3.c) = (gross weight, B.3.a) - (tare weight, B.3.b)

(Total weight wet solids, B.4) = (Weight subsample, B.2.c) - (Weight filtrate, B.3.c)

(Vol of initail filtrate, B.7) = (Weight of filtrate, B.3.c) / (Denisity of filtrate, B.3.d)

(Weight percent wet solids, B.5.) = 100 X (Total weight wet solids, B.4.) / (Weight of subsample, B.2.c.)

Analyst: DB

DV-IP-0012
TCLP Worksheet No. 2
Selection of Leach Fluid

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Login No.	107630	107630	107637	107674	320-36960	320-37176	LB3			
Sample No.	1	3	1	2	26	18				
C. Leach Fluid Determination- Does not apply to determination of volatile organic components or SPLP.										
1. Particle size reduction? (<1mm) Yes/No										
If yes, write NCM descibing how.										
2. Balance ID										
3. Sample weight, 5.0 +/- 0.1g										
4. Add 96.5 (+/- 2% or 94.57mL to 98.43mL)										
a. Pipette ID or Grad Cylinder ID										
5. Initial pH (after 5 min. mixing time)										
a. Start Time for Mixing										
b. Stop Time for Mixing										
c. pH reading after mixing										
6. If pH > 5.0, then add 3.5 mL 1N HCL & mark **"X"**										
a. HCL Lot# used										
b. Pipette ID										
7. Secondary pH (after 10min at 50C to 55C)										
a. Thermometer ID										
Termometer Correction Factor										
b. Start Time										
c. Start Temperature (Observed)										
Start Temperature (Actual)	0	0	0	0	0	0	0	0	0	0
d. Finish Time										
e. Finish Temperature (Observed)										
Finish Temperature (Actual)	0	0	0	0	0	0	0	0	0	0
f. pH reading after heating (temperature corrected)										
D. Selection of Leach Fluid										
1. If pH from C.5. or C.7.f. is <5.0 use Leach Fluid #1										
2. If pH from C.7.f is > 5.0, use Leach Fluid #2										
3. SPLP Fluid 1: Soils- East of the Mississippi River; Wastewates; or Wastewaters										
4. SPLP Fluid 2: Soils- West of Mississippi River										
5. SPLP Fluid 3: If VOCs or Cyanide containing wastes.										
6. **X** if filtrate and fluid are miscible										

Analyst: DB

DV-IP-0012

TCLP/SPLP Worksheet No. 3

Bottle Leach Procedure for Metals and Semi-Volatile Organic Components

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Login No.	107630	107630	107637	107674	320-36960	320-37176	LB3			
Sample No.	1	3	1	2	26	18				
E. Determination of Sample Size										
1. Particle size reduction? Yes/no										
If yes, write NCM descibing how.										
2. Balance ID										
3. Weight of wet solids after filtration (g)										
F. Determination of Amount of Leach Fluid										
Fluid Type from Wksht 2	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1. TCLP Fluid 1 Lot #		230426								
2. TCLP Fluid 2 Lot #										
3. SPLP 1 (East) Lot #										
4. SPLP 2 (West) Lot #										
5. pH of leach fluid										
6. Vol of Fluid = wet solids x 20 (mL)										
G. Record of Leach - leach period is 16 to 20 hours										
1. Rotator checked to be rotating between 28 and 32 RPM?										
2. Leach start date and time										
3. Leach stop date and time										
4. Room temperature										
Thermometer Correction Factor										
a.Temp Min (Observed) (^oC)										
b.Temp Max (Observed) (^oC)										
c.Temp Min (Actual) (^oC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
d.Temp Max (Actual) (^oC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. pH of leachate										
Was the sample multiphasic?	FALSE	FALSE	FALSE	FALSE	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
6. Volume of leachate (mL)										
a. Oil recovered from leachate (mL)										
7. Volume of initial filtrate for recombination (mL)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
8. Combined initial filtrate + leachate (mL)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
COMMENTS:										

(Volume of Fluid, F.4) = (Weight of wet solids, E.3) X 20

(Vol. of Combined Filtrate and Leachate, G.8) = (Vol of Leachate, G.6) + (Vol of Filtrate, G.7)

$$(\text{Vol. of Inital Filtrate for Recombinat ion, G.7}) = \frac{(\text{Solids Leachated, E.3})}{(\text{Tot. Wet Solids, B.4})} \times \frac{(\text{LeachateRe covered, G.6})}{(\text{FluidAdded , F.6})} \times (\text{InitialFil trat, B.7})$$

Analyst: DB

DV-IP-0012
TCLP/SPLP Worksheet No. 4
ZHE Leach

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Login No.	107630	107630	107637	107674	320-36960	320-37176	LB3			
Sample No.	1	3	1	2	26	18				
H.Determination of Amount of Leach Fluid										
1. Balance ID	24950431	24950431		24950431	24950431	24950431				
2. ZHE vessel number	Ginger	Tim		Brenda	Franny	Dawn	Dawn			
3. Weight of material added to ZHE (g)										
"X" if there was headspace in container.										
4. Weight of filtrate in syringe										
a. gross weight (g)										
b. tare weight (g)										
c. net weight (g)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5. Volume of filtrate in syringe (mL)										
6. Wet solids in ZHE (g)										
7. Weight of fluid to add (g)	0	0	0	0	0	0	0	0	0	0
a. TCLP Fluid 1 Lot #										
b. SPLP Fluid 3 Lot #										
c. pH of Blank Fluid										
8. Percent Wet Solids (%)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
I. Record of ZHE Leach - the Leach period is 16 to 20 hours.										
1. Leak Check										
a. Reading #1 (psi)										
b. Reading #2 (psi)										
2. Rotator checked to be rotating between 28 and 32 RPM?										
3. Leach start date & time										
4. Leach stop date & time										
5. Room temperature										
Thermometer Correction Factor										
a.Temp Min (Observed) (^oC)										
b.Temp Max (Observed) (^oC)										
c.Temp Min (Actual) (^oC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
d. Temp Max (Actual) (^oC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. **X** if still under positive pressure after leaching										
7. Volume of leachate recovered (mL)										
a. Volume of oil recovered after leaching										
8. Vol. of initial aqueous filtrate for recombination										
a. Calculated from Worksheet 1 (mL)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
b. Calculated from Worksheet 4 (mL)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

(Net Weight of Filtrate, H.4.c) = (Gross weight, H.4.a.) - (Tare weight, H.4.b.)

(Percent Wet Solids, H.8.) = 100 X **[** (Wet Solids in ZHE, H.6) / (Weight of material added to ZHE, H.3) **]**

(Wet Solids in ZHE, H.6) = (Weight of material added to ZHE, H.3.) - (net weight of filtrate, H.4.c.)

(Vol of Filtrate for recombination, I.7.b) = (Vol of Leachate Recvd, I.6) X (Weight of Filtrate, H.4.c) / (Vol Fluid Added, H.7.)

(Weight of Fluid to add, H.7.) = (Wet Solids in ZHE, H.6) X 20

(Vol of Filtrate for recombination, I.7.a) = **[** (Wet Solids in ZHE, H.6.) / (Tot Wet Solids, B.4) **]** X **[** (Vol Leachate Recvd, I.6.) / (Vol Fluid Add, H.7.) **]** X (Vol Filtrate, B.7.)

COMMENTS:

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 320-36960-1

SDG No.:

Batch Number: 409141 Batch Start Date: 03/27/18 06:23 Batch Analyst: Wickham, Tom A

Batch Method: 8260B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	MV-2cleve+AVA 00033	MV-568718-D 00014	MV-ARCH SS A 00091	MV-BFB 00025
BFB 280-409141/1		8260B		1 uL	1 uL				1 uL
CCV 280-409141/2		8260B		20 mL	20 mL	5 uL	1 uL	0.9 uL	
CCV 280-409141/3		8260B		20 mL	20 mL		1 uL		
LCS 280-408888/2-A		8260B		2 mL	20 mL		1 uL	0.9 uL	
LB3 280-408888/1-A		8260B		2 mL	20 mL		1 uL	0.9 uL	
320-36960-A-26-A	BNA-IDW-W-01	8260B	P	2 mL	20 mL		1 uL	0.9 uL	
CCVC 280-409141/28		8260B		20 mL	20 mL	5 uL	1 uL	0.9 uL	

Lab Sample ID	Client Sample ID	Method Chain	Basis	MV-Gas/Ket A 00071	MV-Gas/Ket B 00041	MV-Main A 00034	MV-Main B 00020	MV-SS 2-Cleve 00042	MV-Supp A 00029
BFB 280-409141/1		8260B							
CCV 280-409141/2		8260B		5 uL		5 uL			
CCV 280-409141/3		8260B							5 uL
LCS 280-408888/2-A		8260B			2.5 uL		2.5 uL	2.5 uL	
LB3 280-408888/1-A		8260B							
320-36960-A-26-A	BNA-IDW-W-01	8260B	P						
CCVC 280-409141/28		8260B		5 uL		5 uL			

Batch Notes	

Basis	Basis Description
P	TCLP

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.

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Batch Number: 269508 Batch Start Date: 03/20/18 14:43 Batch Analyst: Kidder, Robert 1

Batch Method: 1311 Batch End Date: 03/21/18 11:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	VesselNumber	TCLP%Solids	ExtractFluid	Pressure_Init
MB 580-269508/1		1311, 8260B		25.0 g	500 mL		100 %	1	50
LCS 580-269508/2		1311, 8260B		25.0 g	500 mL		100 %	1	50
LCSD 580-269508/3		1311, 8260B		25.0 g	500 mL		100 %	1	50
320-36960-A-21	BNA-IDW-5-01	1311, 8260B	P	25.0 g	500 mL	2g	100 %	1	50

Lab Sample ID	Client Sample ID	Method Chain	Basis	Pressure_Final					
MB 580-269508/1		1311, 8260B		50					
LCS 580-269508/2		1311, 8260B		50					
LCSD 580-269508/3		1311, 8260B		50					
320-36960-A-21	BNA-IDW-5-01	1311, 8260B	P	50					

Batch Notes	
Balance ID	SEA237
First End time	3/21/18@1015
Filter Paper ID	14141050
Minumum Temperature	21.0 Celsius
Room Temperature Thermometer ID	122531678
First Start time	3/20/18@1700
TCLP Fluid 1 ID	20050466
Maximum Temperature	22.6 Celsius
Thermometer ID	64155
Tumbler Rotations per Minute	30
Uncorrected Maximum Temperature	22.9 Celsius
Uncorrected Minimum Temperature	21.3 Celsius

Basis	Basis Description
P	TCLP

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.

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Batch Number: 269589 Batch Start Date: 03/21/18 11:40 Batch Analyst: Pimtong, Pratumrat 1

Batch Method: 8260B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	BFB 00002	SURR/IS/TFT 00100	VOAMasterMix 00018	VOAMasterSEC 00014
BFB 580-269589/2		8260B		5 mL	5 mL	1 uL	1 uL		
IC 580-269589/3		8260B		5 mL	5 mL		1 uL	0.5 uL	
IC 580-269589/4		8260B		5 mL	5 mL		1 uL	1 uL	
IC 580-269589/5		8260B		5 mL	5 mL		1 uL	5 uL	
IC 580-269589/6		8260B		5 mL	5 mL		1 uL	10 uL	
ICIS 580-269589/7		8260B		5 mL	5 mL		1 uL	20 uL	
IC 580-269589/8		8260B		5 mL	5 mL		1 uL	50 uL	
IC 580-269589/9		8260B		5 mL	5 mL		1 uL	75 uL	
IC 580-269589/10		8260B		5 mL	5 mL		1 uL	100 uL	
ICV 580-269589/12		8260B		5 mL	5 mL		1 uL		20 uL

Batch Notes	

Basis	Basis Description

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.

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica Seattle Job No.: 320-36960-1

SDG No.:

Batch Number: 269828 Batch Start Date: 03/25/18 02:23 Batch Analyst: Pimtong, Pratumrat 1

Batch Method: 8260B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	BFB 00002	SURR/IS/TFT 00100	VOAMasterMix 00018	
BFB 580-269828/2		8260B		5 mL	5 mL	1 uL	1 uL		
CCVIS 580-269828/3		8260B		5 mL	5 mL		1 uL	20 uL	
MB 580-269508/1-A		8260B		5 mL	5 mL		1 uL		
LCS 580-269508/2-A		8260B		5 mL	5 mL		1 uL	10 uL	
LCSD 580-269508/3-A		8260B		5 mL	5 mL		1 uL	10 uL	
320-36960-A-21-A	BNA-IDW-5-01	8260B	P	5 mL	5 mL		1 uL		
CCVC 580-269828/13		8260B		5 mL	5 mL		1 uL	20 uL	

Batch Notes	

Basis	Basis Description
P	TCLP

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.

Method PFC DOD

Fluorinated Hydrocarbons (LC/MS) by Method PFAS_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Solid Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBS #	PFHpA #	PFHxS #	PFOA #	PFNA #	PFOS #
BNA01-SB1-01	320-36960-4	55	73	60	72	73	58
BNA01-SB1-01 DL	320-36960-4 DL	53	73	61	71	75	61
BNA01-SB1-02	320-36960-5	65	75	73	79	81	67
BNA03-SB1-01	320-36960-6	60	71	64	70	70	60
BNA03-SB1-01D	320-36960-7	58	74	63	71	72	63
BNA03-SB1-02	320-36960-8	65	71	65	75	78	65
BNA03-SB2-01	320-36960-9	60	70	63	68	73	63
BNA03-SB2-01D	320-36960-10	64	71	65	70	73	66
BNA03-SB2-02	320-36960-11	66	77	74	75	77	68
BNA04-SB1-01	320-36960-12	60	71	65	69	71	65
BNA04-SB1-02	320-36960-13	64	71	64	71	75	65
BNA05-SB1-01	320-36960-14	66	75	72	82	81	63
BNA05-SB1-02	320-36960-15	66	82	73	81	82	64
BNA05-SD1-01	320-36960-18	68	79	78	85	94	84
	MB 320-213404/1-A	81	87	86	87	94	84
	LCS 320-213404/2-A	74	84	82	84	90	80
BNA01-SB1-01 MS	320-36960-4 MS	52	72	53	73	77	51
BNA01-SB1-01 MS DL	320-36960-4 MS DL	51	71	57	76	79	55
BNA01-SB1-01 MSD	320-36960-4 MSD	56	77	60	76	79	58
BNA01-SB1-01 MSD DL	320-36960-4 MSD DL	50	70	61	75	78	58

	QC LIMITS
PFBS = 13C3-PFBS	50-150
PFHpA = 13C4-PFHpA	50-150
PFHxS = 18O2 PFHxS	50-150
PFOA = 13C4 PFOA	50-150
PFOS = 13C4 PFOS	50-150
PFNA = 13C5 PFNA	50-150

Column to be used to flag recovery values

FORM II EPA 537 (Mod)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBS #	PFHpA #	PFHxS #	PFOA #	PFNA #	PFOS #
BNA-ER-SB-01	320-36960-1	87	93	90	96	89	89
BNA-FB-01	320-36960-2	94	95	93	94	97	94
BNA-RB-01	320-36960-3	96	93	93	96	98	98
BNA05-SW1-01	320-36960-16	79	79	79	77	78	76
BNA05-ER-SD-01	320-36960-17	93	91	94	94	92	92
BNA-ER-GW-01	320-36960-19	90	90	95	91	93	88
BNA-FB-02	320-36960-20	89	92	95	95	97	93
MW-BNA05-01-01	320-36960-22	84	91	91	93	93	90
MW-BNA05-01-01 RE	320-36960-22 RE	14 Q	9 Q	13 Q	9 Q	9 Q	11 Q
MW-BNA05-01-01D	320-36960-23	65	68	72	55	72	69
MW-BNA01-01-01	320-36960-24	69	70	75	74	70	73
BNA04-SW1-01	320-36960-25	67	68	73	68	64	67
	MB 320-213387/1-A	90	93	92	97	101	91
	MB 320-214457/1-A	70	69	71	67	68	67
	LCS 320-213387/2-A	91	96	93	95	97	90
	LCS 320-214457/2-A	72	74	73	72	75	73
MW-BNA05-01-01 MS	320-36960-22 MS	87	90	95	96	94	92
MW-BNA05-01-01 MS RE	320-36960-22 MS RE	60 Q	62 Q	63 Q	63 Q	61 Q	61 Q
MW-BNA05-01-01 MSD	320-36960-22 MSD	88	87	91	94	95	93
MW-BNA05-01-01 MSD RE	320-36960-22 MSD RE	72	76	77	74	74	75

	QC LIMITS
PFBS = 13C3-PFBS	50-150
PFHpA = 13C4-PFHpA	50-150
PFHxS = 18O2 PFHxS	50-150
PFOA = 13C4 PFOA	50-150
PFOS = 13C4 PFOS	50-150
PFNA = 13C5 PFNA	50-150

Column to be used to flag recovery values

FORM II EPA 537 (Mod)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.03.19LLAA_028.d

Lab ID: LCS 320-213387/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	40.0	42.5	106	80-113	
Perfluorooctanoic acid (PFOA)	40.0	46.6	116	80-107	Q
Perfluorononanoic acid (PFNA)	40.0	43.0	108	83-113	
13C3-PFBS	93.0	84.3	91	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	40.3	114	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.6	101	81-106	
Perfluorooctanesulfonic acid (PFOS)	37.1	40.7	110	82-112	
13C4-PFHpA	100	95.7	96	50-150	
13C4 PFOA	100	95.1	95	50-150	
13C5 PFNA	100	96.7	97	50-150	
18O2 PFHxS	94.6	88.4	93	50-150	
13C4 PFOS	95.6	86.3	90	50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.04.07LLA1_008.d

Lab ID: LCS 320-213404/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	2.00	2.47	124	76-124	
Perfluorooctanoic acid (PFOA)	2.00	2.39	120	76-121	
Perfluorononanoic acid (PFNA)	2.00	2.62	131	74-126	Q
13C3-PFBS	4.65	3.44	74	50-150	
Perfluorobutanesulfonic acid (PFBS)	1.77	2.27	128	73-142	
Perfluorohexanesulfonic acid (PFHxS)	1.82	2.15	118	75-121	
Perfluorooctanesulfonic acid (PFOS)	1.86	2.33	125	69-131	M
13C4-PFHpA	5.00	4.20	84	50-150	
13C4 PFOA	5.00	4.22	84	50-150	
13C5 PFNA	5.00	4.48	90	50-150	
18O2 PFHxS	4.73	3.88	82	50-150	
13C4 PFOS	4.78	3.83	80	50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.03.24LLAA_008.d

Lab ID: LCS 320-214457/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	40.0	38.1	95	80-113	
Perfluorooctanoic acid (PFOA)	40.0	36.1	90	80-107	
Perfluorononanoic acid (PFNA)	40.0	36.5	91	83-113	
13C3-PFBS	93.0	67.0	72	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	33.7	95	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.6	90	81-106	
Perfluorooctanesulfonic acid (PFOS)	37.1	34.1	92	82-112	
13C4-PFHpA	100	74.4	74	50-150	
13C4 PFOA	100	72.0	72	50-150	
13C5 PFNA	100	74.6	75	50-150	
18O2 PFHxS	94.6	69.5	73	50-150	
13C4 PFOS	95.6	69.7	73	50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.04.07LLA_010.d

Lab ID: 320-36960-4 MS Client ID: BNA01-SB1-01 MS

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	2.50	0.19 J	2.83	106	76-124	
Perfluorooctanoic acid (PFOA)	2.50	0.40	2.84	98	76-121	
Perfluorononanoic acid (PFNA)	2.50	0.25 U	2.63	105	74-126	
13C3-PFBS	5.81	3.2	3.00	52	50-150	
Perfluorobutanesulfonic acid (PFBS)	2.21	0.99	3.42	110	73-142	
Perfluorohexanesulfonic acid (PFHxS)	2.27	6.0	8.22	99	75-121	
Perfluorooctanesulfonic acid (PFOS)	2.32	27	29.7	116	69-131	E 4
13C4-PFHpA	6.25	4.6	4.52	72	50-150	
13C4 PFOA	6.25	4.5	4.55	73	50-150	
13C5 PFNA	6.25	4.5	4.80	77	50-150	
18O2 PFHxS	5.91	3.5	3.13	53	50-150	
13C4 PFOS	5.97	3.4	3.05	51	50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.04.07LLA1_027.d

Lab ID: 320-36960-4 MS DL Client ID: BNA01-SB1-01 MS DL

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	2.50	1.2 U	2.98	119	76-124	D
Perfluorooctanoic acid (PFOA)	2.50	1.2 U	3.12	125	76-121	D J1
Perfluorononanoic acid (PFNA)	2.50	1.2 U	2.71	109	74-126	D
13C3-PFBS	5.81	3.1	2.99	51	50-150	
Perfluorobutanesulfonic acid (PFBS)	2.21	1.1 J	3.75	120	73-142	D
Perfluorohexanesulfonic acid (PFHxS)	2.27	6.4	8.09	74	75-121	D J1
Perfluorooctanesulfonic acid (PFOS)	2.32	27	29.0	108	69-131	D 4
13C4-PFHpA	6.25	4.5	4.47	71	50-150	
13C4 PFOA	6.25	4.4	4.76	76	50-150	
13C5 PFNA	6.25	4.7	4.93	79	50-150	
18O2 PFHxS	5.91	3.6	3.38	57	50-150	
13C4 PFOS	5.97	3.6	3.27	55	50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.03.19LLAX_045.d

Lab ID: 320-36960-22 MS Client ID: MW-BNA05-01-01 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	39.7	3.2	47.1	110	80-113	
Perfluorooctanoic acid (PFOA)	39.7	12	56.4	111	80-107	J1
Perfluorononanoic acid (PFNA)	39.7	1.3 J	44.3	108	83-113	
13C3-PFBS	92.3	78	80.4	87	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.1	5.1	45.9	116	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.1	75	114	106	81-106	
Perfluorooctanesulfonic acid (PFOS)	36.9	66	109	116	82-112	J1
13C4-PFHpA	99.3	90	89.8	90	50-150	
13C4 PFOA	99.3	92	95.4	96	50-150	
13C5 PFNA	99.3	93	93.3	94	50-150	
18O2 PFHxS	93.9	86	89.1	95	50-150	
13C4 PFOS	94.9	86	87.8	92	50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.03.24LLAA_011.d

Lab ID: 320-36960-22 MS RE Client ID: MW-BNA05-01-01 MS RE

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	38.8	3.6	36.2	84	80-113	
Perfluorooctanoic acid (PFOA)	38.8	12	44.9	84	80-107	
Perfluorononanoic acid (PFNA)	38.8	1.4 U	37.2	96	83-113	
13C3-PFBS	90.1	13	53.9	60	50-150	Q
Perfluorobutanesulfonic acid (PFBS)	34.3	5.0	35.4	89	87-120	
Perfluorohexanesulfonic acid (PFHxS)	35.3	78	99.6	61	81-106	J1
Perfluorooctanesulfonic acid (PFOS)	36.0	68	95.0	76	82-112	J1
13C4-PFHpA	96.9	8.4	59.7	62	50-150	Q
13C4 PFOA	96.9	8.3	61.1	63	50-150	Q
13C5 PFNA	96.9	8.1	58.8	61	50-150	Q
18O2 PFHxS	91.7	12	57.8	63	50-150	Q
13C4 PFOS	92.6	10	56.1	61	50-150	Q

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.04.07LLA_011.d

Lab ID: 320-36960-4 MSD Client ID: BNA01-SB1-01 MSD

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	2.51	2.74	101	3	30	76-124	
Perfluorooctanoic acid (PFOA)	2.51	2.85	98	0	30	76-121	
Perfluorononanoic acid (PFNA)	2.51	2.71	108	3	30	74-126	
13C3-PFBS	5.84	3.27	56			50-150	
Perfluorobutanesulfonic acid (PFBS)	2.22	3.24	101	6	30	73-142	
Perfluorohexanesulfonic acid (PFHxS)	2.29	6.61	28	22	30	75-121	J1
Perfluorooctanesulfonic acid (PFOS)	2.33	25.8	-54	14	30	69-131	E 4
13C4-PFHpA	6.28	4.84	77			50-150	
13C4 PFOA	6.28	4.79	76			50-150	
13C5 PFNA	6.28	4.94	79			50-150	
18O2 PFHxS	5.95	3.59	60			50-150	
13C4 PFOS	6.01	3.47	58			50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.04.07LLA1_028.d

Lab ID: 320-36960-4 MSD DL Client ID: BNA01-SB1-01 MSD DL

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	2.51	3.15	125	6	30	76-124	D J1
Perfluorooctanoic acid (PFOA)	2.51	2.87	114	8	30	76-121	D M
Perfluorononanoic acid (PFNA)	2.51	2.78	110	2	30	74-126	D
13C3-PFBS	5.84	2.94	50			50-150	
Perfluorobutanesulfonic acid (PFBS)	2.22	3.67	116	2	30	73-142	D
Perfluorohexanesulfonic acid (PFHxS)	2.29	6.58	8	21	30	75-121	D J1
Perfluorooctanesulfonic acid (PFOS)	2.33	26.0	-23	11	30	69-131	D M 4
13C4-PFHpA	6.28	4.38	70			50-150	
13C4 PFOA	6.28	4.73	75			50-150	
13C5 PFNA	6.28	4.90	78			50-150	
18O2 PFHxS	5.95	3.61	61			50-150	
13C4 PFOS	6.01	3.47	58			50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.03.19LLAX_046.d

Lab ID: 320-36960-22 MSD Client ID: MW-BNA05-01-01 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	39.7	47.2	111	0	30	80-113	
Perfluorooctanoic acid (PFOA)	39.7	57.0	113	1	30	80-107	J1
Perfluorononanoic acid (PFNA)	39.7	42.7	104	4	30	83-113	
13C3-PFBS	92.2	81.5	88			50-150	
Perfluorobutanesulfonic acid (PFBS)	35.1	42.8	107	7	30	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.1	114	108	0	30	81-106	J1
Perfluorooctanesulfonic acid (PFOS)	36.8	105	107	3	30	82-112	
13C4-PFHpA	99.1	85.8	87			50-150	
13C4 PFOA	99.1	93.1	94			50-150	
13C5 PFNA	99.1	94.5	95			50-150	
18O2 PFHxS	93.8	85.5	91			50-150	
13C4 PFOS	94.8	88.4	93			50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.03.24LLAA_012.d

Lab ID: 320-36960-22 MSD RE Client ID: MW-BNA05-01-01 MSD RE

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	38.2	38.9	92	7	30	80-113	
Perfluorooctanoic acid (PFOA)	38.2	46.7	90	4	30	80-107	
Perfluorononanoic acid (PFNA)	38.2	37.0	97	0	30	83-113	
13C3-PFBS	88.8	64.0	72			50-150	
Perfluorobutanesulfonic acid (PFBS)	33.8	35.7	91	1	30	87-120	
Perfluorohexanesulfonic acid (PFHxS)	34.7	97.9	57	2	30	81-106	J1
Perfluorooctanesulfonic acid (PFOS)	35.4	95.9	80	1	30	82-112	J1
13C4-PFHpA	95.5	72.5	76			50-150	
13C4 PFOA	95.5	70.7	74			50-150	
13C5 PFNA	95.5	70.2	74			50-150	
18O2 PFHxS	90.3	69.5	77			50-150	
13C4 PFOS	91.3	68.4	75			50-150	

Column to be used to flag recovery and RPD values

FORM III EPA 537 (Mod)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab File ID: 2018.03.19LLA_027.d Lab Sample ID: MB 320-213387/1-A

Matrix: Water Date Extracted: 03/16/2018 10:38

Instrument ID: A8_N Date Analyzed: 03/19/2018 11:20

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-213387/2-A	2018.03.19LLAA_028.d	03/19/2018 13:18
BNA-ER-SB-01	320-36960-1	2018.03.19LLAX_037.d	03/19/2018 19:26
BNA-FB-01	320-36960-2	2018.03.19LLAX_038.d	03/19/2018 19:33
BNA-RB-01	320-36960-3	2018.03.19LLAX_039.d	03/19/2018 19:41
BNA05-ER-SD-01	320-36960-17	2018.03.19LLAX_041.d	03/19/2018 19:57
BNA-ER-GW-01	320-36960-19	2018.03.19LLAX_042.d	03/19/2018 20:05
BNA-FB-02	320-36960-20	2018.03.19LLAX_043.d	03/19/2018 20:13
MW-BNA05-01-01	320-36960-22	2018.03.19LLAX_044.d	03/19/2018 20:20
MW-BNA05-01-01 MS	320-36960-22 MS	2018.03.19LLAX_045.d	03/19/2018 20:28
MW-BNA05-01-01 MSD	320-36960-22 MSD	2018.03.19LLAX_046.d	03/19/2018 20:36

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab File ID: 2018.04.07LLA_007.d Lab Sample ID: MB 320-213404/1-A

Matrix: Solid Date Extracted: 03/16/2018 11:19

Instrument ID: A8_N Date Analyzed: 04/07/2018 09:24

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
BNA01-SB1-01	320-36960-4	2018.04.07LLA_009.d	04/07/2018 09:40
BNA01-SB1-01 MS	320-36960-4 MS	2018.04.07LLA_010.d	04/07/2018 09:48
BNA01-SB1-01 MSD	320-36960-4 MSD	2018.04.07LLA_011.d	04/07/2018 09:55
BNA01-SB1-02	320-36960-5	2018.04.07LLA_012.d	04/07/2018 10:03
BNA03-SB1-01	320-36960-6	2018.04.07LLA_013.d	04/07/2018 10:11
BNA03-SB1-01D	320-36960-7	2018.04.07LLA_014.d	04/07/2018 10:19
BNA03-SB1-02	320-36960-8	2018.04.07LLA_015.d	04/07/2018 10:27
BNA03-SB2-01	320-36960-9	2018.04.07LLA_016.d	04/07/2018 10:35
BNA03-SB2-01D	320-36960-10	2018.04.07LLA_018.d	04/07/2018 10:50
BNA03-SB2-02	320-36960-11	2018.04.07LLA_019.d	04/07/2018 10:58
BNA04-SB1-01	320-36960-12	2018.04.07LLA_020.d	04/07/2018 11:06
BNA04-SB1-02	320-36960-13	2018.04.07LLA_021.d	04/07/2018 11:14
BNA05-SB1-01	320-36960-14	2018.04.07LLA_022.d	04/07/2018 11:22
BNA05-SB1-02	320-36960-15	2018.04.07LLA_023.d	04/07/2018 11:29
BNA05-SD1-01	320-36960-18	2018.04.07LLA_024.d	04/07/2018 11:37
	LCS 320-213404/2-A	2018.04.07LLA1_008.d	04/07/2018 11:53
BNA01-SB1-01 DL	320-36960-4 DL	2018.04.07LLA1_026.d	04/07/2018 12:01
BNA01-SB1-01 MS DL	320-36960-4 MS DL	2018.04.07LLA1_027.d	04/07/2018 12:09
BNA01-SB1-01 MSD DL	320-36960-4 MSD DL	2018.04.07LLA1_028.d	04/07/2018 12:16

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab File ID: 2018.03.24LLAA_007.d Lab Sample ID: MB 320-214457/1-A

Matrix: Water Date Extracted: 03/22/2018 18:07

Instrument ID: A8_N Date Analyzed: 03/24/2018 19:26

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-214457/2-A	2018.03.24LLAA_008.d	03/24/2018 19:34
BNA05-SW1-01	320-36960-16	2018.03.24LLAA_009.d	03/24/2018 19:42
MW-BNA05-01-01 RE	320-36960-22 RE	2018.03.24LLAA_010.d	03/24/2018 19:50
MW-BNA05-01-01 MS RE	320-36960-22 MS RE	2018.03.24LLAA_011.d	03/24/2018 19:58
MW-BNA05-01-01 MSD RE	320-36960-22 MSD RE	2018.03.24LLAA_012.d	03/24/2018 20:05
MW-BNA05-01-01D	320-36960-23	2018.03.24LLAA_013.d	03/24/2018 20:13
MW-BNA01-01-01	320-36960-24	2018.03.24LLAA_014.d	03/24/2018 20:21
BNA04-SW1-01	320-36960-25	2018.03.24LLAA_015.d	03/24/2018 20:29

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Sample No.: IC 320-213555/5 Date Analyzed: 03/16/2018 23:33

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.03.16ICAL_005. Heated Purge: (Y/N) N

Calibration ID: 38194

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		4548538	2.68				
UPPER LIMIT		6822807	2.88				
LOWER LIMIT		2274269	2.48				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 320-213555/9		4410810	2.68				
ICV 320-213555/10		4328656	2.67				
CCV 320-213658/3 CCVIS		4352112	2.71				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII EPA 537 (MOD)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Sample No.: CCV 320-213658/3 Date Analyzed: 03/19/2018 10:26

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.03.19LLA_005.d Heated Purge: (Y/N) N

Calibration ID: 38194

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4352112	2.71				
UPPER LIMIT		6528168	2.91				
LOWER LIMIT		2176056	2.51				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 320-213672/4		4467295	2.70				
MB 320-213387/1-A		4531633	2.71				
CCV 320-213672/14		4563769	2.70				
CCV 320-213706/1		4386533	2.70				
LCS 320-213387/2-A		4487912	2.70				
CCV 320-213706/3		4436546	2.71				
CCV 320-213789/1		4095930	2.69				
320-36960-1	BNA-ER-SB-01	4474930	2.70				
320-36960-2	BNA-FB-01	4196187	2.69				
320-36960-3	BNA-RB-01	3990883	2.69				
320-36960-17	BNA05-ER-SD-01	4324208	2.68				
320-36960-19	BNA-ER-GW-01	4435162	2.70				
320-36960-20	BNA-FB-02	4241396	2.69				
320-36960-22	MW-BNA05-01-01	4296902	2.69				
320-36960-22 MS	MW-BNA05-01-01 MS	4208784	2.69				
320-36960-22 MSD	MW-BNA05-01-01 MSD	4286182	2.69				
CCV 320-213789/12		4078674	2.68				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII EPA 537 (MOD)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Sample No.: IC 320-214176/5 Date Analyzed: 03/21/2018 18:47

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.03.21LLICALAX_ Heated Purge: (Y/N) N

Calibration ID: 38242

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		5311138	2.70				
UPPER LIMIT		7966707	2.90				
LOWER LIMIT		2655569	2.50				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 320-214176/9		5094636	2.69				
ICV 320-214176/10		5042269	2.70				
CCV 320-214716/3 CCVIS		4968245	2.71				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII EPA 537 (MOD)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Sample No.: CCV 320-214716/3 Date Analyzed: 03/24/2018 19:18

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.03.24LLAA_006. Heated Purge: (Y/N) N

Calibration ID: 38242

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4968245	2.71				
UPPER LIMIT		7452368	2.91				
LOWER LIMIT		2484123	2.51				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-214716/1		4822111	2.71				
CCVL 320-214716/2		5059005	2.71				
MB 320-214457/1-A		6477006	2.72				
LCS 320-214457/2-A		6159195	2.71				
320-36960-16	BNA05-SW1-01	6511999	2.72				
320-36960-22 RE	MW-BNA05-01-01 RE	7780766Q	2.71				
320-36960-22 MS RE	MW-BNA05-01-01 MS RE	8261451Q	2.72				
320-36960-22 MSD RE	MW-BNA05-01-01 MSD RE	6471516	2.72				
320-36960-23	MW-BNA05-01-01D	6912011	2.73				
320-36960-24	MW-BNA01-01-01	7056457	2.71				
320-36960-25	BNA04-SW1-01	6821169	2.71				
CCV 320-214716/15		4757103	2.71				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII EPA 537 (MOD)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Sample No.: IC 320-215538/5 Date Analyzed: 03/29/2018 17:50

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.03.29A_ICALB_0 Heated Purge: (Y/N) N

Calibration ID: 38354

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		4517618	2.69				
UPPER LIMIT		6776427	2.89				
LOWER LIMIT		2258809	2.49				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 320-215538/9		4317989	2.69				
ICV 320-215538/10		4235745	2.68				
CCV 320-216821/3 CCVIS		4896716	2.66				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII EPA 537 (MOD)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Sample No.: CCV 320-216821/3 Date Analyzed: 04/07/2018 09:16

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.04.07LLA_006.d Heated Purge: (Y/N) N

Calibration ID: 38354

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4896716	2.66				
UPPER LIMIT		7345074	2.86				
LOWER LIMIT		2448358	2.46				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-216821/1		4655047	2.66				
CCVL 320-216821/2		4898002	2.66				
MB 320-213404/1-A		4786207	2.66				
320-36960-4	BNA01-SB1-01	5322209	2.67				
320-36960-4 MS	BNA01-SB1-01 MS	5196161	2.66				
320-36960-4 MSD	BNA01-SB1-01 MSD	4819277	2.66				
320-36960-5	BNA01-SB1-02	5182843	2.66				
320-36960-6	BNA03-SB1-01	4819652	2.66				
320-36960-7	BNA03-SB1-01D	4931400	2.66				
320-36960-8	BNA03-SB1-02	4835997	2.66				
320-36960-9	BNA03-SB2-01	4969857	2.66				
CCV 320-216821/14		4723212	2.67				
320-36960-10	BNA03-SB2-01D	4815643	2.67				
320-36960-11	BNA03-SB2-02	4742800	2.66				
320-36960-12	BNA04-SB1-01	4785311	2.66				
320-36960-13	BNA04-SB1-02	4670918	2.66				
320-36960-14	BNA05-SB1-01	5075132	2.66				
320-36960-15	BNA05-SB1-02	4888481	2.66				
320-36960-18	BNA05-SD1-01	5141886	2.65				
CCV 320-216821/22		4846592	2.65				
CCV 320-216849/1		4846592	2.65				
LCS 320-213404/2-A		5174188	2.66				
320-36960-4 DL	BNA01-SB1-01 DL	979650Q	2.66				
320-36960-4 MS DL	BNA01-SB1-01 MS DL	939322Q	2.67				
320-36960-4 MSD DL	BNA01-SB1-01 MSD DL	923834Q	2.67				
CCV 320-216849/6		4621448	2.66				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII EPA 537 (MOD)

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA-ER-SB-01 | Lab Sample ID: 320-36960-1

Matrix: Water | Lab File ID: 2018.03.19LLAX_037.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 10:45

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 252.4(mL) | Date Analyzed: 03/19/2018 19:26

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	1.5	0.53
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.99	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	87		50-150
STL01892	13C4-PFHpA	93		50-150
STL00990	13C4 PFOA	96		50-150
STL00995	13C5 PFNA	89		50-150
STL00994	18O2 PFHxS	90		50-150
STL00991	13C4 PFOS	89		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_037.d
Lims ID: 320-36960-A-1-A
Client ID: BNA-ER-SB-01
Sample Type: Client
Inject. Date: 19-Mar-2018 19:26:05 ALS Bottle#: 23 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:44:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.740	-0.004	0.644	80641	2.03		87.2	1363	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.335	-0.007	0.863	4063490	2.32		93.0	118835	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.354	2.348	0.006	1.006	15803	0.006714			21.3	
399.00 > 99.00	2.341	2.348	-0.007	1.000	6481		2.44(1.50-4.49)		13.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.868	4990937	2.14		90.5	98189	
D 14 13C4 PFOA										
417.00 > 372.00	2.696	2.706	-0.010	1.000	4033827	2.39		95.6	140389	
* 62 13C2-PFOA										
415.00 > 370.00	2.696	2.706	-0.010		4474930	2.50			136079	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.083	-0.018	1.137	3461113	2.12		88.8	30368	
D 19 13C5 PFNA										
468.00 > 423.00	3.072	3.083	-0.011	1.139	3015024	2.23		89.3	58186	

Report Date: 22-Mar-2018 10:49:25 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_037.d

Injection Date: 19-Mar-2018 19:26:05 Instrument ID: A8_N

Lims ID: 320-36960-A-1-A Lab Sample ID: 320-36960-1

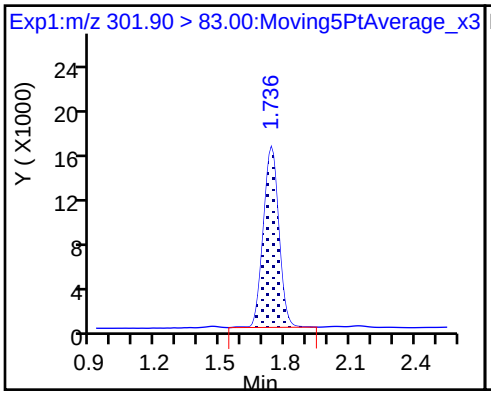
Client ID: BNA-ER-SB-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 2

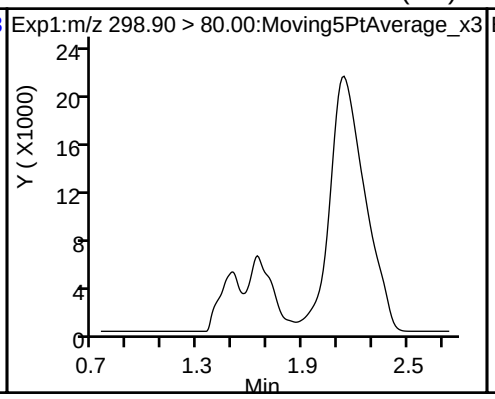
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

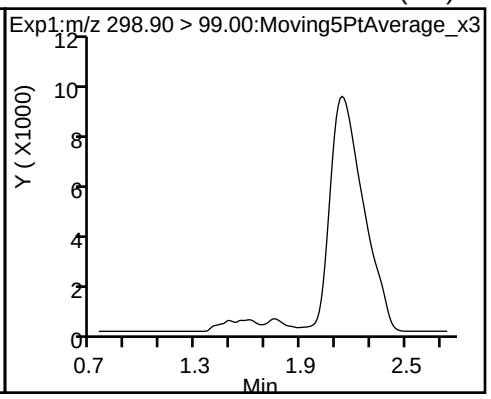
D 47 13C3-PFBS



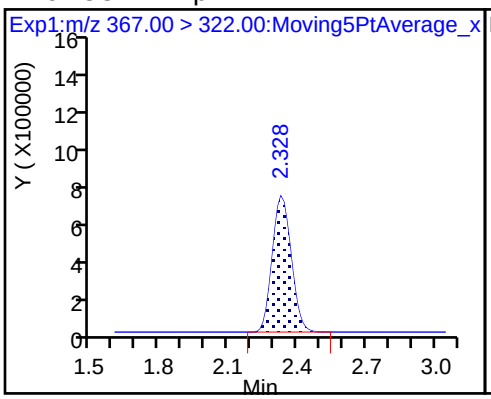
5 Perfluorobutanesulfonic acid (ND)



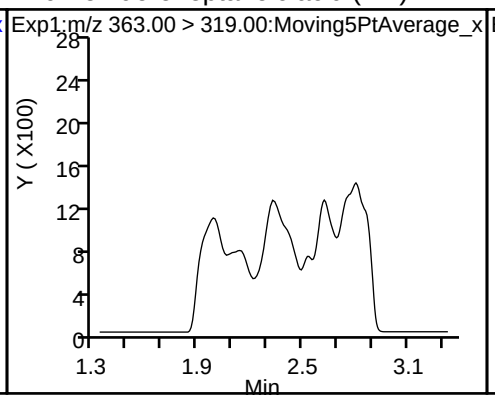
5 Perfluorobutanesulfonic acid (ND)



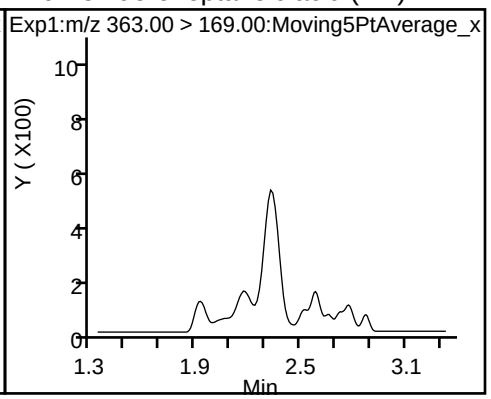
D 9 13C4-PFHpA



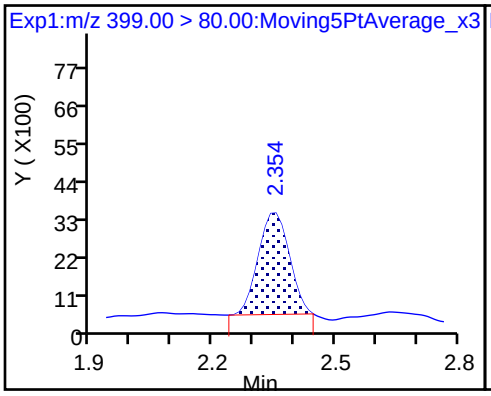
10 Perfluoroheptanoic acid (ND)



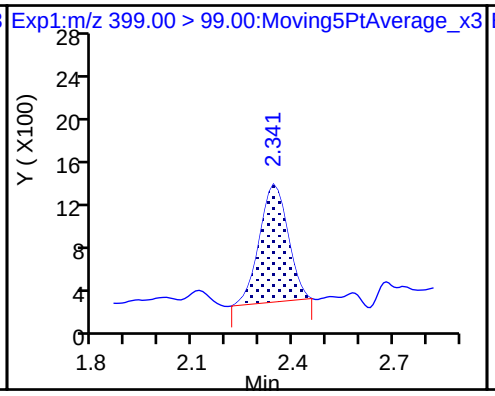
10 Perfluoroheptanoic acid (ND)



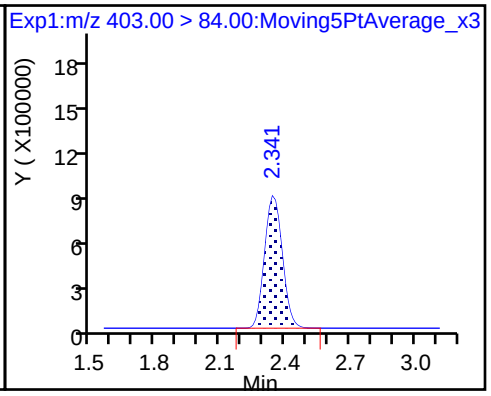
8 Perfluorohexanesulfonic acid



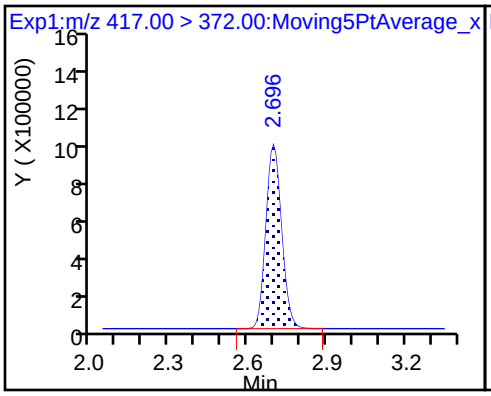
8 Perfluorohexanesulfonic acid



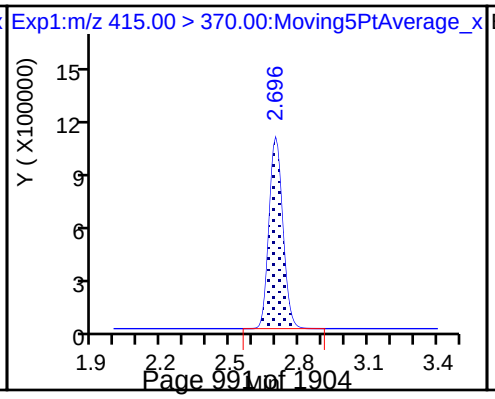
D 11 18O2 PFHxS



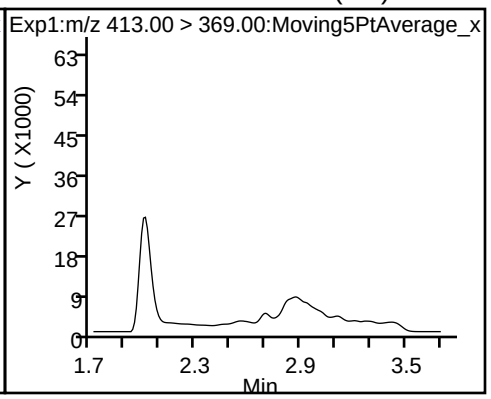
D 14 13C4 PFOA



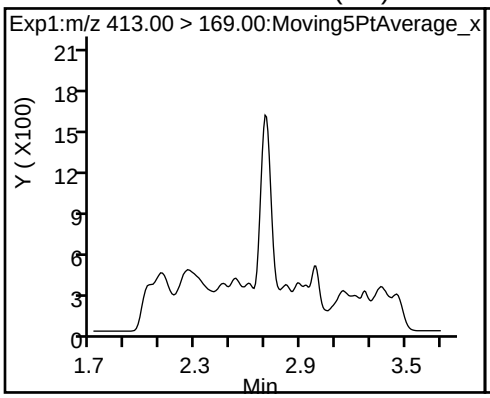
* 62 13C2-PFOA



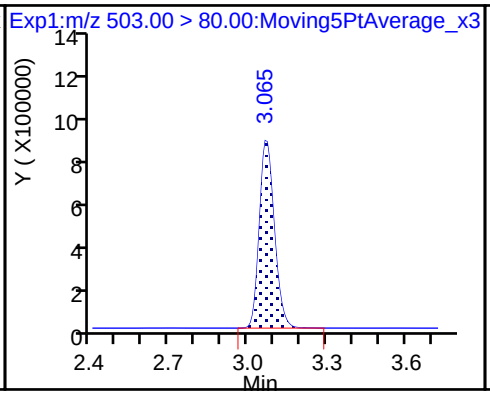
15 Perfluorooctanoic acid (ND)



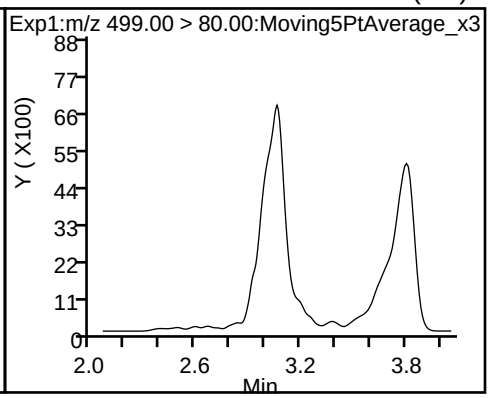
15 Perfluorooctanoic acid (ND)



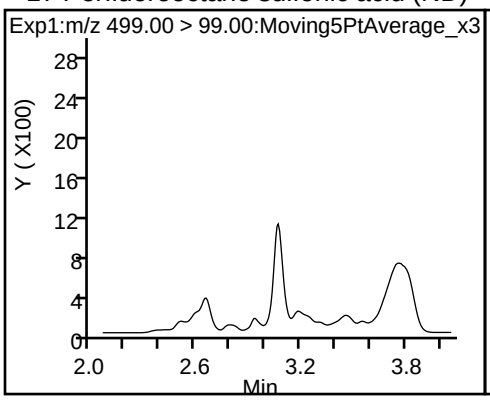
D 18 13C4 PFOS



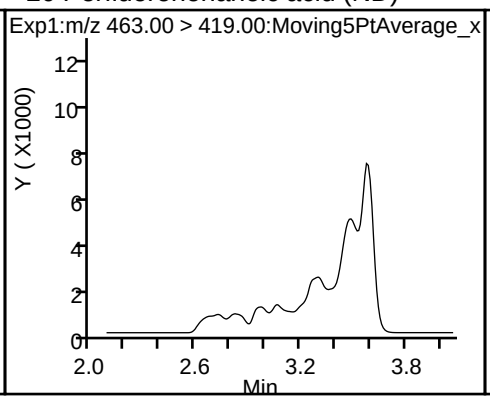
17 Perfluorooctane sulfonic acid (ND)



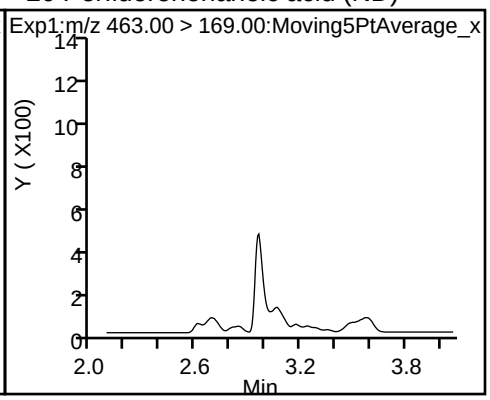
17 Perfluorooctane sulfonic acid (ND)



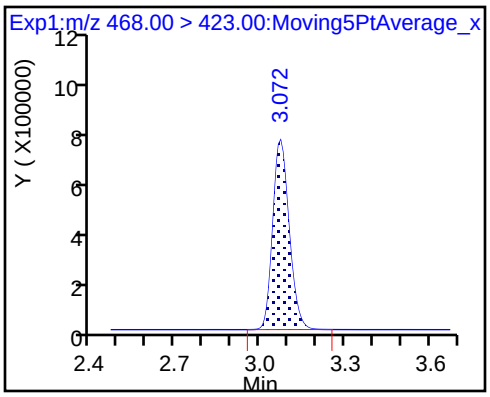
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)



D 19 13C5 PFNA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA-FB-01 | Lab Sample ID: 320-36960-2

Matrix: Water | Lab File ID: 2018.03.19LLAX_038.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 10:55

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 252.1(mL) | Date Analyzed: 03/19/2018 19:33

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.99	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	94		50-150
STL01892	13C4-PFHpA	95		50-150
STL00990	13C4 PFOA	94		50-150
STL00995	13C5 PFNA	97		50-150
STL00994	18O2 PFHxS	93		50-150
STL00991	13C4 PFOS	94		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_038.d
Lims ID: 320-36960-A-2-A
Client ID: BNA-FB-01
Sample Type: Client
Inject. Date: 19-Mar-2018 19:33:53 ALS Bottle#: 24 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:44:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.740	-0.013	0.642	81300	2.18		93.7	459	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.335	-0.019	0.861	3890009	2.37		94.9	95696	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.348	-0.007	1.000	14231	0.006242			30.7	
399.00 > 99.00	2.341	2.348	-0.007	1.000	5075		2.80(1.50-4.49)		12.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.871	4834375	2.21		93.5	119850	
D 14 13C4 PFOA										
417.00 > 372.00	2.689	2.706	-0.017	1.000	3712183	2.35		93.8	112250	
* 62 13C2-PFOA										
415.00 > 370.00	2.689	2.706	-0.017		4196187	2.50			113006	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.083	-0.025	1.137	3452266	2.26		94.4	59438	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.083	-0.025	1.137	3080957	2.43		97.3	65234	

Report Date: 22-Mar-2018 10:49:26 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_038.d

Injection Date: 19-Mar-2018 19:33:53 Instrument ID: A8_N

Lims ID: 320-36960-A-2-A Lab Sample ID: 320-36960-2

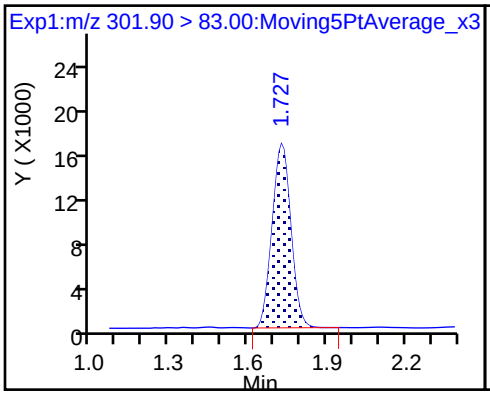
Client ID: BNA-FB-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 3

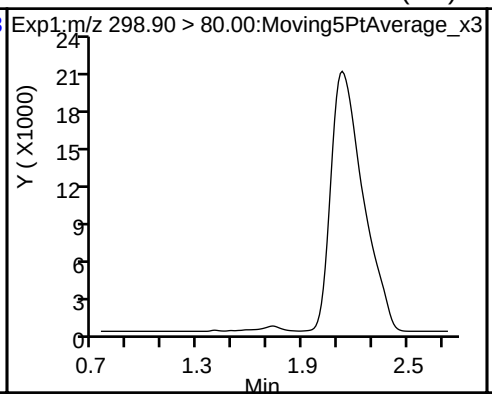
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

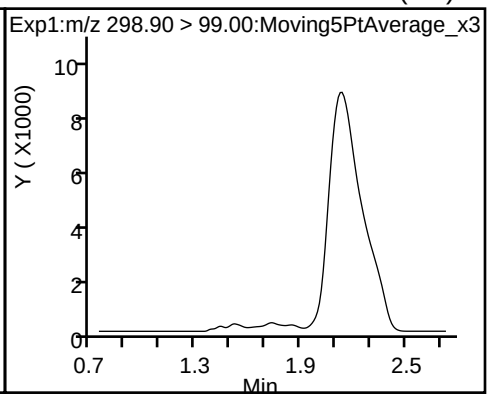
D 47 13C3-PFBS



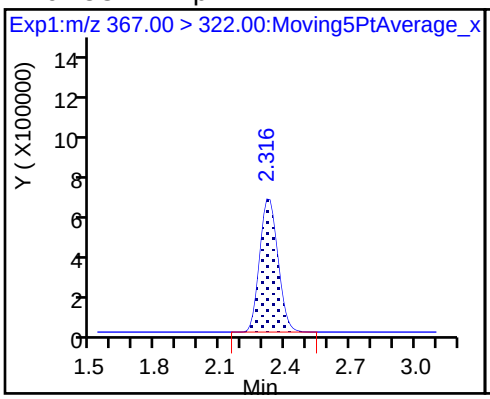
5 Perfluorobutanesulfonic acid (ND)



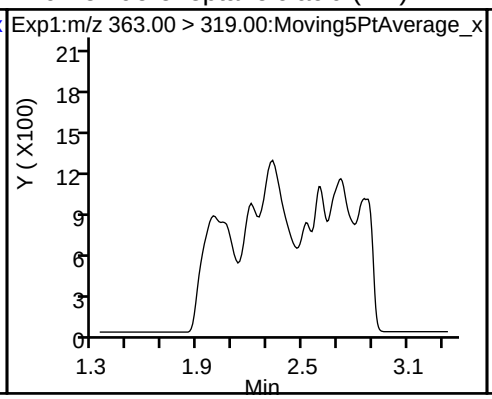
5 Perfluorobutanesulfonic acid (ND)



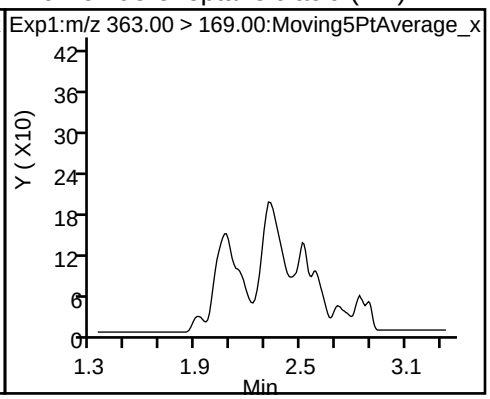
D 9 13C4-PFHpA



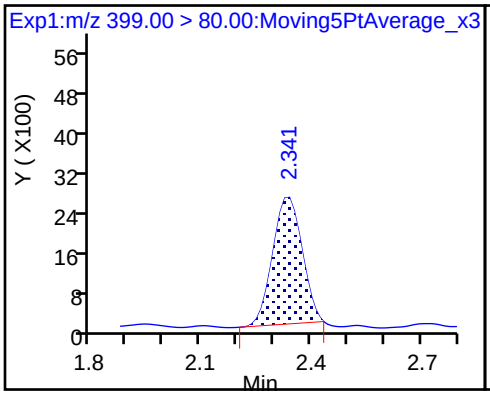
10 Perfluoroheptanoic acid (ND)



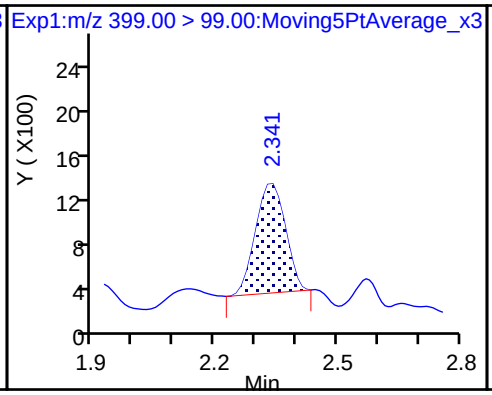
10 Perfluoroheptanoic acid (ND)



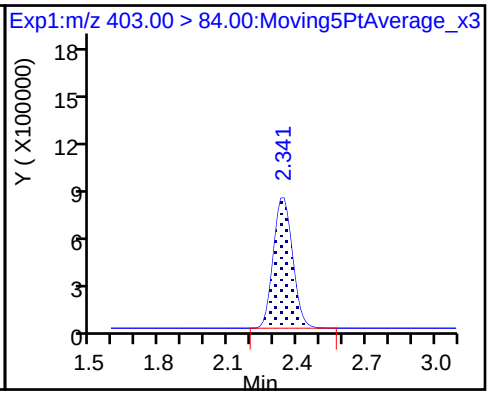
8 Perfluorohexanesulfonic acid



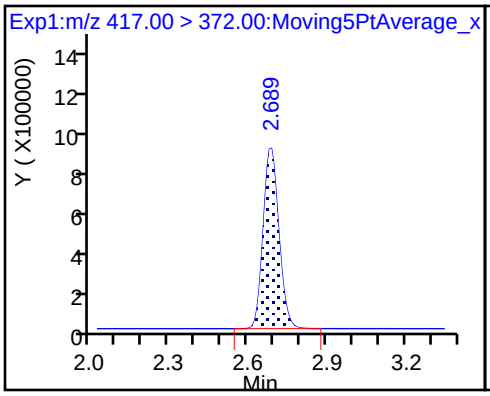
8 Perfluorohexanesulfonic acid



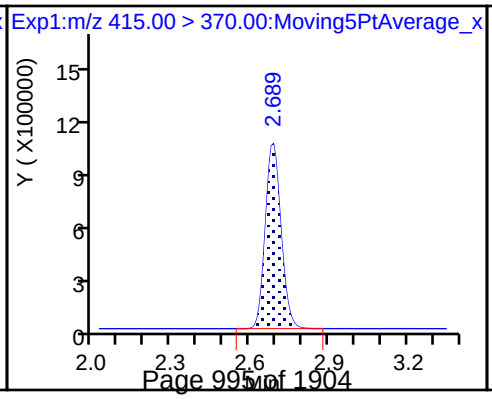
D 11 18O2 PFHxS



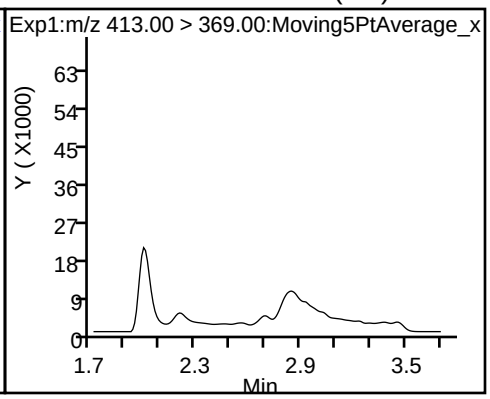
D 14 13C4 PFOA



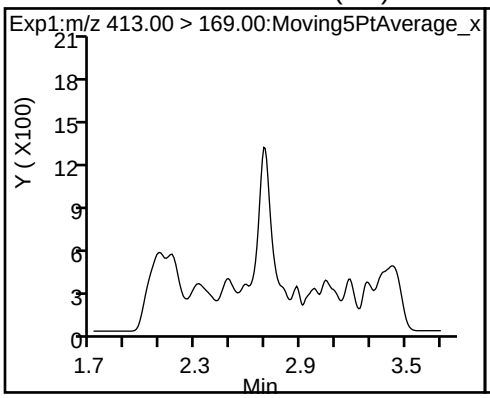
* 62 13C2-PFOA



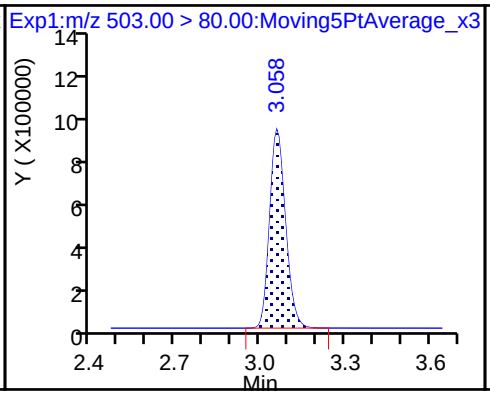
15 Perfluorooctanoic acid (ND)



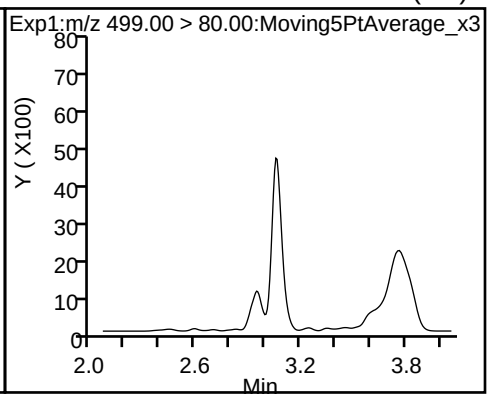
15 Perfluorooctanoic acid (ND)



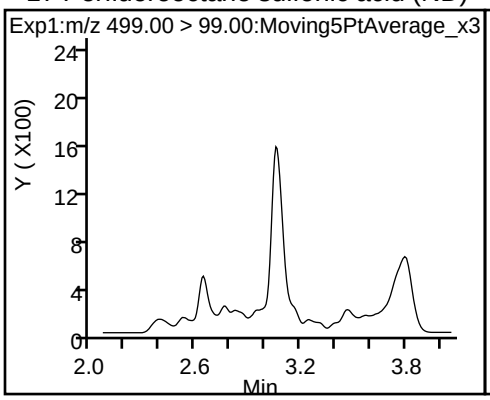
D 18 13C4 PFOS



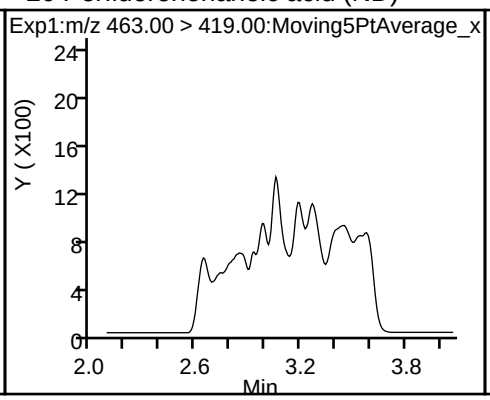
17 Perfluorooctane sulfonic acid (ND)



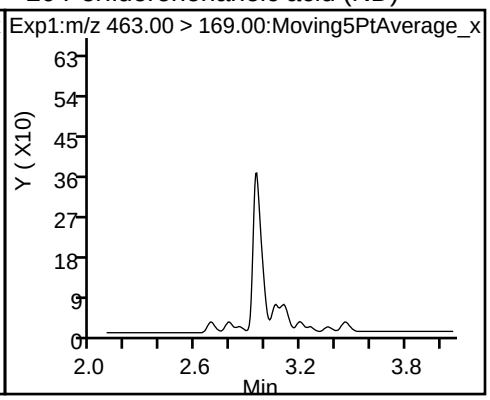
17 Perfluorooctane sulfonic acid (ND)



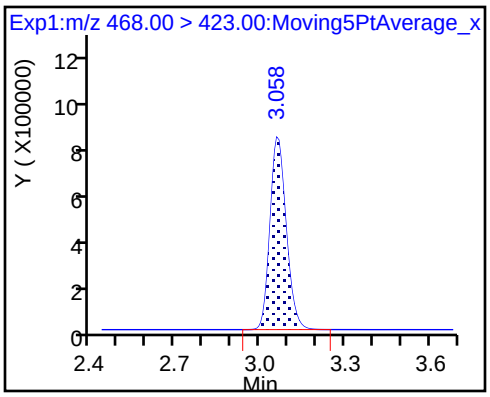
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)



D 19 13C5 PFNA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA-RB-01 | Lab Sample ID: 320-36960-3

Matrix: Water | Lab File ID: 2018.03.19LLAX_039.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 11:05

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 251.6(mL) | Date Analyzed: 03/19/2018 19:41

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.99	U	2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.99	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	96		50-150
STL01892	13C4-PFHpA	93		50-150
STL00990	13C4 PFOA	96		50-150
STL00995	13C5 PFNA	98		50-150
STL00994	18O2 PFHxS	93		50-150
STL00991	13C4 PFOS	98		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_039.d
Lims ID: 320-36960-A-3-A
Client ID: BNA-RB-01
Sample Type: Client
Inject. Date: 19-Mar-2018 19:41:41 ALS Bottle#: 25 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:44:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.740	-0.013	0.643	79242	2.23		96.1	345	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.335	-0.019	0.862	3642756	2.34		93.5	103791	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.342	2.348	-0.006	1.000	14940	0.006916			34.5	
399.00 > 99.00	2.342	2.348	-0.006	1.000	5411		2.76(1.50-4.49)		12.6	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.348	-0.006	0.872	4580442	2.20		93.1	79654	
D 14 13C4 PFOA										
417.00 > 372.00	2.687	2.706	-0.019	1.000	3611770	2.40		96.0	109768	
* 62 13C2-PFOA										
415.00 > 370.00	2.687	2.706	-0.019		3990883	2.50			87130	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.083	-0.025	1.138	3413621	2.35		98.2	73453	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.083	-0.025	1.138	2940147	2.44		97.6	74132	

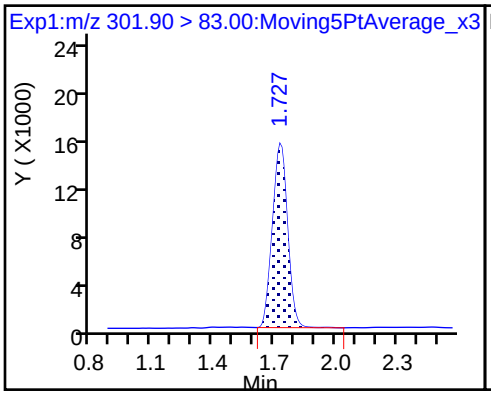
Report Date: 22-Mar-2018 10:49:28 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

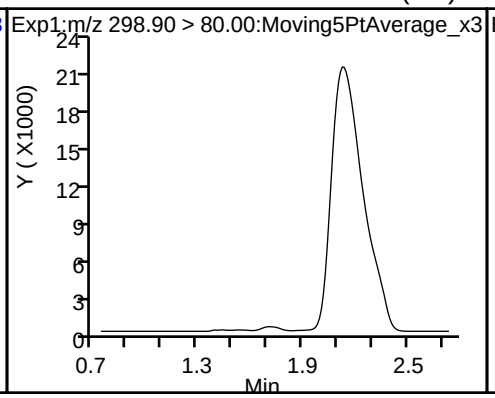
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_039.d

Injection Date:	19-Mar-2018 19:41:41	Instrument ID:	A8_N		
Lims ID:	320-36960-A-3-A	Lab Sample ID:	320-36960-3		
Client ID:	BNA-RB-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

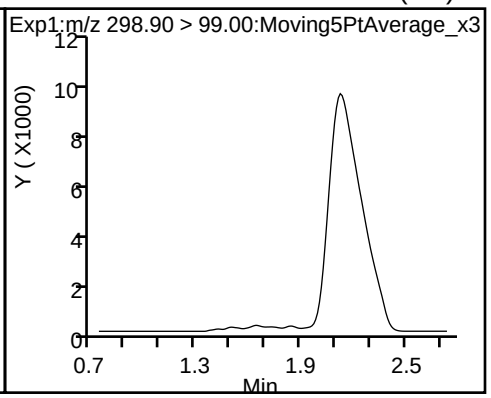
D 47 13C3-PFBS



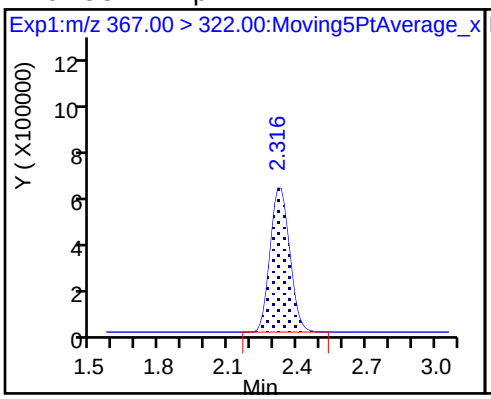
5 Perfluorobutanesulfonic acid (ND)



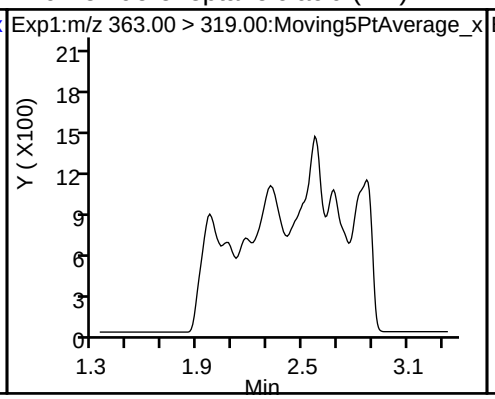
5 Perfluorobutanesulfonic acid (ND)



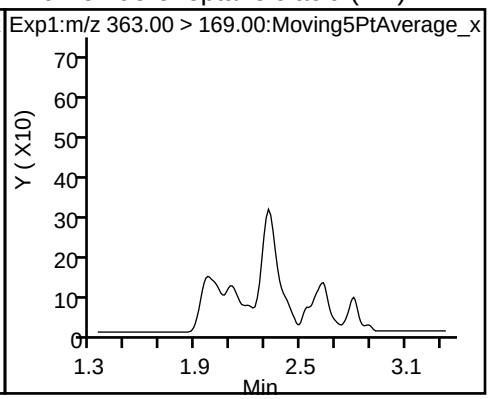
D 9 13C4-PFHpA



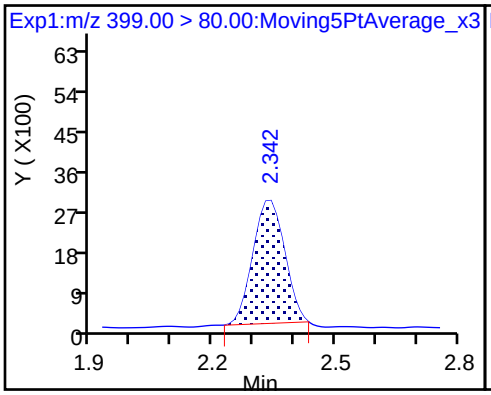
10 Perfluoroheptanoic acid (ND)



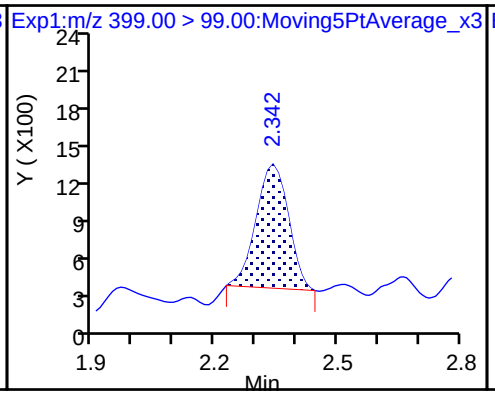
10 Perfluoroheptanoic acid (ND)



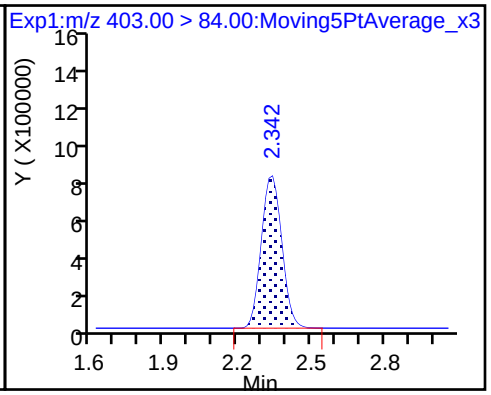
8 Perfluorohexanesulfonic acid



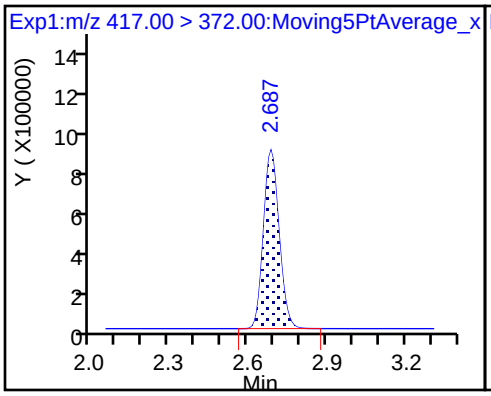
8 Perfluorohexanesulfonic acid



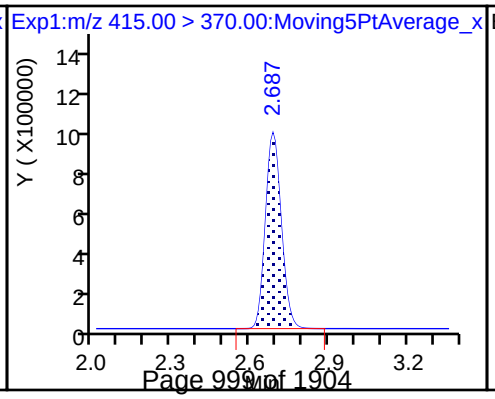
D 11 18O2 PFHxS



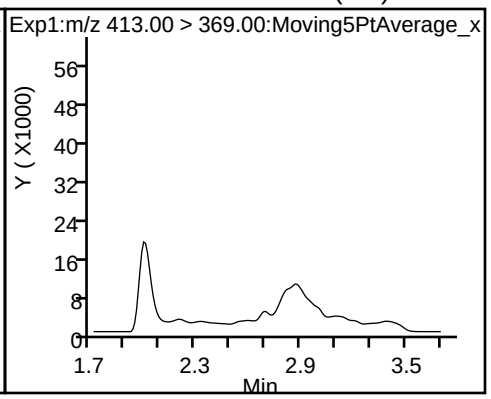
D 14 13C4 PFOA



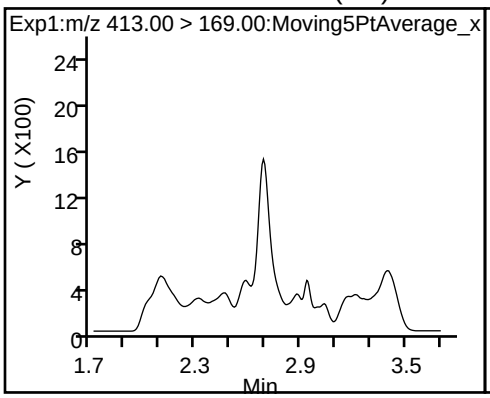
* 62 13C2-PFOA



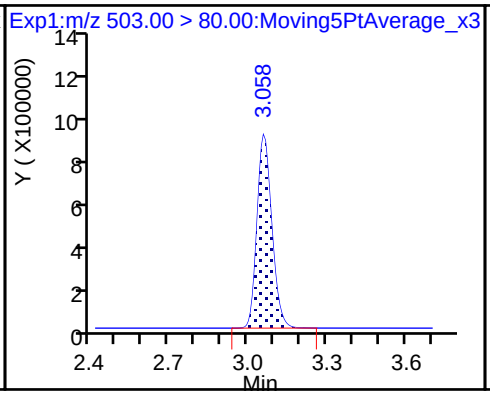
15 Perfluorooctanoic acid (ND)



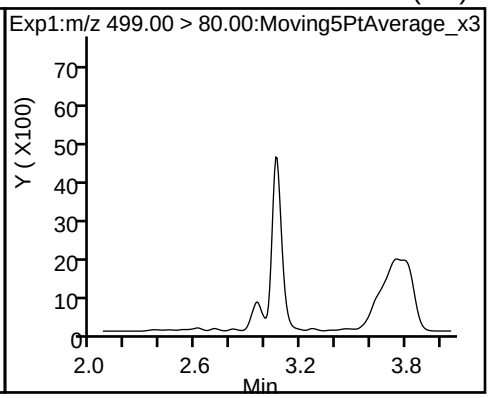
15 Perfluorooctanoic acid (ND)



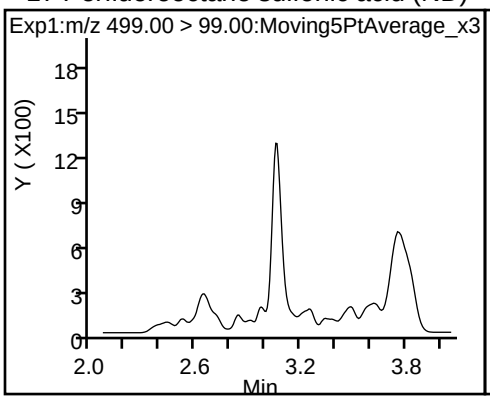
D 18 13C4 PFOS



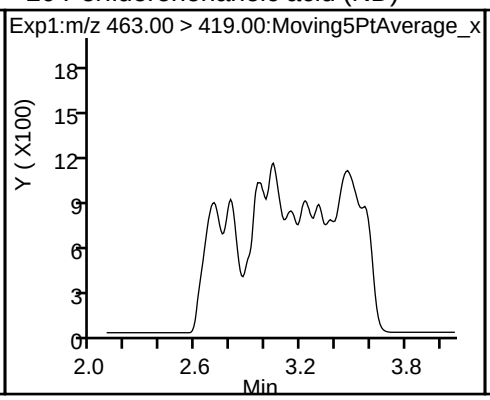
17 Perfluorooctane sulfonic acid (ND)



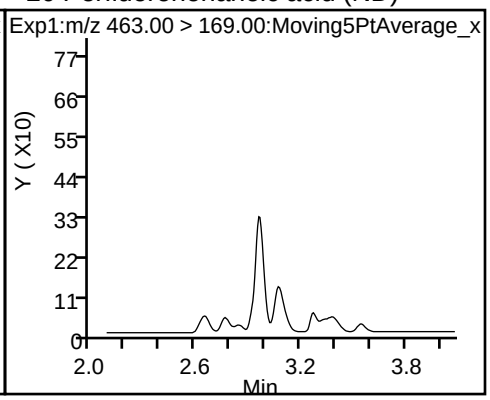
17 Perfluorooctane sulfonic acid (ND)



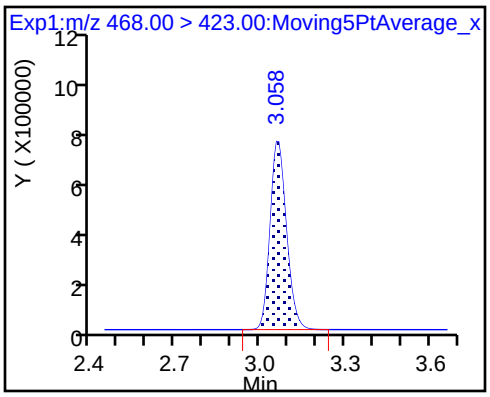
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)



D 19 13C5 PFNA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA01-SB1-01 | Lab Sample ID: 320-36960-4

Matrix: Solid | Lab File ID: 2018.04.07LLA_009.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 14:15

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.00(g) | Date Analyzed: 04/07/2018 09:40

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 19.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.19	J	0.37	0.25	0.097
335-67-1	Perfluorooctanoic acid (PFOA)	0.40		0.37	0.25	0.12
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U M Q	0.37	0.25	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.99		0.50	0.22	0.074
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.0	J1	0.37	0.25	0.077
1763-23-1	*Perfluorooctanesulfonic acid (PFOS)*	*27*	*E J1*	*1.2*	0.62	*0.30*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	55		50-150
STL01892	13C4-PFHpA	73		50-150
STL00990	13C4 PFOA	72		50-150
STL00995	13C5 PFNA	73		50-150
STL00994	18O2 PFHxS	60		50-150
STL00991	13C4 PFOS	58		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_009.d
Lims ID: 320-36960-A-4-A
Client ID: BNA01-SB1-01
Sample Type: Client
Inject. Date: 07-Apr-2018 09:40:14 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-4-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: hannigana Date: 08-Apr-2018 13:20:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.425	0.005	1.000	4772481	1.62		64.9	41336	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.431	-0.001	1.000	356990	0.2023			105	
D 3 13C5-PFPeA										
267.90 > 223.00	1.702	1.694	0.008	0.561	3177473	1.66		66.4	59254	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.693	1.704	-0.011	0.995	278451	0.1830			163	
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	56310	1.28		55.2	297	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.738	1.740	-0.002	1.005	754771	0.3950			2740	
298.90 > 99.00	1.738	1.740	-0.002	1.005	333933		2.26(1.25-3.74)		1628	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.982	-0.001	1.000	3494583	1.66		66.2	78507	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.981	1.983	-0.002	1.000	763550	0.5338			1331	
313.00 > 119.00	1.981	1.983	-0.002	1.000	65132		11.72(5.03-15.10)		845	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.003	2.005	-0.002	1.000	728609	0.4225			4677	
349.00 > 99.00	2.003	2.005	-0.002	1.000	277534		2.63(1.36-4.07)		3409	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.082	2.073	0.009	1.000	171621	NC			3243	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.308	-0.002	1.000	3723751	1.83		73.4	89301	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.310	-0.004	1.000	121543	0.0751			113	
363.00 > 169.00	2.306	2.310	-0.004	1.000	48306		2.52(1.13-3.40)		176	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.321	-0.002	1.000	3597914	1.42		60.1	85766	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.323	-0.004	1.000	4064393	2.39			9337	
399.00 > 99.00	2.319	2.323	-0.004	1.000	1245121		3.26(1.50-4.49)		3465	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.637	0.007	1.000	631419	1.35		56.7	7520	
13 Sodium 1H,1H,2H,2H-perfluorooctane										M
427.00 > 407.00	2.636	2.637	-0.001	0.997	31453	0.0633			242	M
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.660	0.007	1.000	3607011	1.81		72.3	130472	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.661	0.006		5322209	2.50			121435	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.669	-0.002	1.000	275202	0.1609			101	
413.00 > 169.00	2.660	2.669	-0.009	0.997	156128		1.76(0.84-2.52)		328	
16 Perfluoroheptanesulfonic acid										M
449.00 > 80.00	2.667	2.669	-0.002	1.000	344173	0.2540			219	
449.00 > 99.00	2.675	2.669	0.006	1.003	102215		3.37(1.94-5.82)		425	M
D 18 13C4 PFOS										
503.00 > 80.00	3.036	3.023	0.013	1.000	2429797	1.38		57.8	16926	
D 19 13C5 PFNA										
468.00 > 423.00	3.036	3.030	0.006	1.000	3069076	1.82		72.7	50370	
17 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.036	3.032	0.004	1.000	12599713	10.8			34110	E
499.00 > 99.00	3.036	3.032	0.004	1.000	2594022		4.86(2.31-6.93)		14847	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.360	0.016	1.000	3303382	1.33		53.2	50120	
22 Perfluorooctane Sulfonamide										M
498.00 > 78.00	3.385	3.371	0.014	1.003	21110	0.0162			99.2	M
D 26 M2-8:2FTS										
529.00 > 81.00	3.404	3.378	0.026	1.000	689653	1.26		52.8	6625	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.394	3.380	0.014	0.997	9930	0.0256			226	
D 23 13C2 PFDA										
515.00 > 470.00	3.413	3.387	0.026	1.000	2584778	1.81		72.5	108115	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.553	3.537	0.016	1.000	1310858	1.72		68.7	26095	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.715	3.707	0.008	1.000	1523761	1.90		76.1	13168	
D 30 13C2 PFUnA										
565.00 > 520.00	3.726	3.718	0.008	1.000	2114713	1.82		72.7	40220	
D 36 13C2 PFDoA										
615.00 > 570.00	4.016	4.008	0.008	1.000	2316892	1.79		71.5	28084	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.520	4.511	0.009	1.000	2769265	1.68		67.3	17695	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.930	4.922	0.008	1.000	3676258	1.45		57.9	9700	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
45 Perfluorohexadecanoic acid										R
813.00 > 769.00	4.930	4.932	-0.002	1.000	27955	NC			8.9	R
813.00 > 169.00	4.930	4.932	-0.002	1.000	3251		8.60(2.86-8.58)		23.8	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

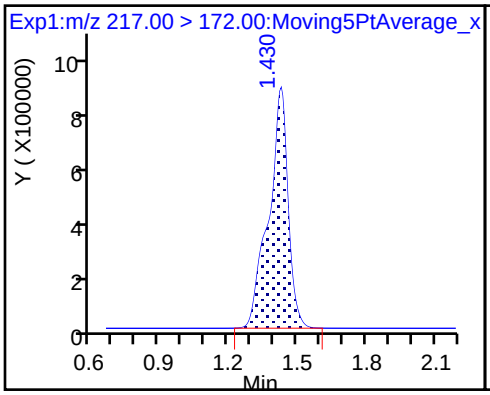
Report Date: 09-Apr-2018 08:26:48 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

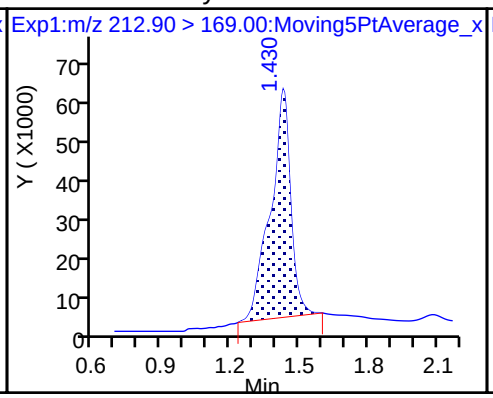
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_009.d

Injection Date:	07-Apr-2018 09:40:14	Instrument ID:	A8_N		
Lims ID:	320-36960-A-4-A	Lab Sample ID:	320-36960-4		
Client ID:	BNA01-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

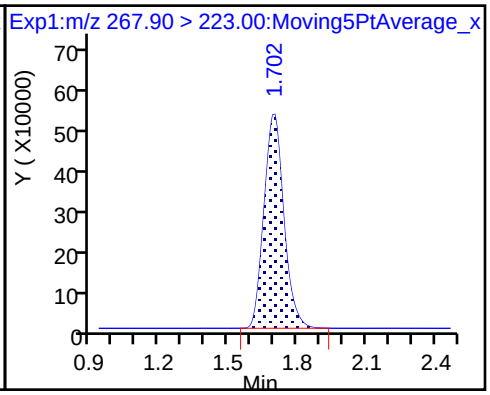
D 1 13C4 PFBA



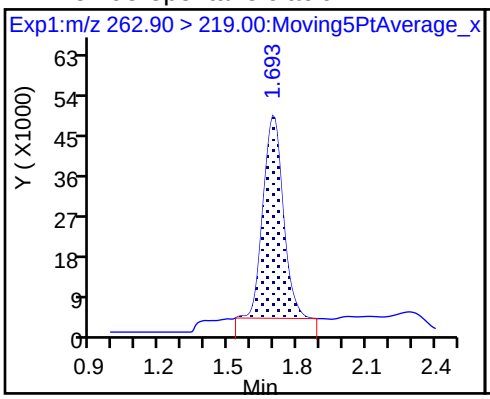
2 Perfluorobutyric acid



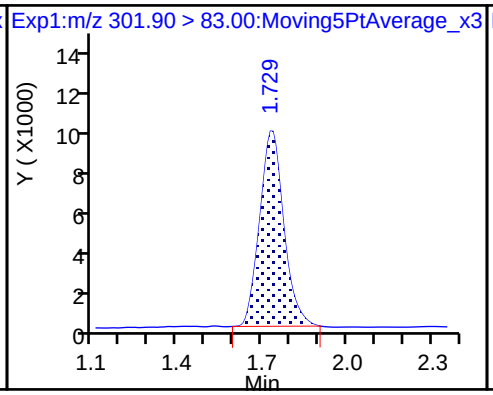
D 3 13C5-PFPeA



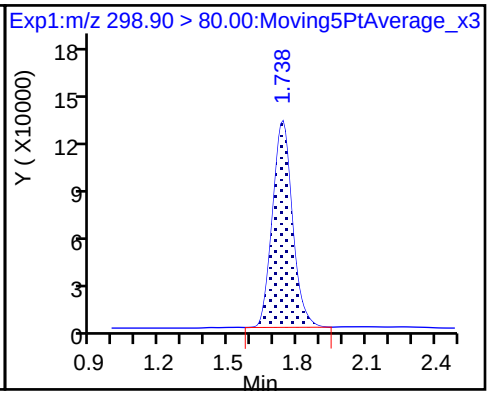
4 Perfluoropentanoic acid



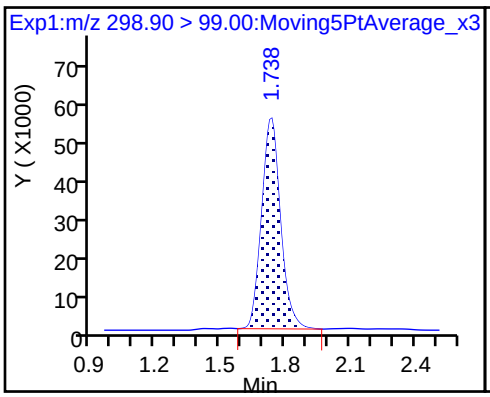
D 47 13C3-PFBS



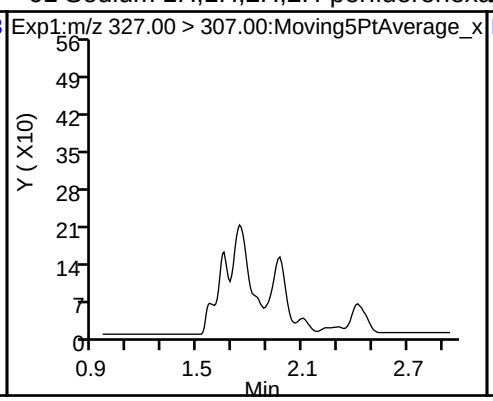
5 Perfluorobutanesulfonic acid



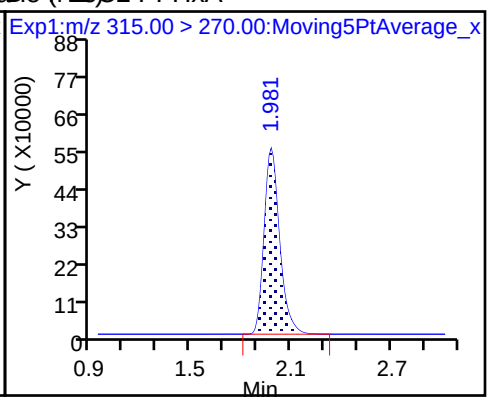
5 Perfluorobutanesulfonic acid



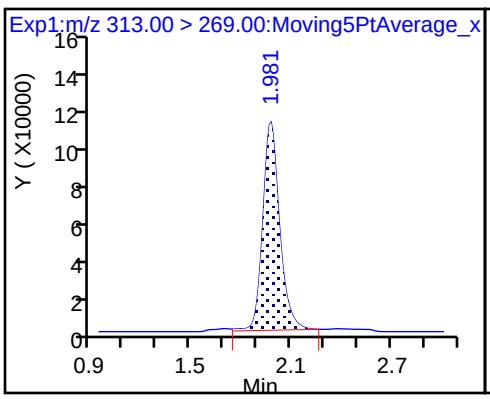
61 Sodium 1H,1H,2H,2H-perfluorohexane (MC)



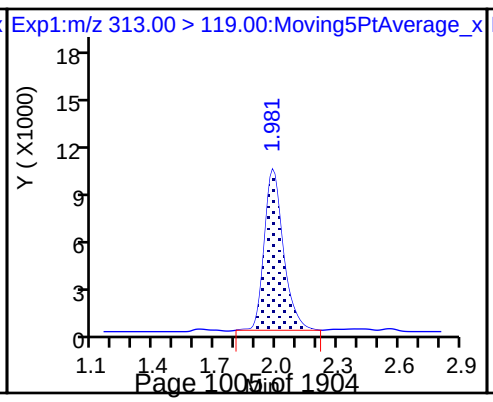
D 13C2 PFHxA



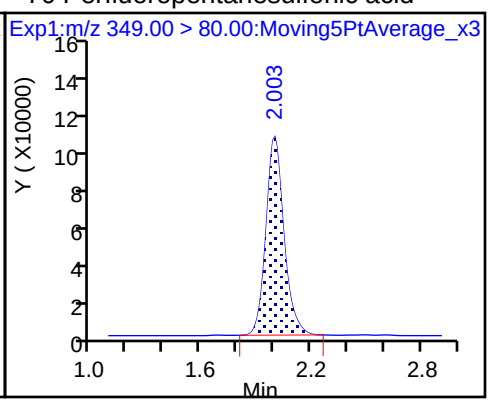
6 Perfluorohexanoic acid



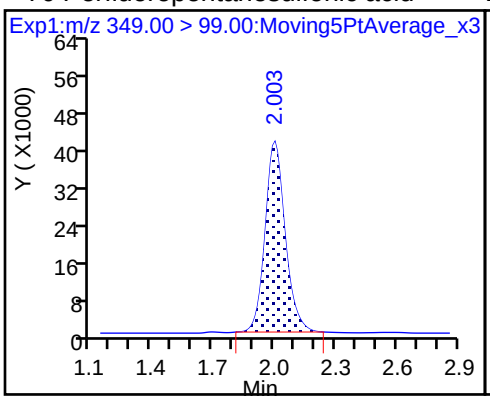
6 Perfluorohexanoic acid



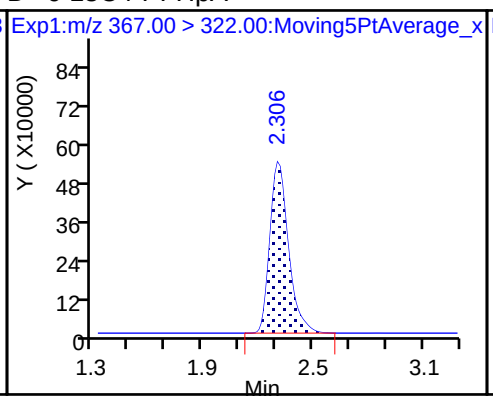
70 Perfluoropentanesulfonic acid



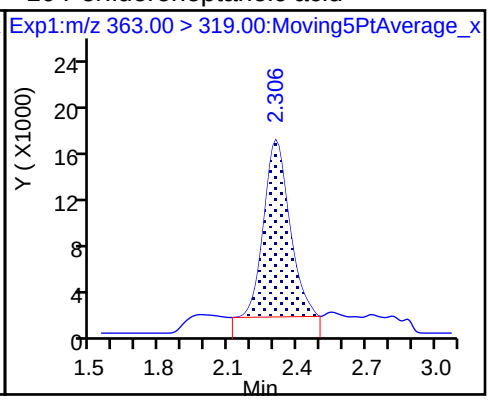
70 Perfluoropentanesulfonic acid



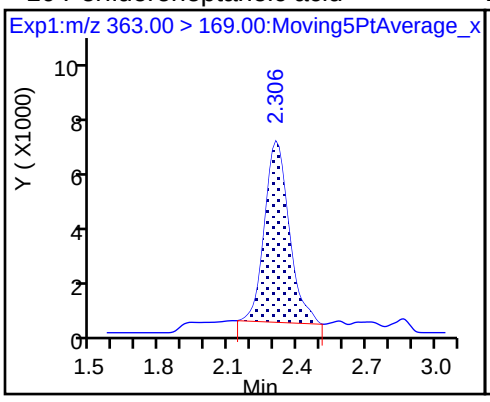
D 9 13C4-PFHpA



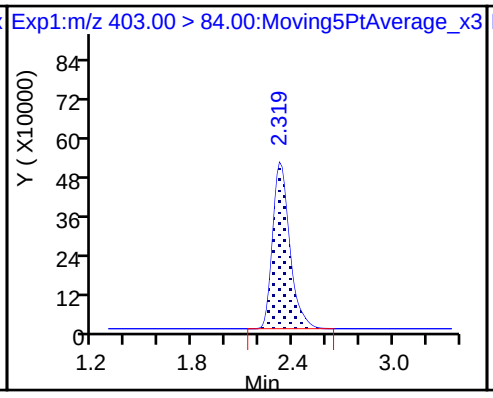
10 Perfluoroheptanoic acid



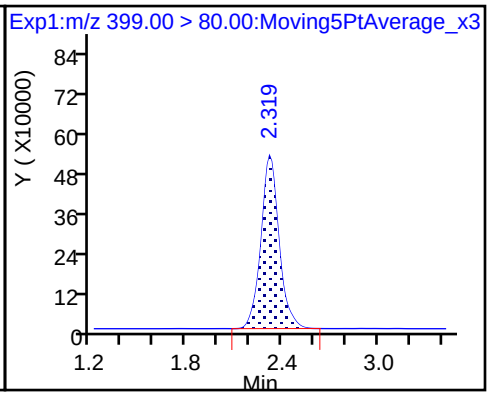
10 Perfluoroheptanoic acid



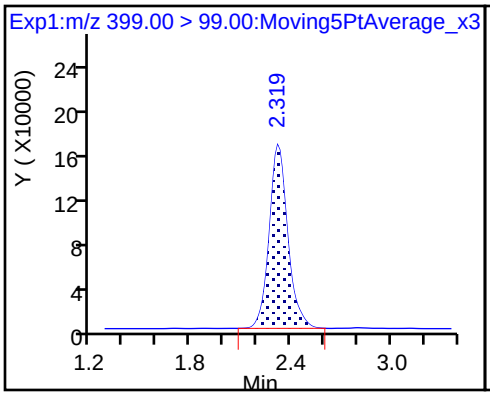
D 11 18O2 PFHxS



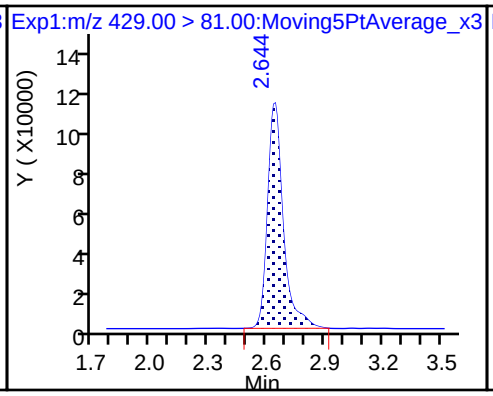
8 Perfluorohexanesulfonic acid



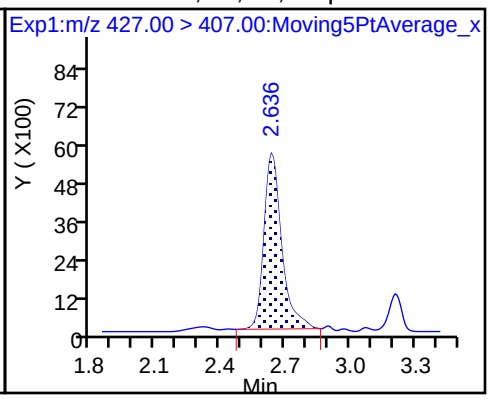
8 Perfluorohexanesulfonic acid



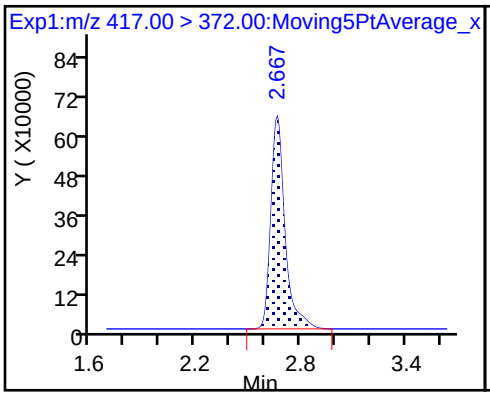
D 12 M2-6:2FTS



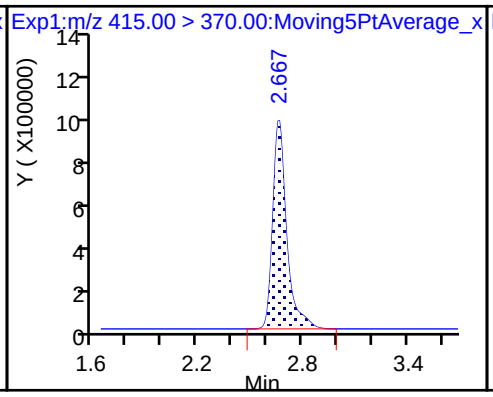
13 Sodium 1H,1H,2H,2H-perfluorooctane (M)



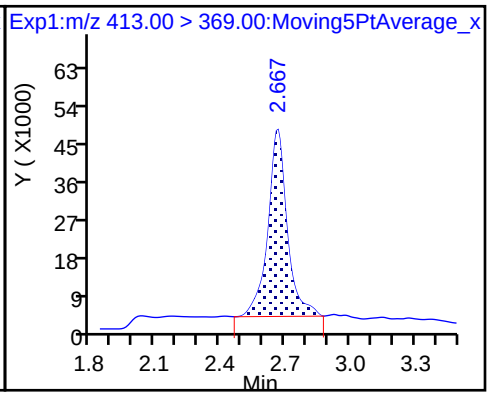
D 14 13C4 PFOA



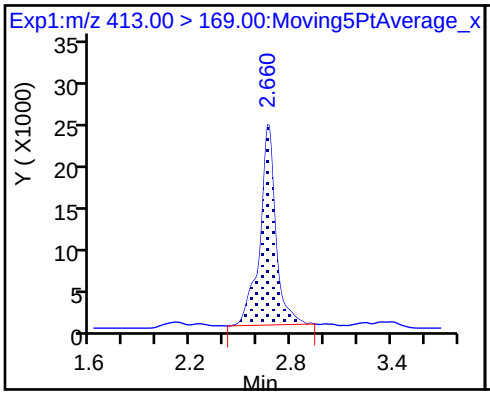
* 62 13C2-PFOA



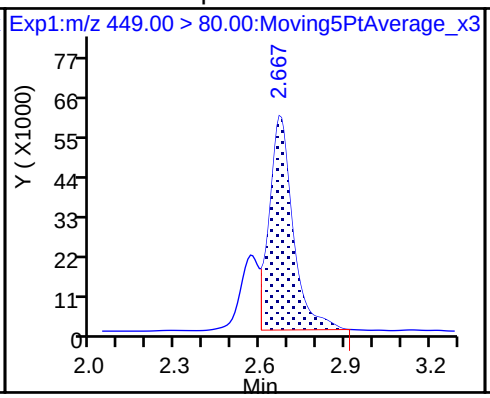
15 Perfluorooctanoic acid



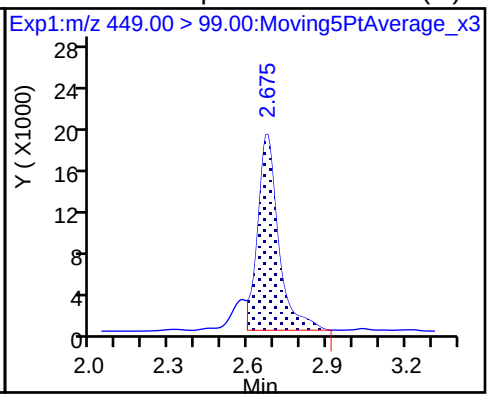
15 Perfluorooctanoic acid



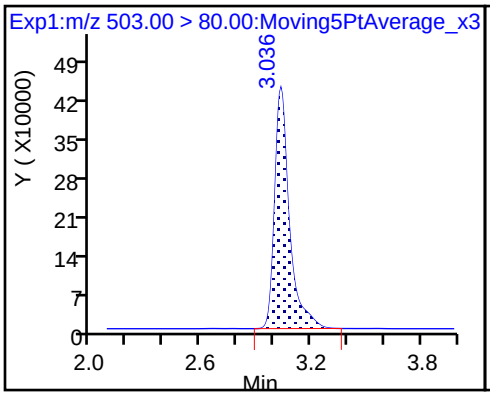
16 Perfluoroheptanesulfonic acid



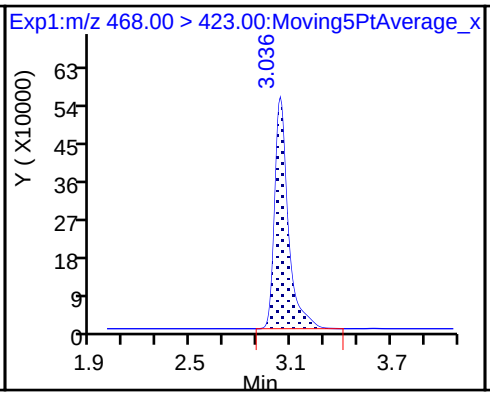
16 Perfluoroheptanesulfonic acid (M)



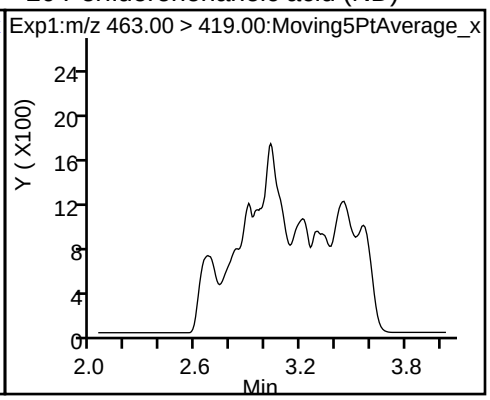
D 18 13C4 PFOS



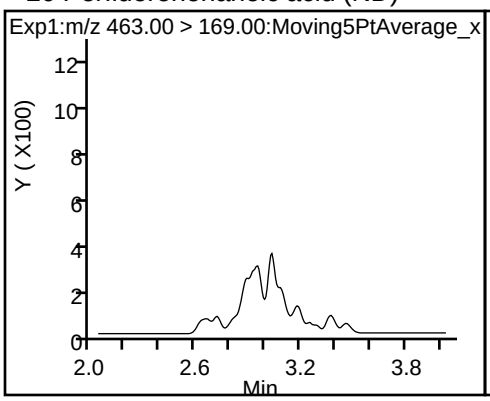
D 19 13C5 PFNA



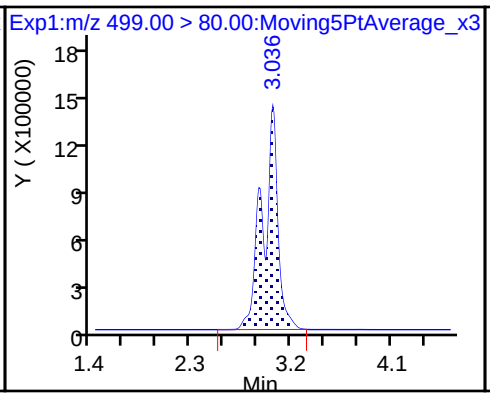
20 Perfluorononanoic acid (ND)



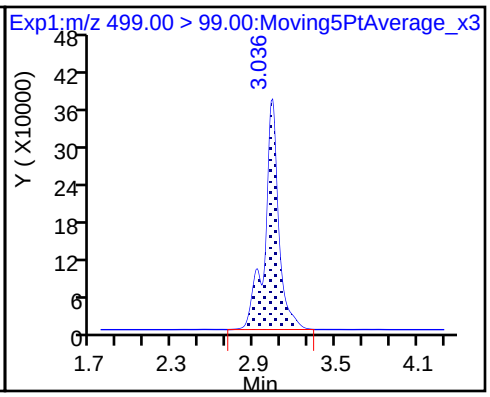
20 Perfluorononanoic acid (ND)



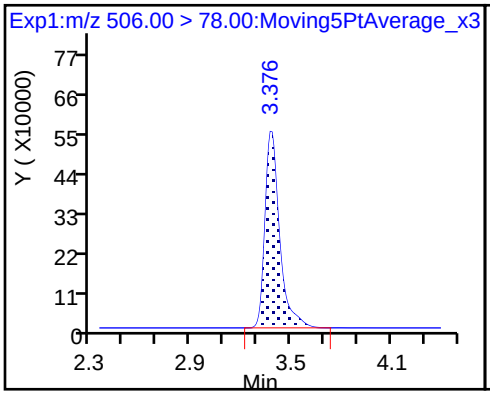
17 Perfluorooctane sulfonic acid



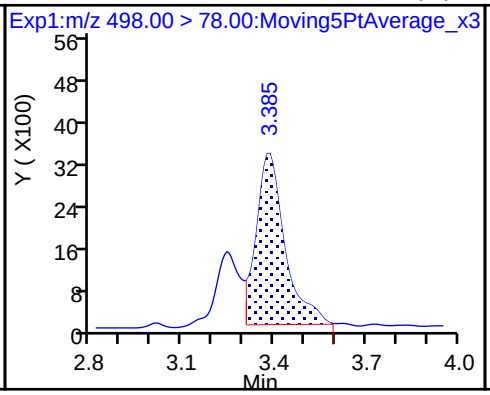
17 Perfluorooctane sulfonic acid



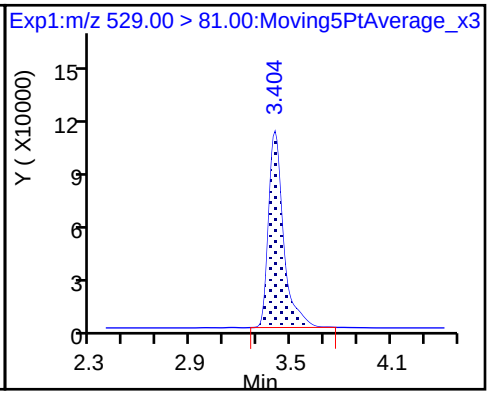
D 21 13C8 FOSA



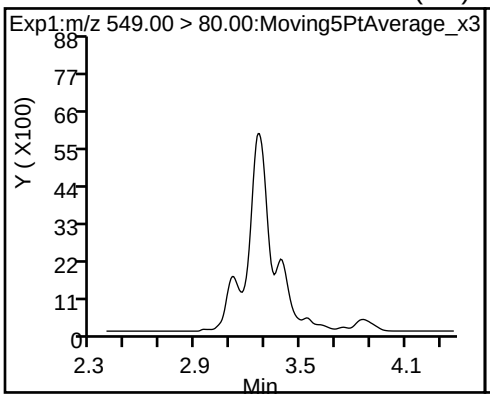
22 Perfluorooctane Sulfonamide (M)



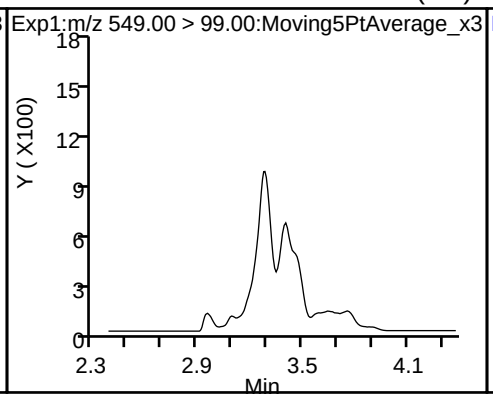
D 26 M2-8:2FTS



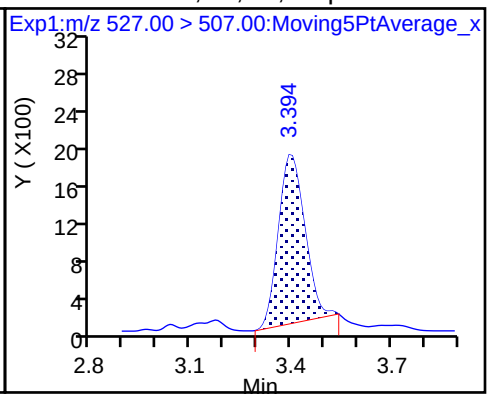
68 Perfluorononanesulfonic acid (ND)



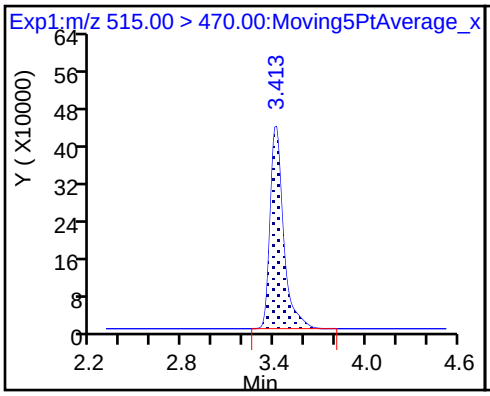
68 Perfluorononanesulfonic acid (ND)



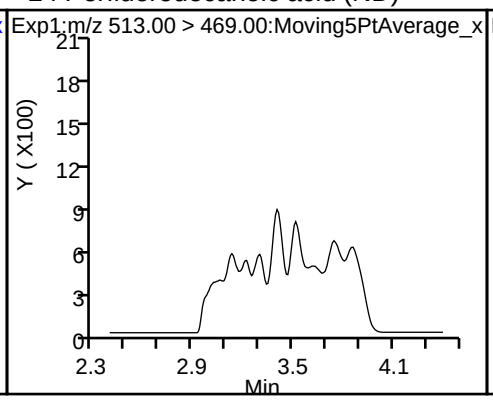
25 Sodium 1H,1H,2H,2H-perfluorodecane



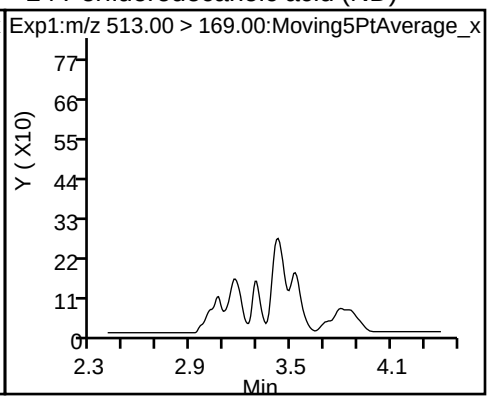
D 23 13C2 PFDA



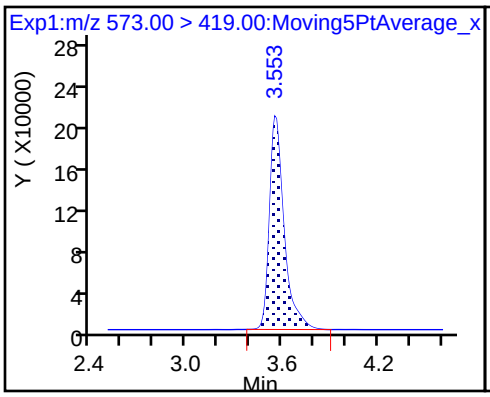
24 Perfluorodecanoic acid (ND)



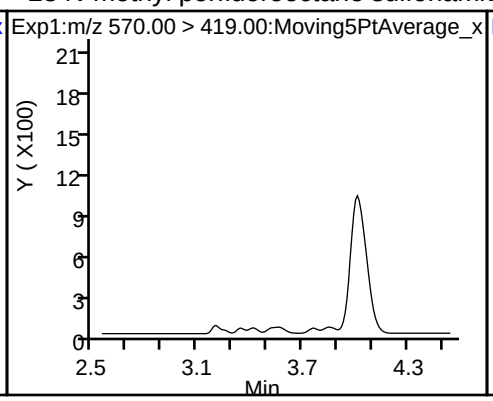
24 Perfluorodecanoic acid (ND)



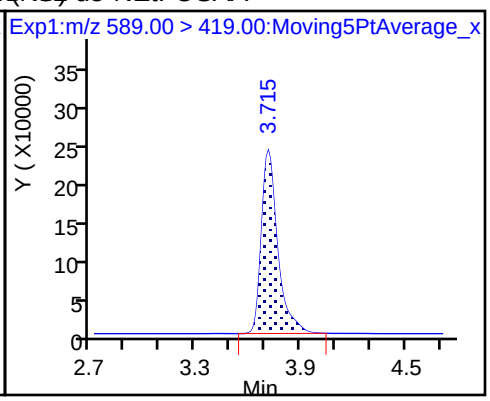
D 27 d3-NMeFOSAA



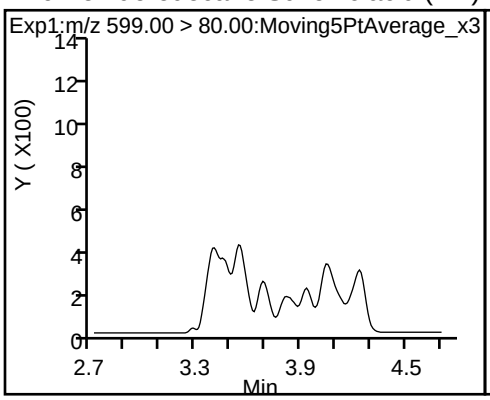
28 N-methyl perfluorooctane sulfonamid



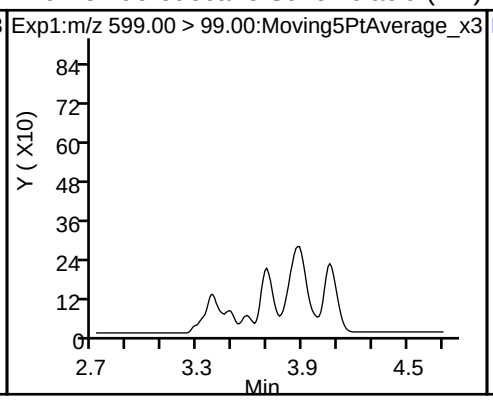
D 32 d5-NEtFOSAA



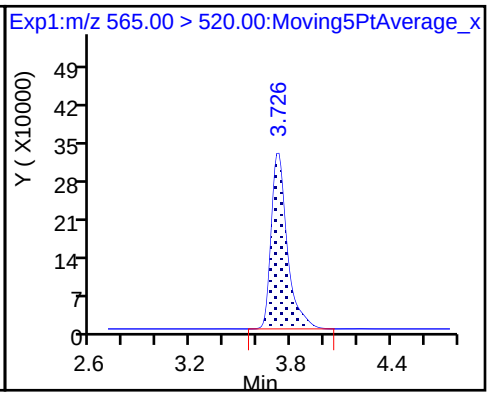
29 Perfluorodecane Sulfonic acid (ND)



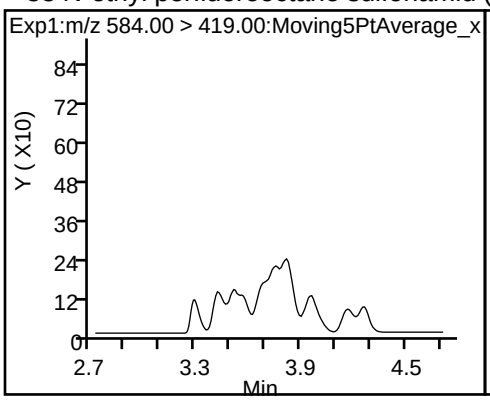
29 Perfluorodecane Sulfonic acid (ND)



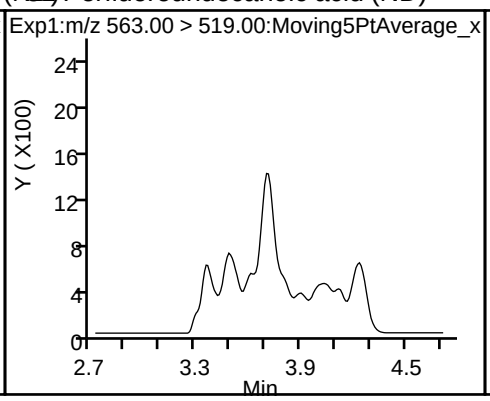
D 30 13C2 PFUnA



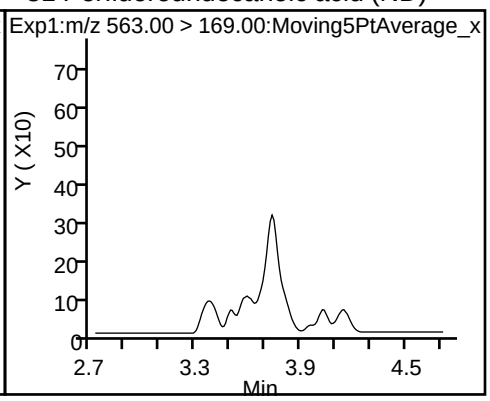
33 N-ethyl perfluorooctane sulfonamid (ND)



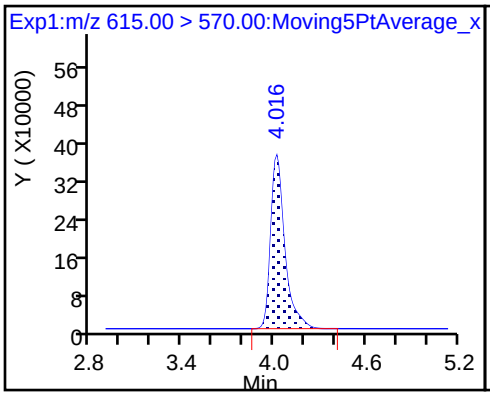
31 Perfluoroundecanoic acid (ND)



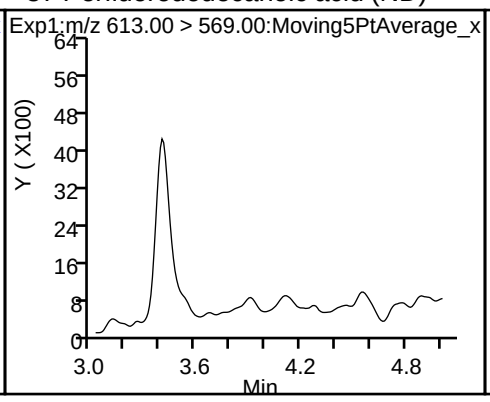
31 Perfluoroundecanoic acid (ND)



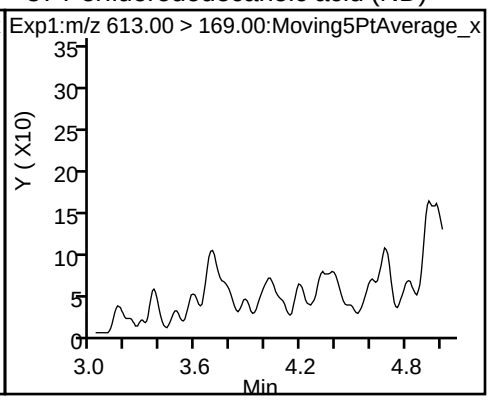
D 36 13C2 PFDoA



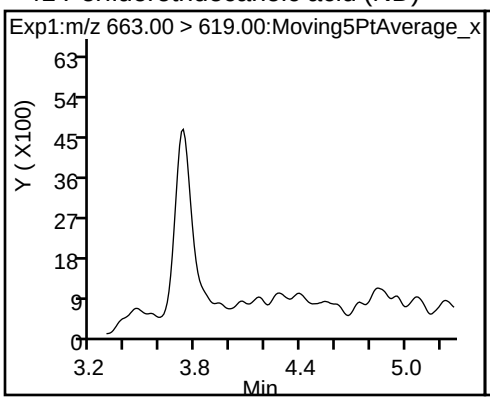
37 Perfluorododecanoic acid (ND)



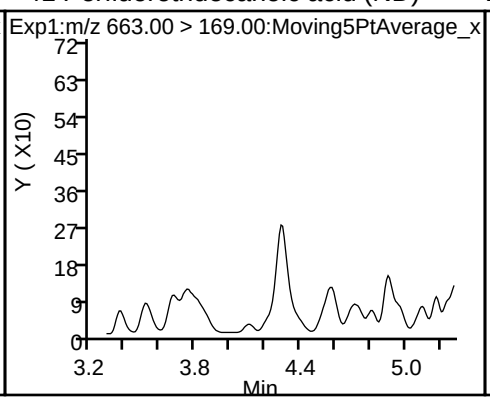
37 Perfluorododecanoic acid (ND)



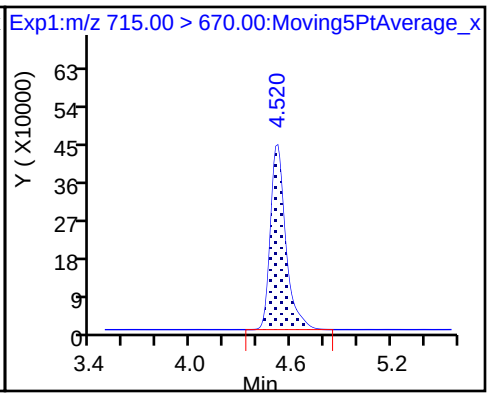
41 Perfluorotridecanoic acid (ND)



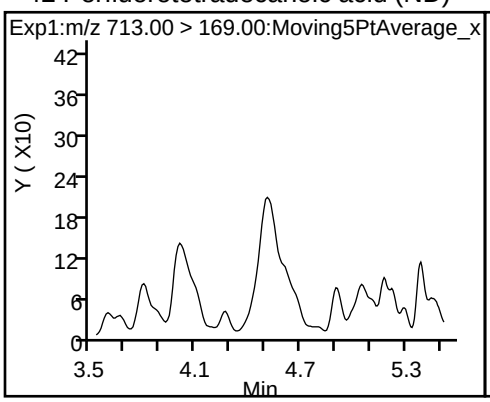
41 Perfluorotridecanoic acid (ND)



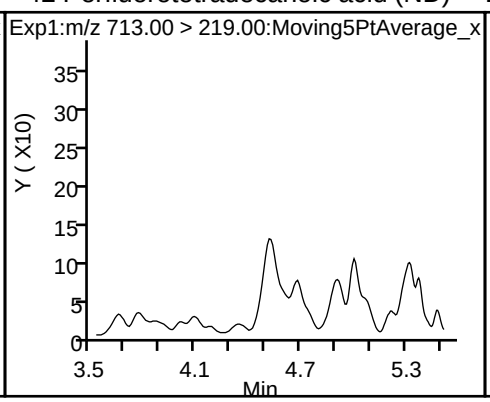
D 43 13C2-PFTeDA



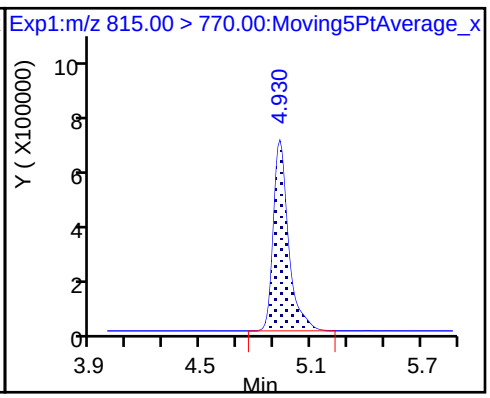
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA01-SB1-01 DL | Lab Sample ID: 320-36960-4 DL

Matrix: Solid | Lab File ID: 2018.04.07LLA1_026.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 14:15

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.00(g) | Date Analyzed: 04/07/2018 12:01

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 5

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 19.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216849 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	*Perfluoroheptanoic acid (PFHpA)*	*1.2*	*U M J1*	*1.9*	1.2	*0.49*
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.2*	*U M J1*	*1.9*	1.2	*0.62*
375-95-1	*Perfluorononanoic acid (PFNA)*	*1.2*	*U Q*	*1.9*	1.2	*0.50*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*1.1*	*J D*	*2.5*	1.1	*0.37*
355-46-4	*Perfluorohexanesulfonic acid (PFHxS)*	*6.4*	*D J1*	*1.9*	1.2	*0.39*
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	27	D J1	6.2	3.1	1.5

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	53		50-150
STL01892	13C4-PFHpA	73		50-150
STL00990	13C4 PFOA	71		50-150
STL00995	13C5 PFNA	75		50-150
STL00994	18O2 PFHxS	61		50-150
STL00991	13C4 PFOS	61		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_026.d
Lims ID: 320-36960-A-4-A
Client ID: BNA01-SB1-01
Sample Type: Client
Inject. Date: 07-Apr-2018 12:01:15 ALS Bottle#: 18 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 5.0000
Sample Info: 320-36960-a-4-a 5X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:30:34 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:29:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.424	0.001	1.000	911548	0.3367		67.3	9463	
2 Perfluorobutyric acid										
212.90 > 169.00	1.425	1.424	0.001	1.000	71396	0.0424			25.3	
D 3 13C5-PFPeA										
267.90 > 223.00	1.694	1.693	0.001	0.560	599167	0.3400		68.0	13402	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.694	1.693	0.001	1.000	56186	0.0392			32.2	
D 47 13C3-PFBS										
301.90 > 83.00	1.730	1.729	0.001	1.000	9979	0.2473		53.2	63.8	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.730	1.729	0.001	1.000	148467	0.0877			509	
298.90 > 99.00	1.730	1.729	0.001	1.000	64641		2.30(1.25-3.74)		377	
D 7 13C2 PFHxA										
315.00 > 270.00	1.977	1.970	0.007	1.000	674254	0.3470		69.4	17623	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.977	1.970	0.007	1.000	142626	0.1034			246	
313.00 > 119.00	1.977	1.970	0.007	1.000	11469		12.44(5.03-15.10)		127	M
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	1.999	1.992	0.007	1.000	147612	0.0966			1000	
349.00 > 99.00	1.999	1.992	0.007	1.000	62439		2.36(1.36-4.07)		834	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.078	2.071	0.007	1.000	36894	NC			1200	
D 9 13C4-PFHpA										
367.00 > 322.00	2.302	2.307	-0.005	1.000	679723	0.3639		72.8	24060	
10 Perfluoroheptanoic acid										RM
363.00 > 319.00	2.302	2.307	-0.005	1.000	29885	0.0202			29.4	RM
363.00 > 169.00	2.302	2.307	-0.005	1.000	7154		4.18(1.13-3.40)		29.8	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.315	2.307	0.008	1.000	816439	0.5133			2360	
399.00 > 99.00	2.315	2.307	0.008	1.000	265925		3.07(1.50-4.49)		1036	
D 11 18O2 PFHxS										
403.00 > 84.00	2.315	2.320	-0.005	1.000	673538	0.2892		61.1	32002	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.629	0.005	1.000	113108	0.2620		55.2	1488	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.642	2.629	0.013	1.003	5866	0.0132			63.9	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.653	0.005	1.000	654442	0.3564		71.3	16584	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.653	0.005		979650	0.5000			21693	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.658	2.660	-0.002	1.000	42385	0.0273			17.0	M
413.00 > 169.00	2.658	2.660	-0.002	1.000	31476		1.35(0.84-2.52)		70.8	
16 Perfluoroheptanesulfonic acid										M
449.00 > 80.00	2.666	2.660	0.006	1.000	70724	0.0539			191	
449.00 > 99.00	2.658	2.660	-0.002	0.997	20938		3.38(1.94-5.82)		186	M
D 18 13C4 PFOS										
503.00 > 80.00	3.025	3.023	0.002	1.000	470773	0.2910		60.9	3256	
D 19 13C5 PFNA										
468.00 > 423.00	3.025	3.023	0.002	1.000	581877	0.3745		74.9	17562	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.025	3.023	0.002	1.000	2392528	2.13			8866	
499.00 > 99.00	3.025	3.023	0.002	1.000	513788		4.66(2.31-6.93)		9054	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.359	0.002	1.000	626379	0.2741		54.8	8452	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.359	0.002	1.000	2393	0.001934			43.5	
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.369	0.010	1.000	130053	0.2591		54.1	1295	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.370	3.378	-0.008	0.997	2137	0.005835			63.4	
D 23 13C2 PFDA										
515.00 > 470.00	3.389	3.387	0.002	1.000	503876	0.3840		76.8	14111	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.537	0.001	1.000	271632	0.3869		77.4	6300	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.707	0.001	1.000	269104	0.3653		73.1	2190	
D 30 13C2 PFUnA										
565.00 > 520.00	3.719	3.718	0.001	1.000	422747	0.3946		78.9	13300	
D 36 13C2 PFDoA										
615.00 > 570.00	4.009	4.007	0.002	1.000	429910	0.3605		72.1	4529	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.511	0.0	1.000	503379	0.3323		66.5	3388	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.922	4.922	0.0	1.000	701658	0.3000		60.0	2473	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Report Date: 09-Apr-2018 08:33:43 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_026.d

Injection Date: 07-Apr-2018 12:01:15 Instrument ID: A8_N

Lims ID: 320-36960-A-4-A Lab Sample ID: 320-36960-4

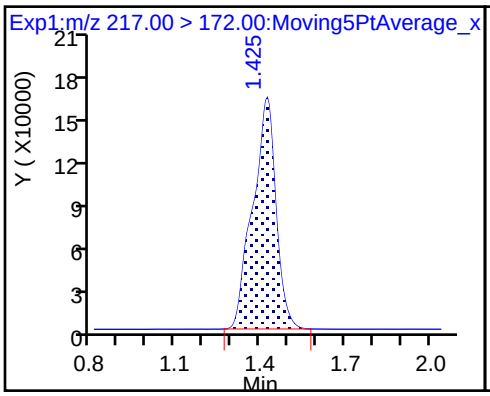
Client ID: BNA01-SB1-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 3

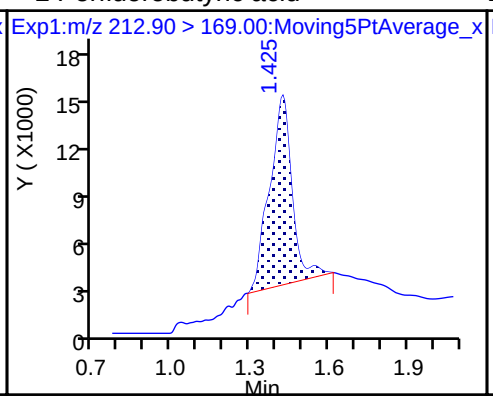
Injection Vol: 2.0 ul Dil. Factor: 5.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

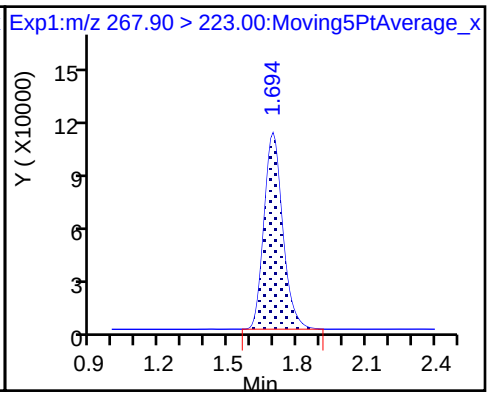
D 1 13C4 PFBA



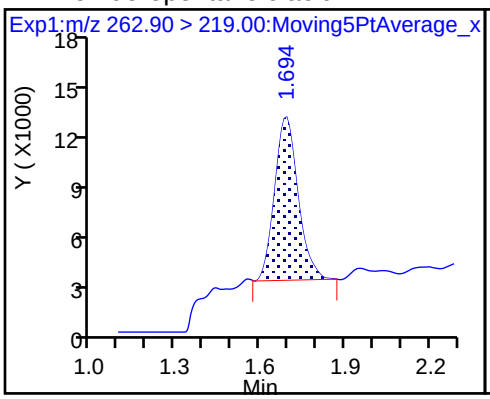
2 Perfluorobutyric acid



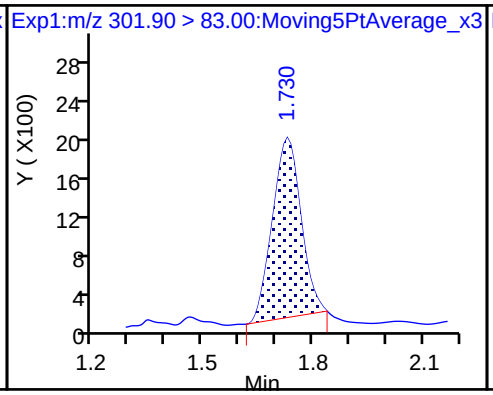
D 3 13C5-PFPeA



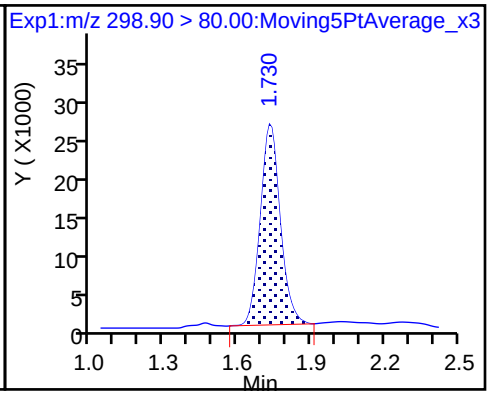
4 Perfluoropentanoic acid



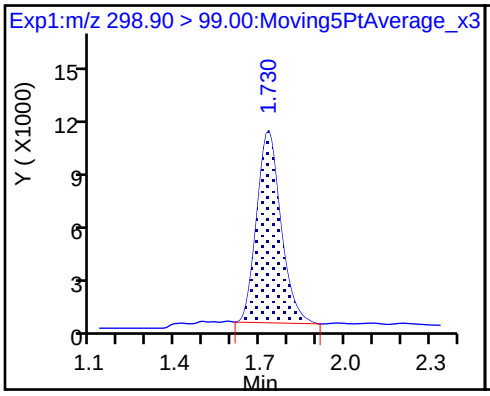
D 47 13C3-PFBS



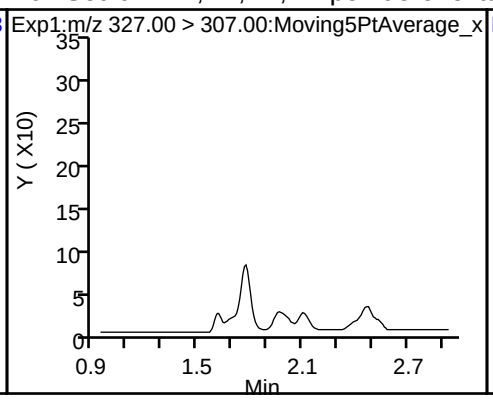
5 Perfluorobutanesulfonic acid



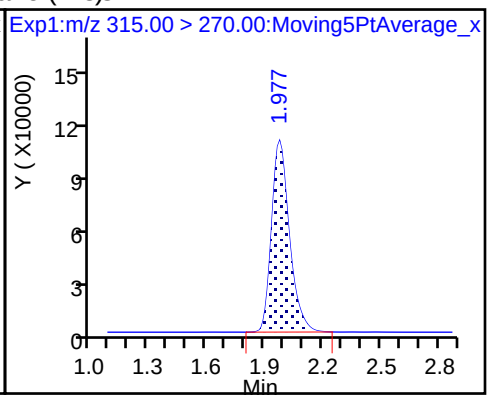
5 Perfluorobutanesulfonic acid



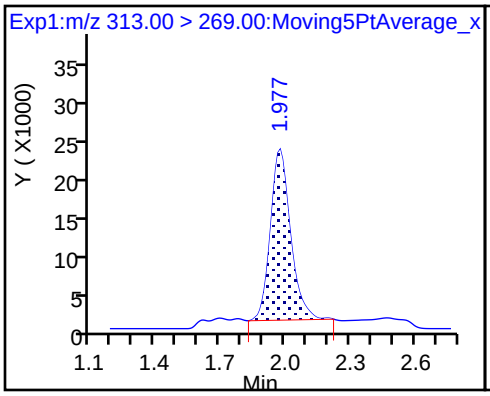
61 Sodium 1H,1H,2H,2H-perfluorohexane (M)



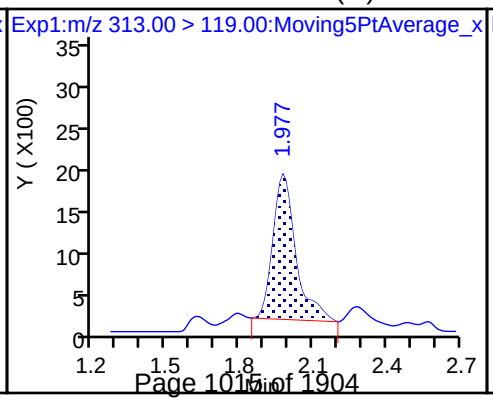
D 13C2 PFHxA



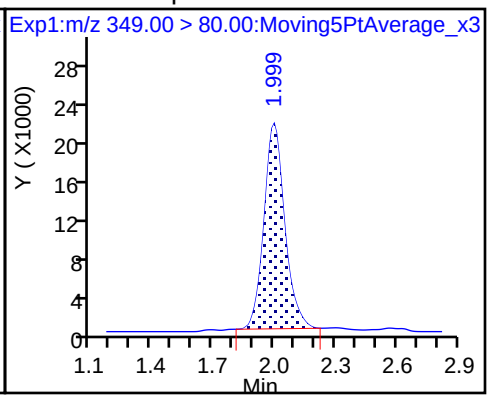
6 Perfluorohexanoic acid



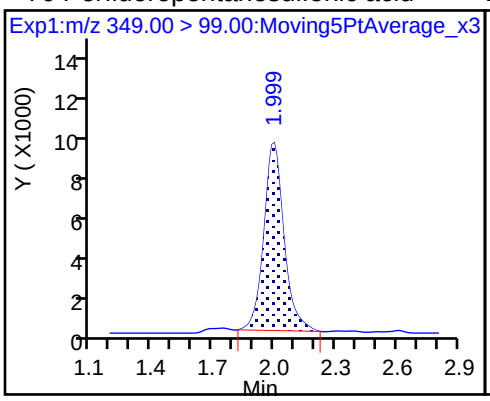
6 Perfluorohexanoic acid (M)



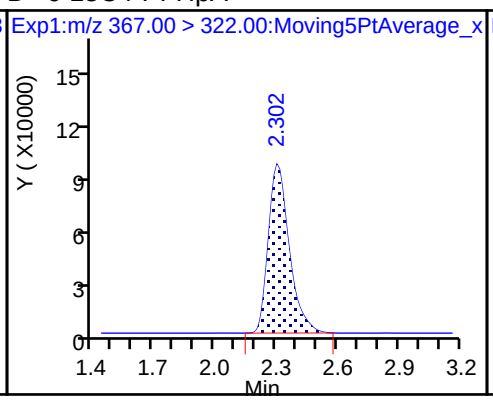
70 Perfluoropentanesulfonic acid



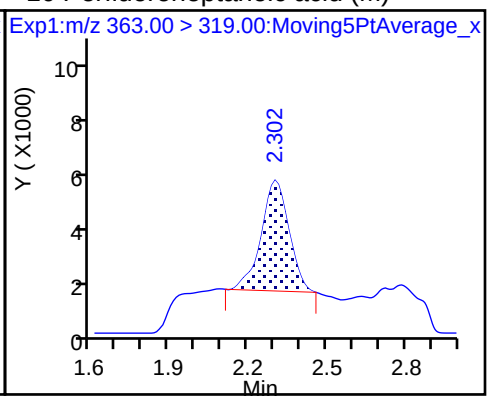
70 Perfluoropentanesulfonic acid



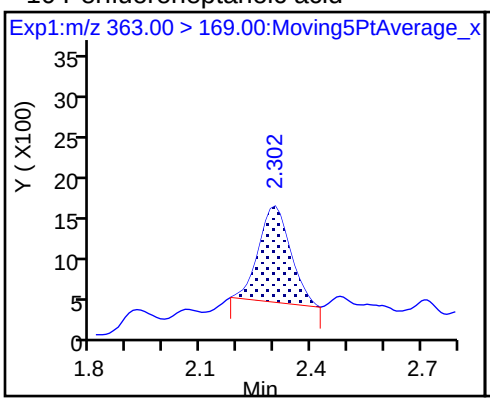
D 9 13C4-PFHpA



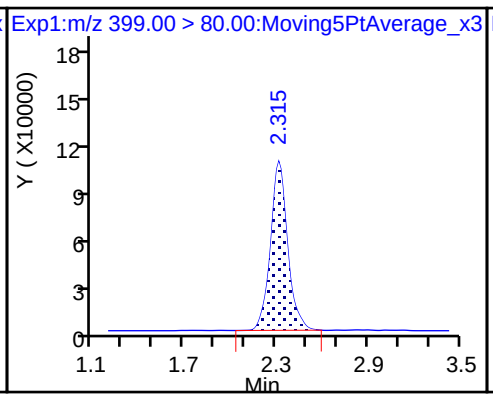
10 Perfluoroheptanoic acid (M)



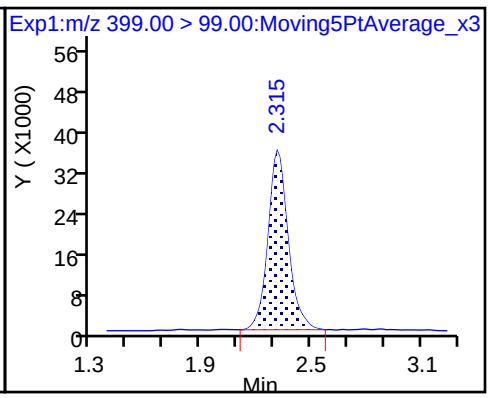
10 Perfluoroheptanoic acid



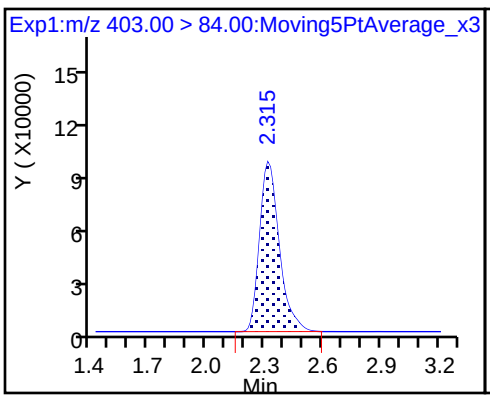
8 Perfluorohexanesulfonic acid



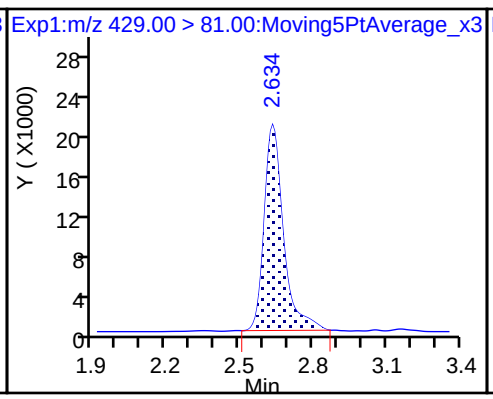
8 Perfluorohexanesulfonic acid



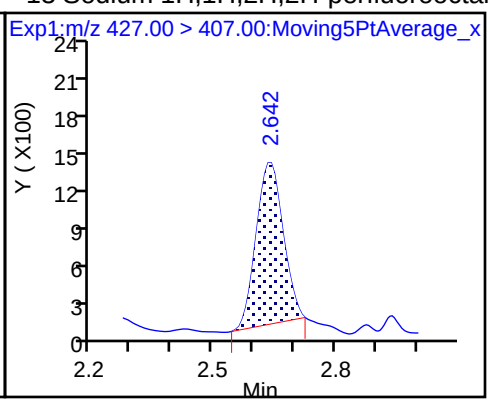
D 11 18O2 PFHxS



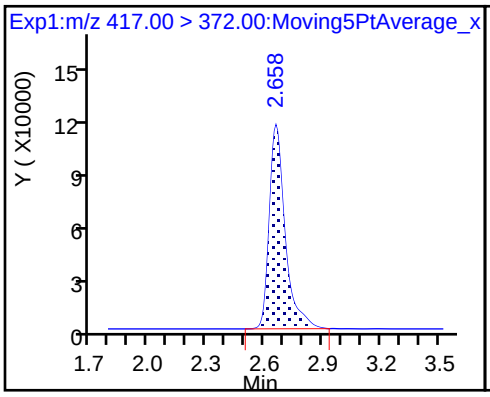
D 12 M2-6:2FTS



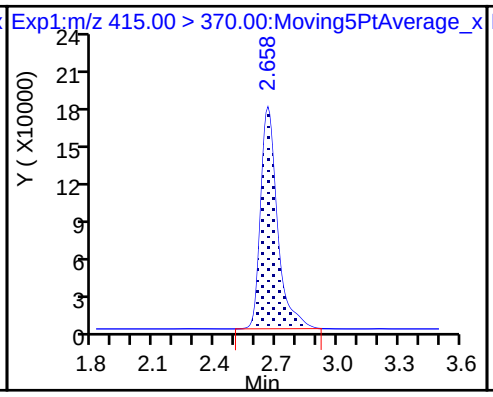
13 Sodium 1H,1H,2H,2H-perfluorooctane



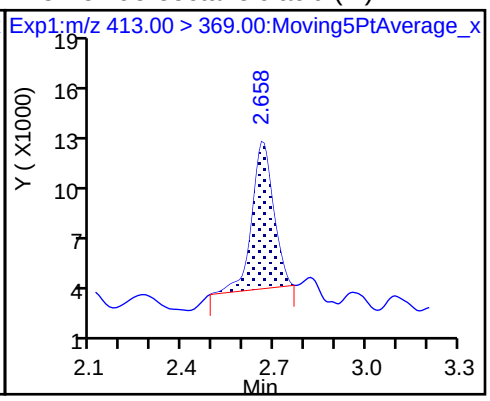
D 14 13C4 PFOA



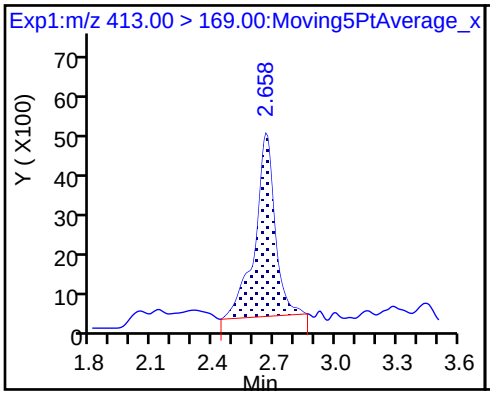
* 62 13C2-PFOA



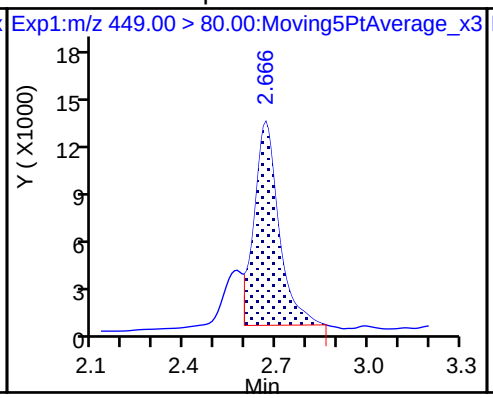
15 Perfluorooctanoic acid (M)



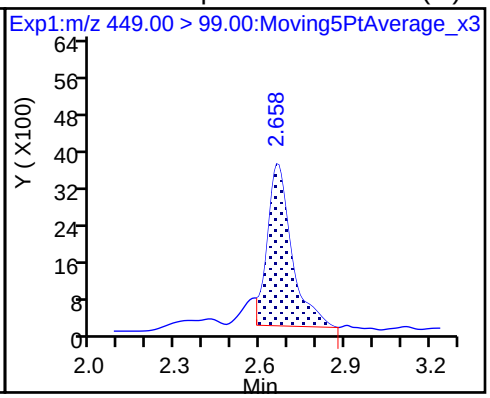
15 Perfluorooctanoic acid



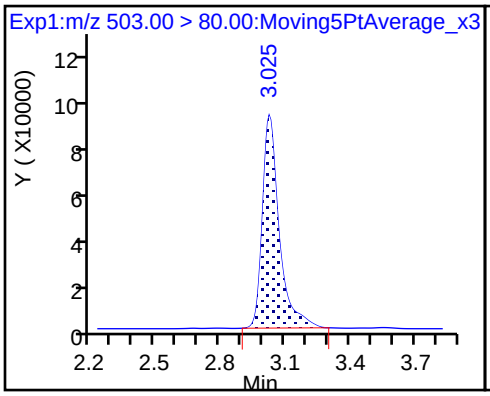
16 Perfluoroheptanesulfonic acid



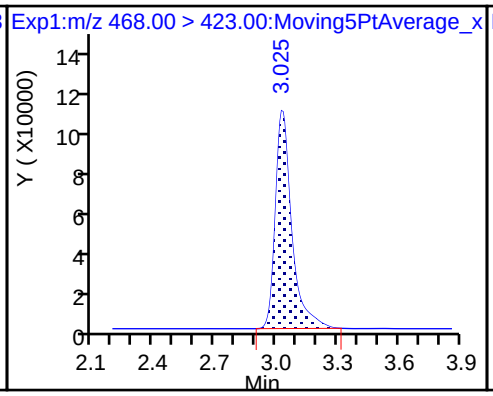
16 Perfluoroheptanesulfonic acid (M)



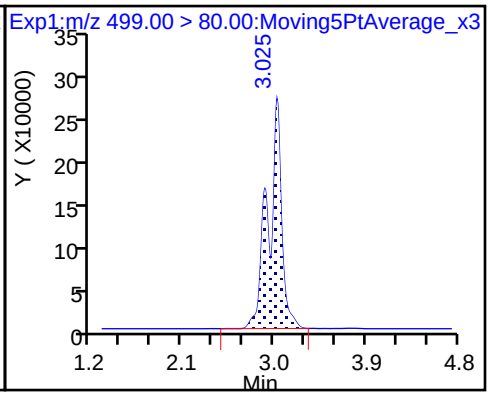
D 18 13C4 PFOS



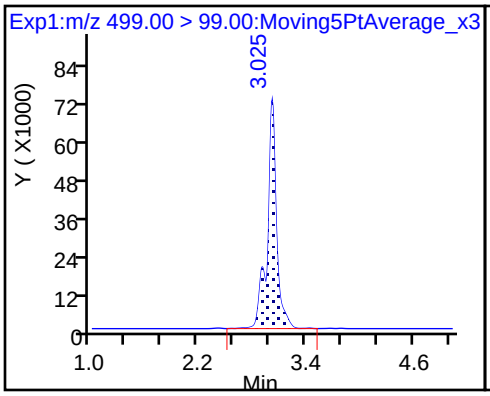
D 19 13C5 PFNA



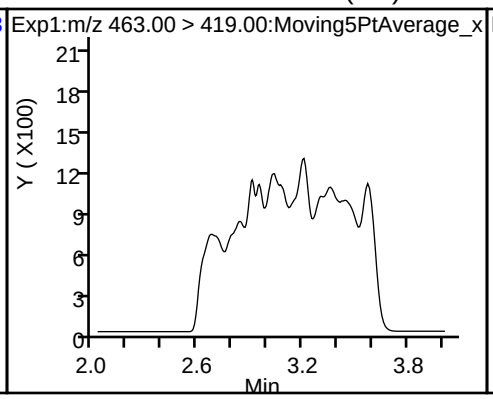
17 Perfluorooctane sulfonic acid



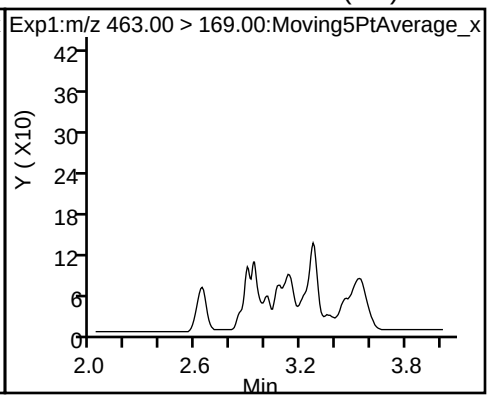
17 Perfluorooctane sulfonic acid



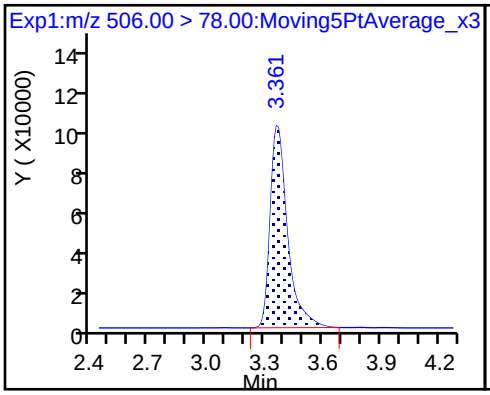
20 Perfluorononanoic acid (ND)



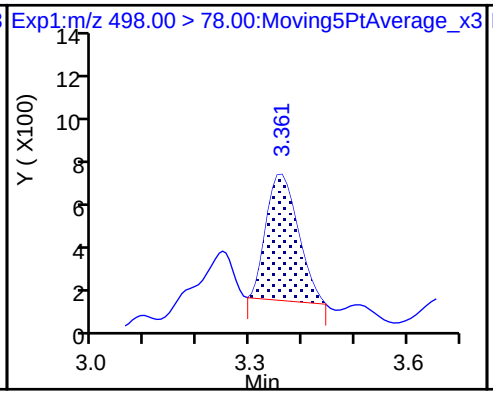
20 Perfluorononanoic acid (ND)



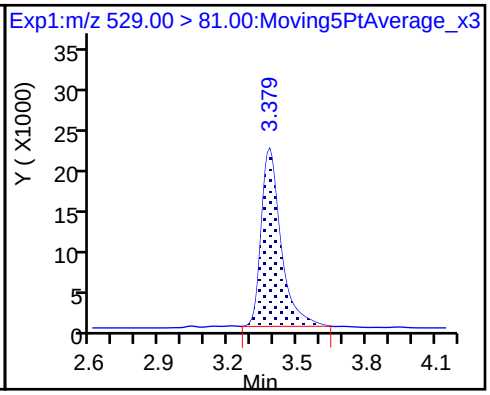
D 21 13C8 FOSA



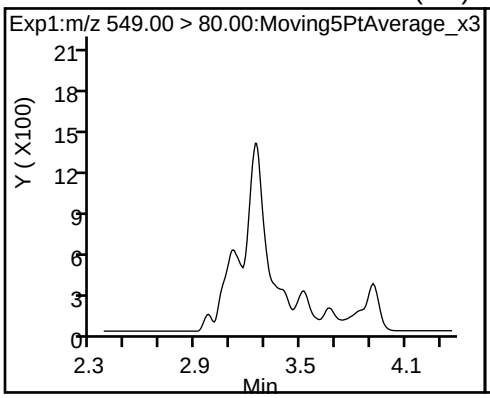
22 Perfluorooctane Sulfonamide



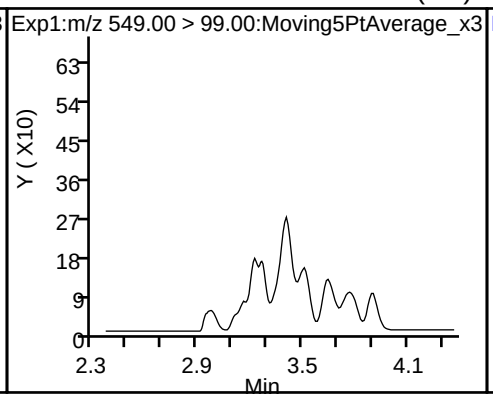
D 26 M2-8:2FTS



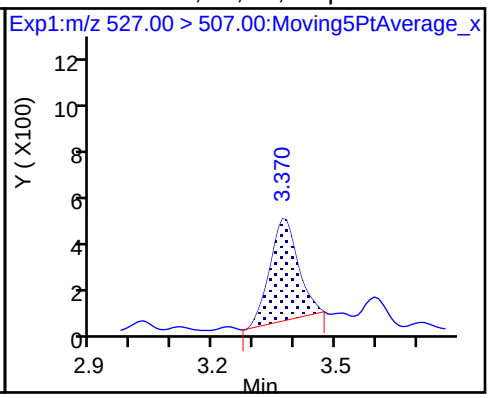
68 Perfluorononanesulfonic acid (ND)



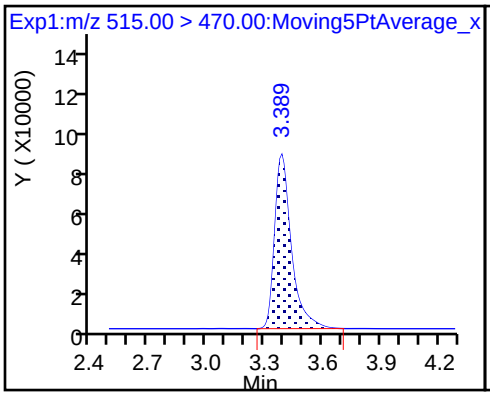
68 Perfluorononanesulfonic acid (ND)



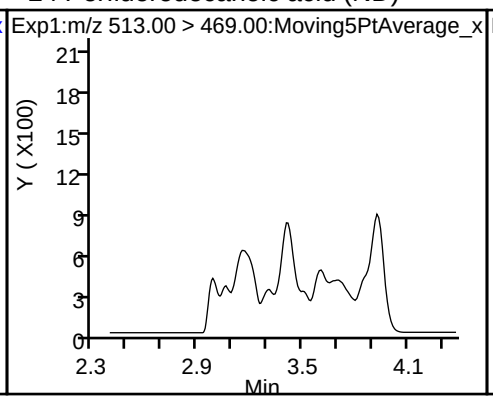
25 Sodium 1H,1H,2H,2H-perfluorodecane



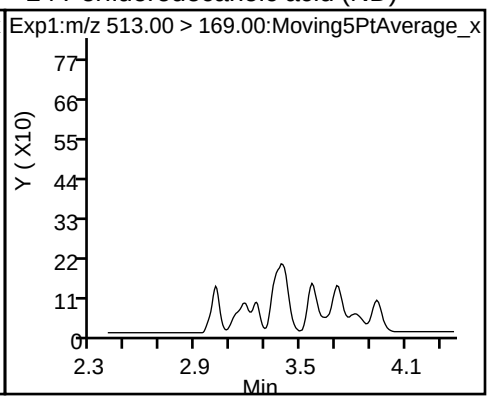
D 23 13C2 PFDA



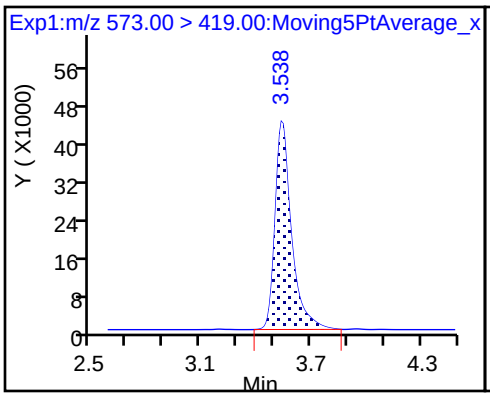
24 Perfluorodecanoic acid (ND)



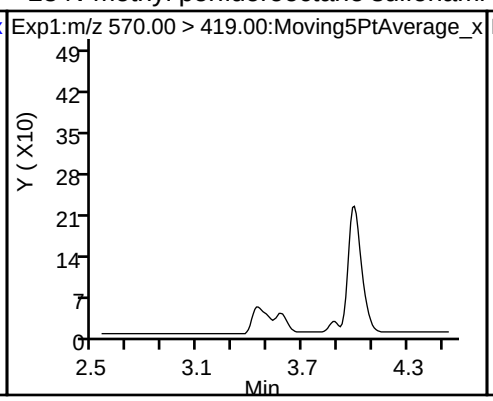
24 Perfluorodecanoic acid (ND)



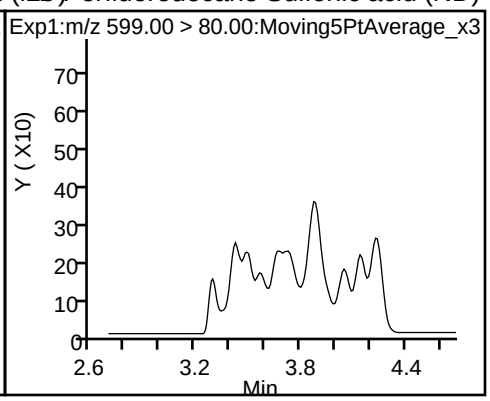
D 27 d3-NMeFOSAA



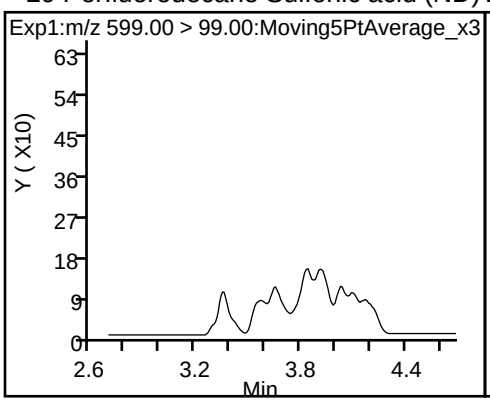
28 N-methyl perfluorooctane sulfonami (ND)



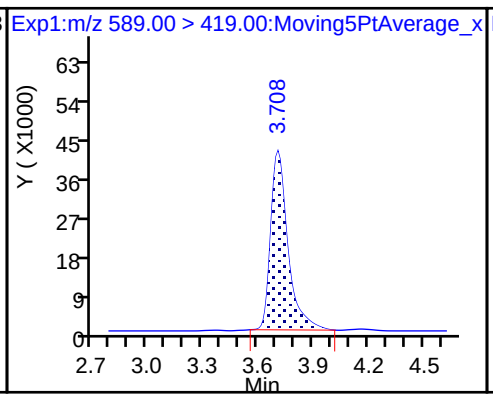
29 Perfluorodecane Sulfonic acid (ND)



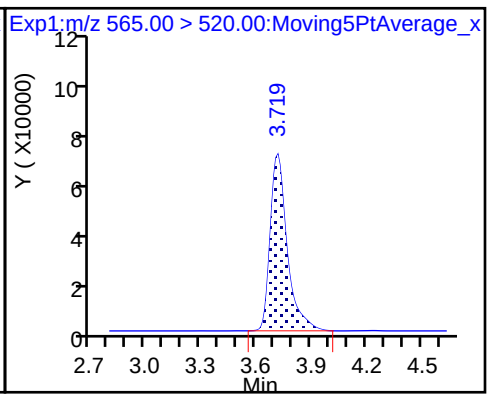
29 Perfluorodecane Sulfonic acid (ND)



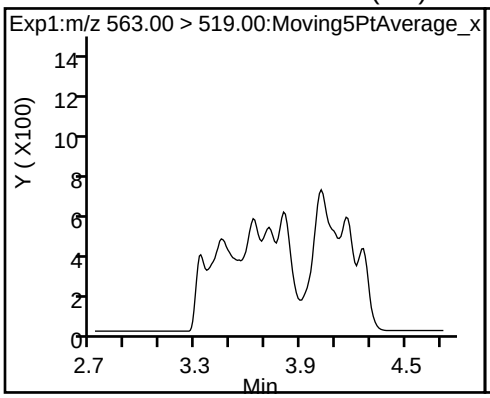
D 32 d5-NEtFOSAA



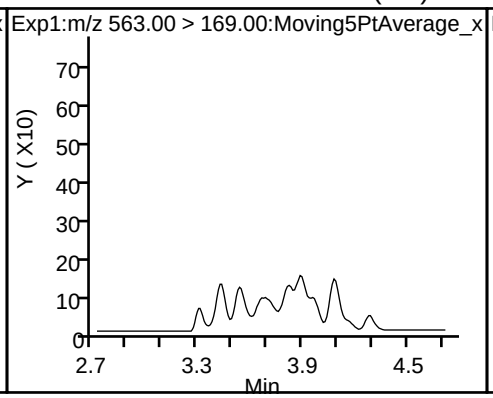
D 30 13C2 PFUnA



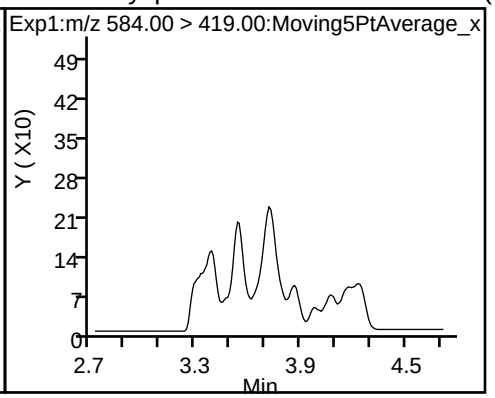
31 Perfluoroundecanoic acid (ND)



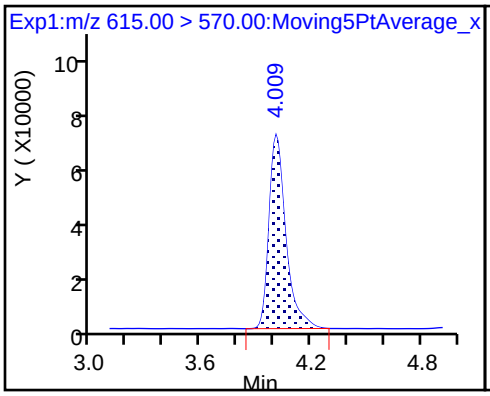
31 Perfluoroundecanoic acid (ND)



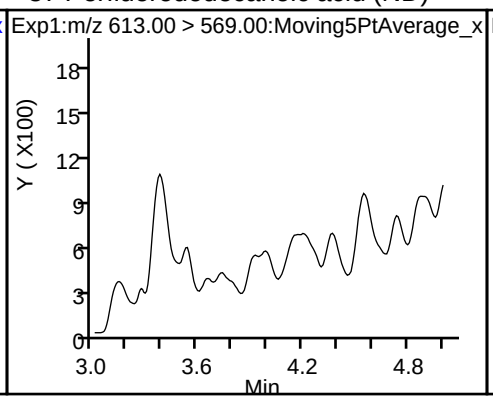
33 N-ethyl perfluorooctane sulfonamid (ND)



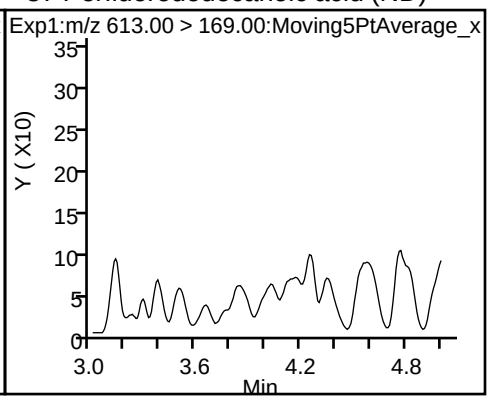
D 36 13C2 PFDoA



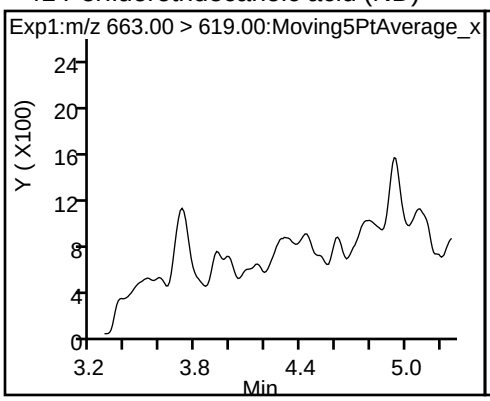
37 Perfluorododecanoic acid (ND)



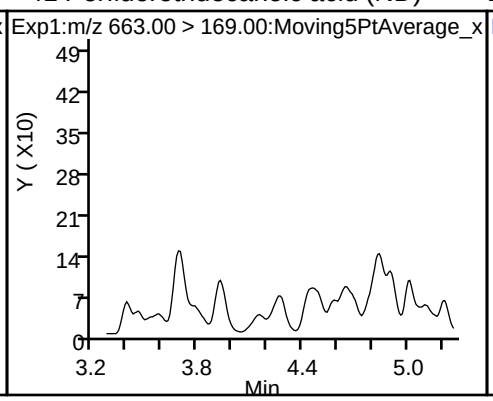
37 Perfluorododecanoic acid (ND)



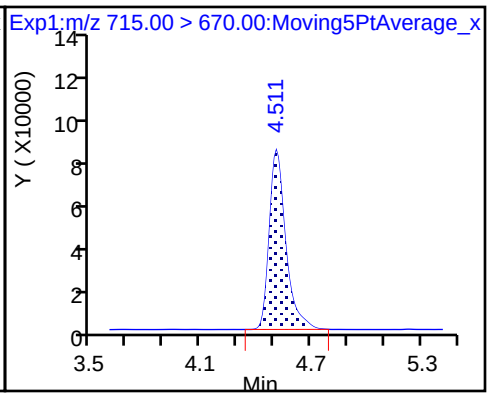
41 Perfluorotridecanoic acid (ND)



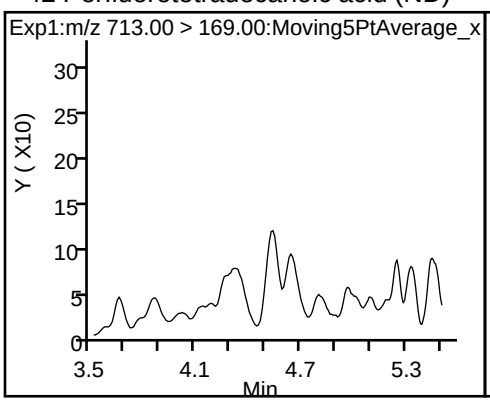
41 Perfluorotridecanoic acid (ND)



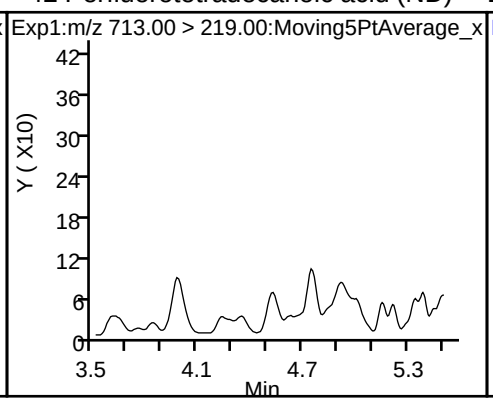
D 43 13C2-PFTeDA



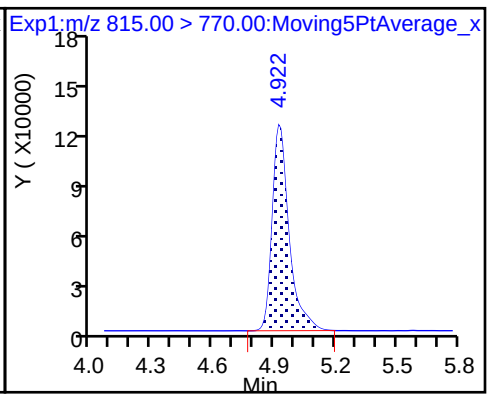
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

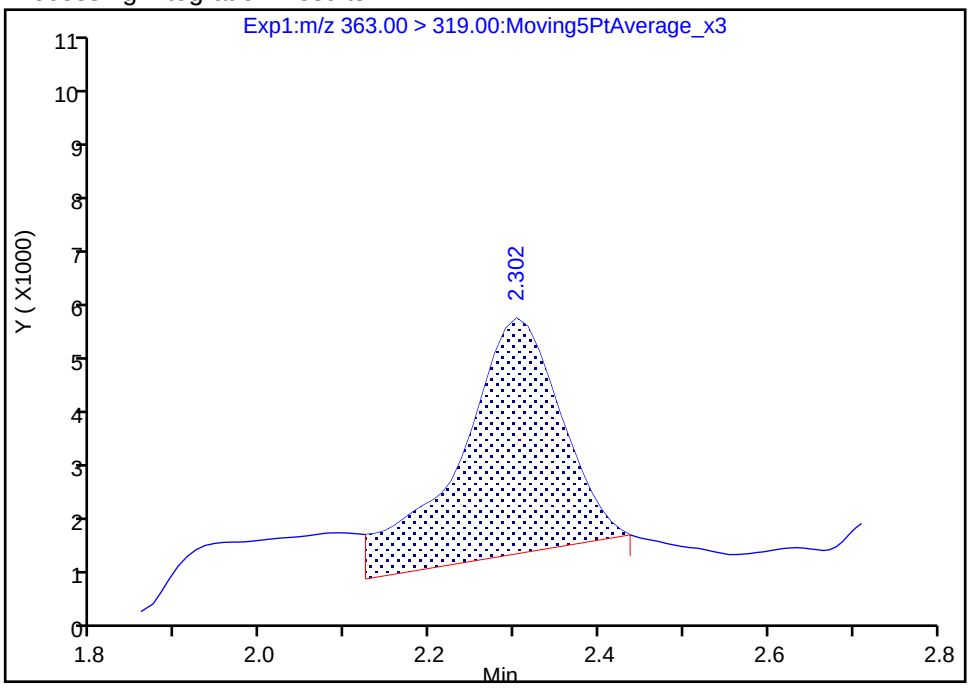
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_026.d				
Injection Date:	07-Apr-2018 12:01:15	Instrument ID:	A8_N		
Lims ID:	320-36960-A-4-A	Lab Sample ID:	320-36960-4		
Client ID:	BNA01-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

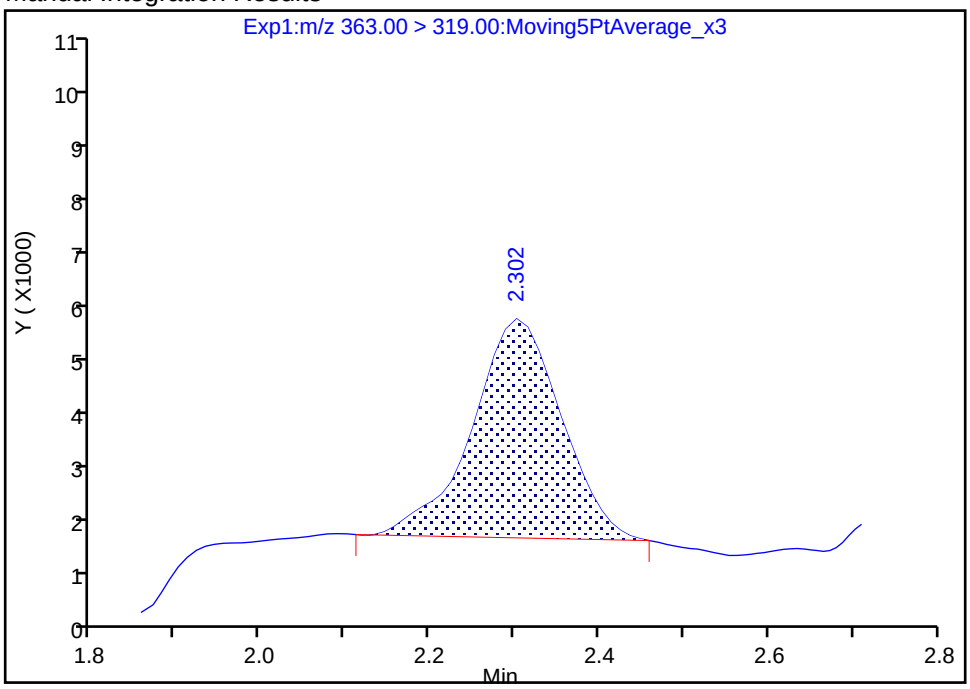
Processing Integration Results

RT: 2.30
Area: 36966
Amount: 0.025026
Amount Units: ng/ml



Manual Integration Results

RT: 2.30
Area: 29885
Amount: 0.020232
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:28:36

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

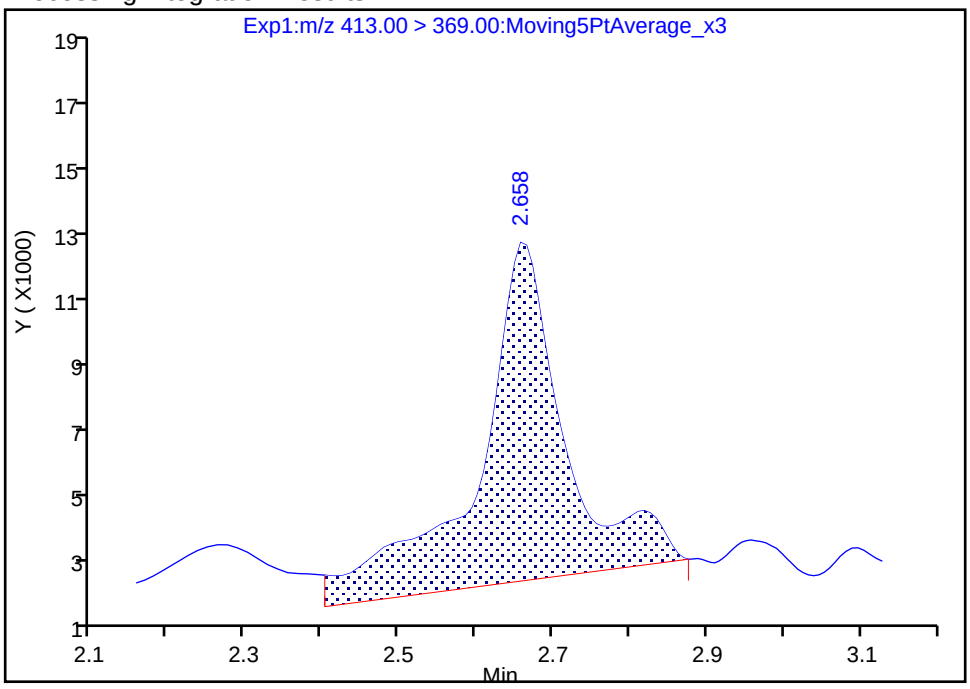
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_026.d				
Injection Date:	07-Apr-2018 12:01:15	Instrument ID:	A8_N		
Lims ID:	320-36960-A-4-A	Lab Sample ID:	320-36960-4		
Client ID:	BNA01-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

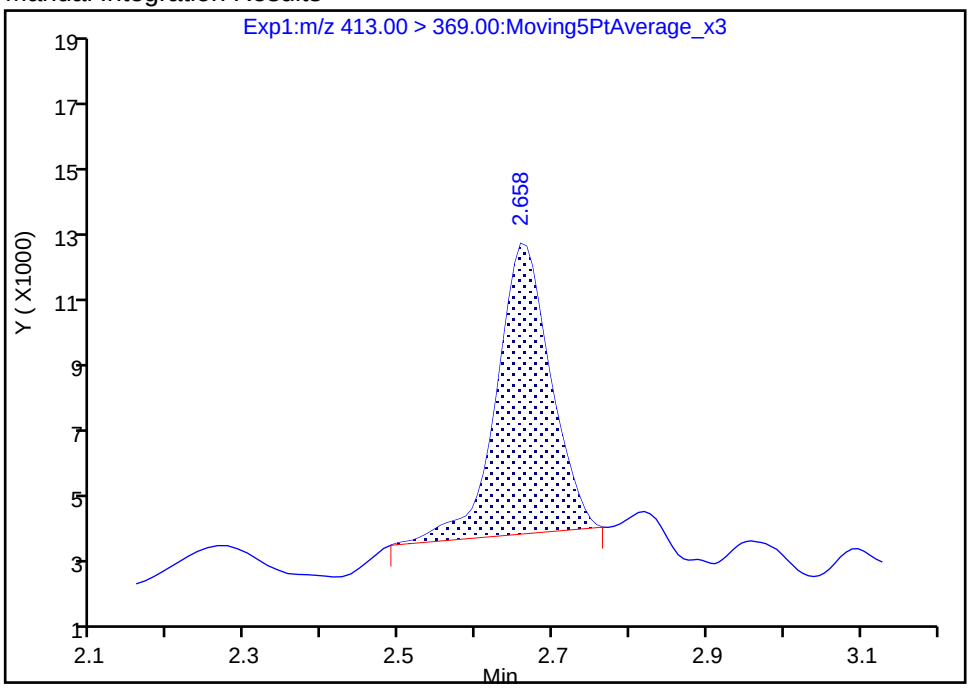
Processing Integration Results

RT: 2.66
Area: 79774
Amount: 0.051398
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 42385
Amount: 0.027308
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:28:44

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA01-SB1-02 | Lab Sample ID: 320-36960-5

Matrix: Solid | Lab File ID: 2018.04.07LLA_012.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 15:50

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.07(g) | Date Analyzed: 04/07/2018 10:03

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 22.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.25	0.099
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U	0.38	0.25	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U M Q	0.38	0.25	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.23	0.075
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.22	J	0.38	0.25	0.079
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.64	U	1.3	0.64	0.31

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	65		50-150
STL01892	13C4-PFHpA	75		50-150
STL00990	13C4 PFOA	79		50-150
STL00995	13C5 PFNA	81		50-150
STL00994	18O2 PFHxS	73		50-150
STL00991	13C4 PFOS	67		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_012.d
Lims ID: 320-36960-A-5-A
Client ID: BNA01-SB1-02
Sample Type: Client
Inject. Date: 07-Apr-2018 10:03:50 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-5-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: hannigana Date: 08-Apr-2018 13:18:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.730	1.730	0.0	1.000	64949	1.52		65.4	174	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.308	0.0	1.000	3714797	1.88		75.2	66273	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.321	0.0	1.000	4243614	1.72		72.8	102442	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.323	-0.002	1.000	171182	0.0854			270	
399.00 > 99.00	2.321	2.323	-0.002	1.000	43364		3.95(1.50-4.49)		98.5	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	3856557	1.98		79.4	100266	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.661	-0.001		5182843	2.50			157379	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.669	-0.009	1.000	30963	0.0169			16.1	
413.00 > 169.00	2.660	2.669	-0.009	1.000	22299		1.39(0.84-2.52)		42.4	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.023	-0.001	1.000	2745795	1.60		67.1	13103	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.030	-0.008	1.000	3338471	2.03		81.2	76359	

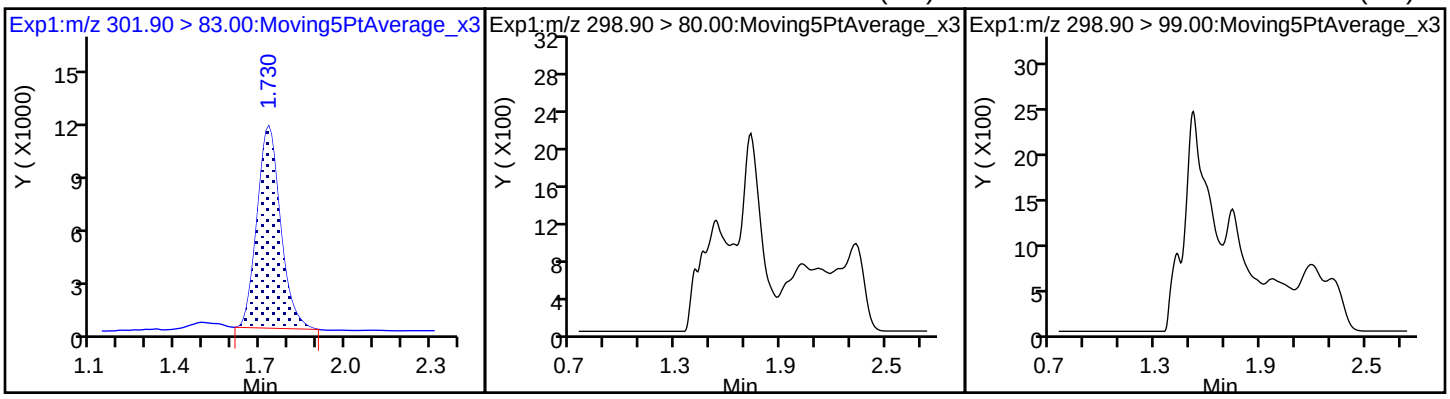
Report Date: 09-Apr-2018 08:26:53 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

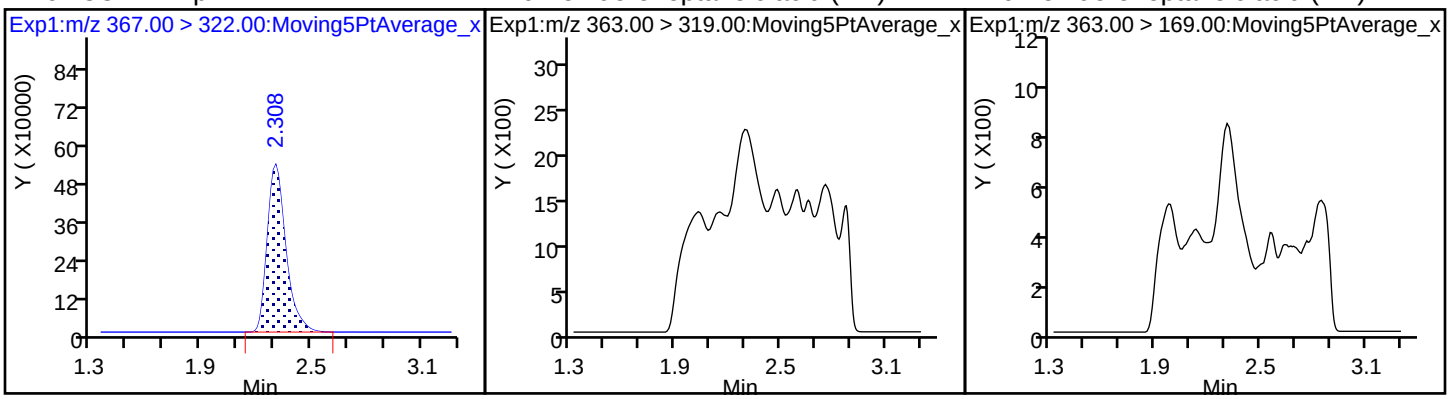
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_012.d

Injection Date:	07-Apr-2018 10:03:50	Instrument ID:	A8_N
Lims ID:	320-36960-A-5-A	Lab Sample ID:	320-36960-5
Client ID:	BNA01-SB1-02		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6 Worklist Smp#: 9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL

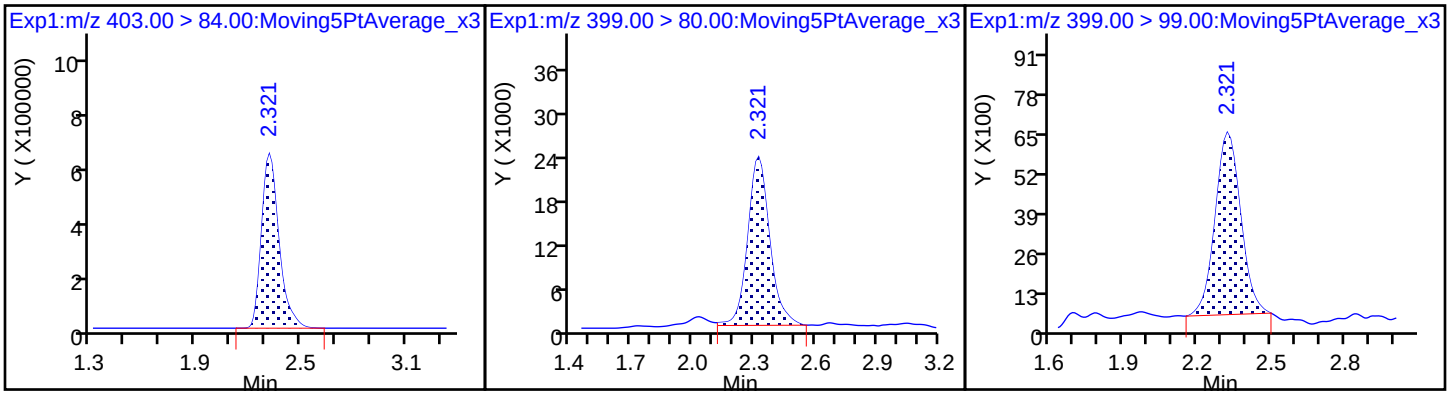
D 47 13C3-PFBS | 5 Perfluorobutanesulfonic acid (ND) | 5 Perfluorobutanesulfonic acid (ND)



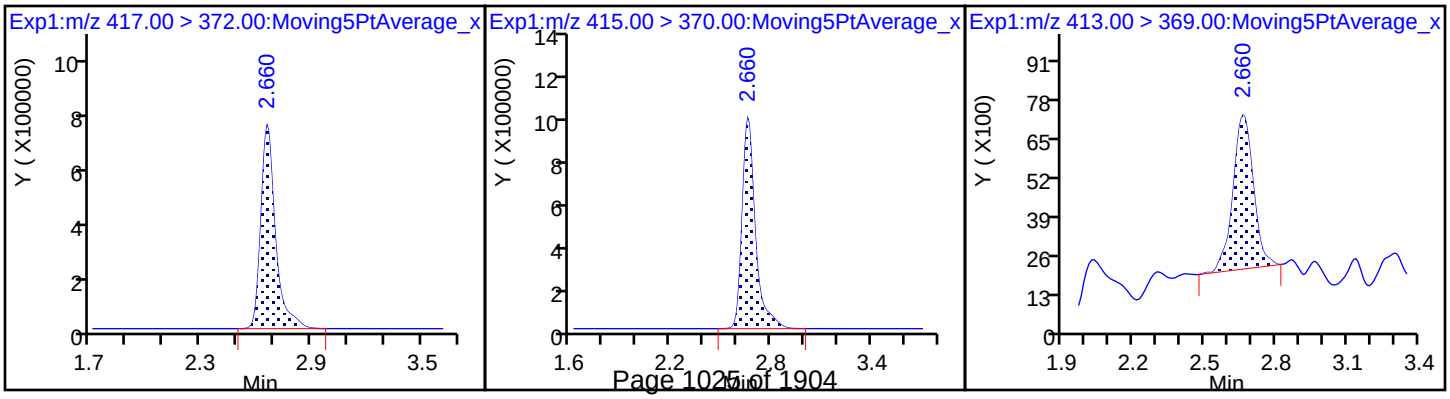
D 9 13C4-PFHpA | 10 Perfluoroheptanoic acid (ND) | 10 Perfluoroheptanoic acid (ND)



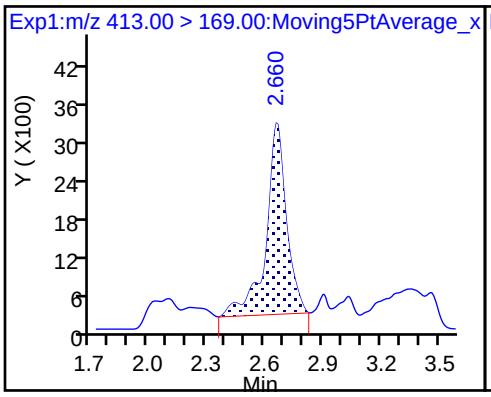
D 11 18O2 PFHxS | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



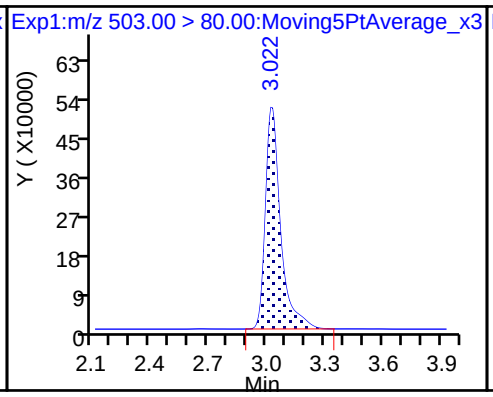
D 14 13C4 PFOA | * 62 13C2-PFOA | 15 Perfluorooctanoic acid



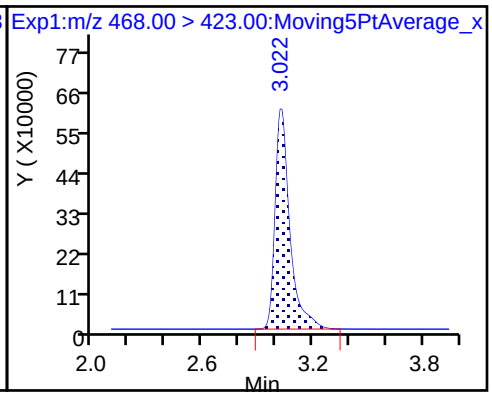
15 Perfluorooctanoic acid



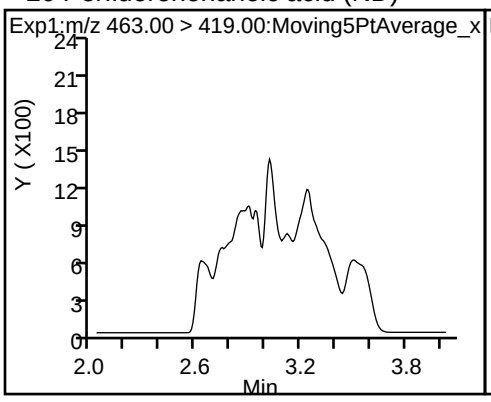
D 18 13C4 PFOS



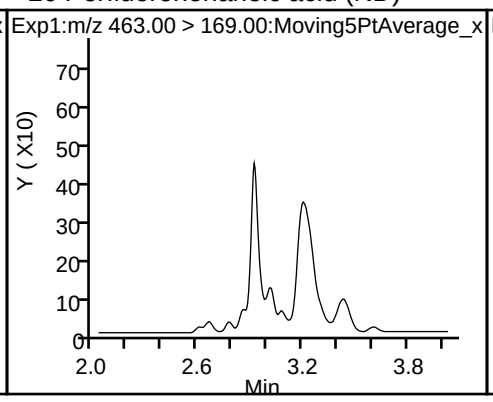
D 19 13C5 PFNA



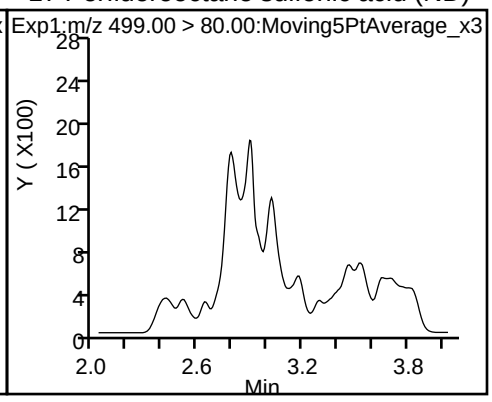
20 Perfluorononanoic acid (ND)



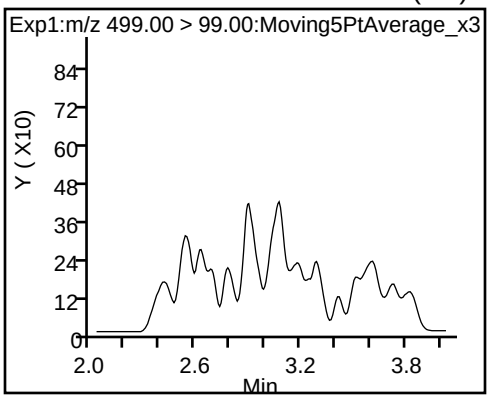
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA03-SB1-01 | Lab Sample ID: 320-36960-6

Matrix: Solid | Lab File ID: 2018.04.07LLA_013.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/06/2018 07:20

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.10(g) | Date Analyzed: 04/07/2018 10:11

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 22.7 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.25	0.099
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U M	0.38	0.25	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U M Q	0.38	0.25	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.23	0.075
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.19	J	0.38	0.25	0.079
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.63	U	1.3	0.63	0.30

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	60		50-150
STL01892	13C4-PFHpA	71		50-150
STL00990	13C4 PFOA	70		50-150
STL00995	13C5 PFNA	70		50-150
STL00994	18O2 PFHxS	64		50-150
STL00991	13C4 PFOS	60		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_013.d
Lims ID: 320-36960-A-6-A
Client ID: BNA03-SB1-01
Sample Type: Client
Inject. Date: 07-Apr-2018 10:11:38 ALS Bottle#: 7 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-6-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:22:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	55523	1.40		60.1	406	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.729	1.740	-0.011	1.000	24182	0.0128			82.2	
298.90 > 99.00	1.729	1.740	-0.011	1.000	11235		2.15(1.25-3.74)		59.5	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.308	-0.001	1.000	3282446	1.79		71.4	58809	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.321	-0.001	1.000	3483434	1.52		64.3	82794	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.323	-0.003	1.000	122266	0.0743			315	
399.00 > 99.00	2.320	2.323	-0.003	1.000	37843		3.23(1.50-4.49)		147	
D 14 13C4 PFOA										
417.00 > 372.00	2.661	2.660	0.001	1.000	3180087	1.76		70.4	94737	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.661	0.0		4819652	2.50			108703	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.023	0.006	1.000	2271958	1.43		59.7	18413	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.030	-0.001	1.000	2686258	1.76		70.3	81631	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.029	3.032	-0.003	1.000	110364	0.1016			331	
499.00 > 99.00	3.029	3.032	-0.003	1.000	25835		4.27(2.31-6.93)		212	

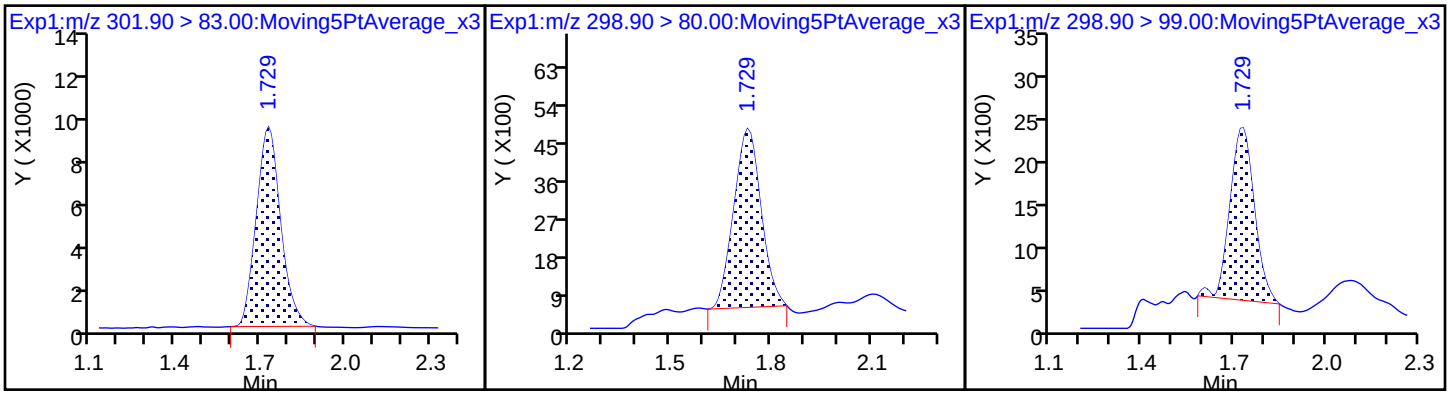
Report Date: 09-Apr-2018 08:26:54 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

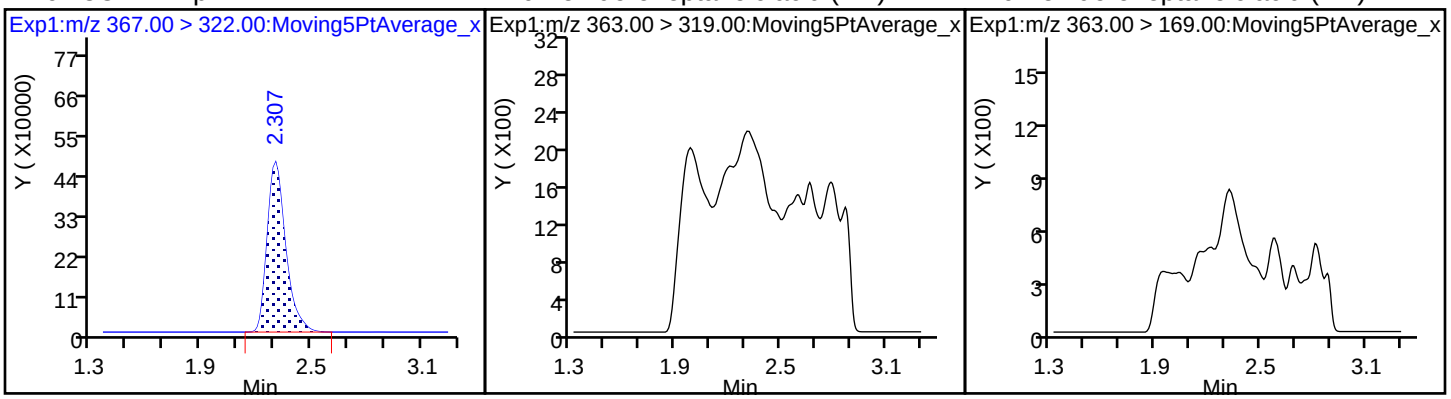
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_013.d

Injection Date:	07-Apr-2018 10:11:38	Instrument ID:	A8_N
Lims ID:	320-36960-A-6-A	Lab Sample ID:	320-36960-6
Client ID:	BNA03-SB1-01		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7 Worklist Smp#: 10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL

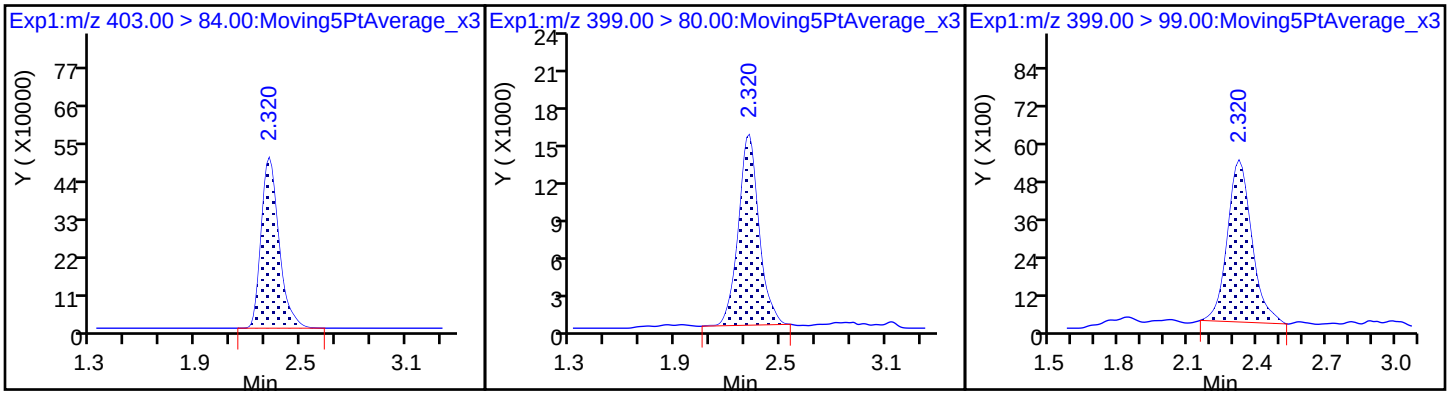
D 47 13C3-PFBS | 5 Perfluorobutanesulfonic acid | 5 Perfluorobutanesulfonic acid



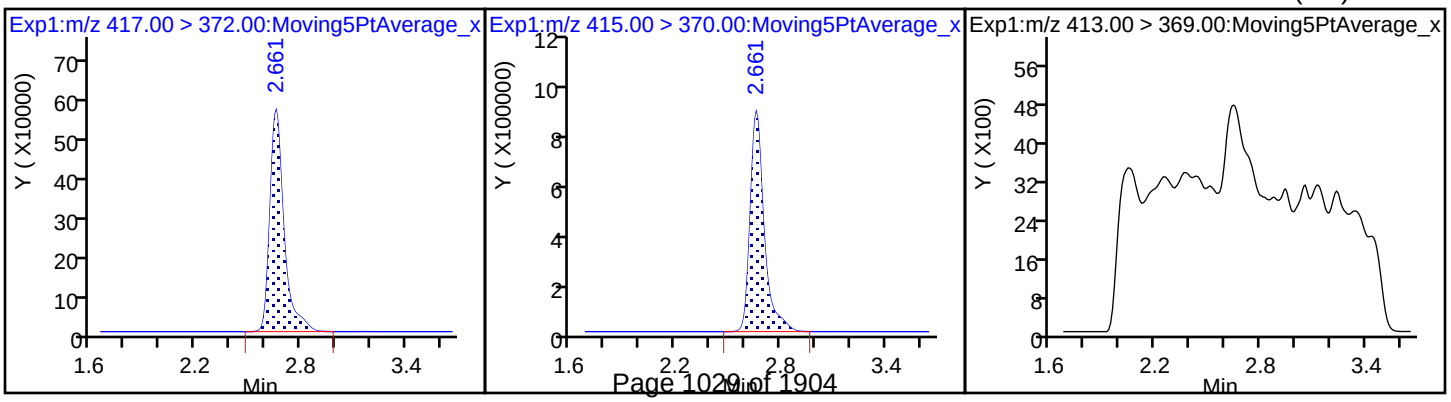
D 9 13C4-PFHpA | 10 Perfluoroheptanoic acid (ND) | 10 Perfluoroheptanoic acid (ND)



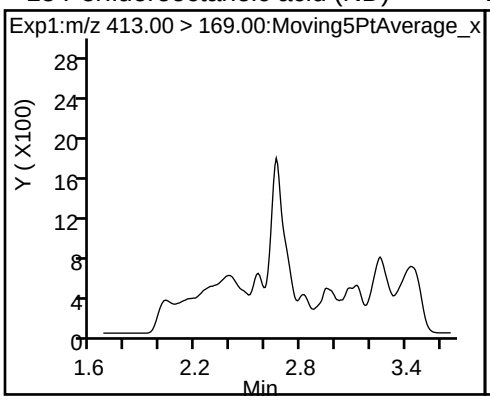
D 11 18O2 PFHxS | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



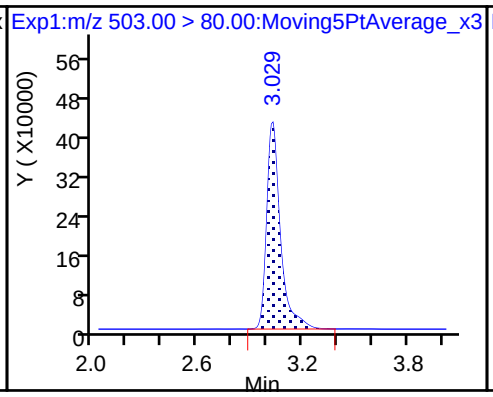
D 14 13C4 PFOA | * 62 13C2-PFOA | 15 Perfluorooctanoic acid (ND)



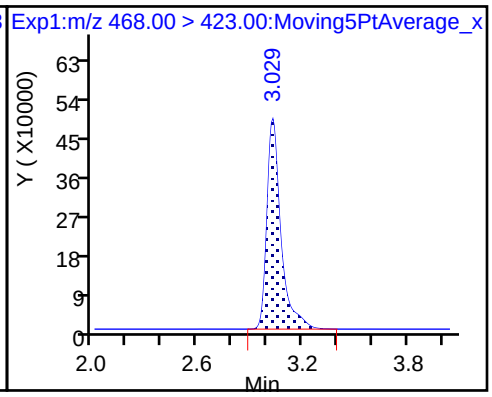
15 Perfluorooctanoic acid (ND)



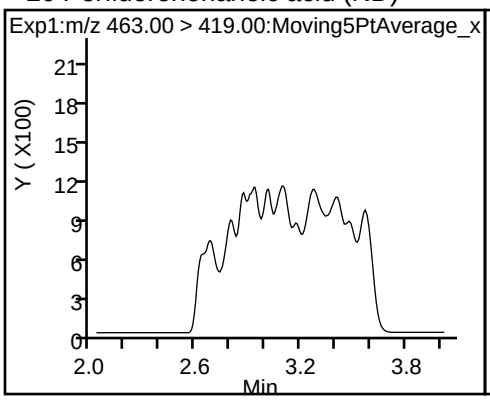
D 18 13C4 PFOS



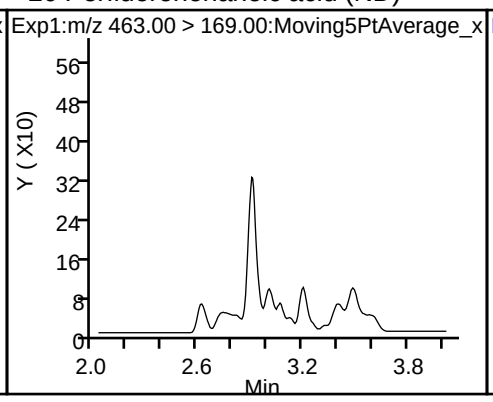
D 19 13C5 PFNA



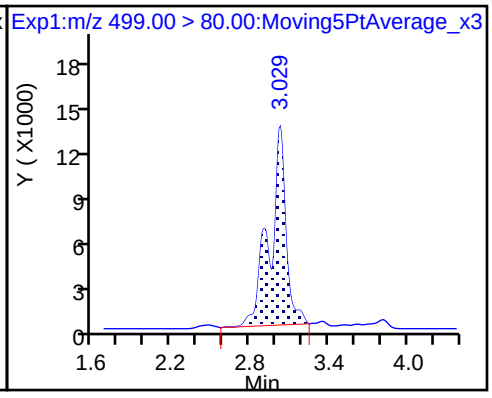
20 Perfluorononanoic acid (ND)



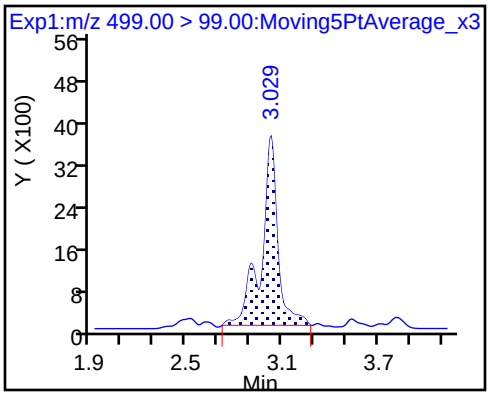
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA03-SB1-01D | Lab Sample ID: 320-36960-7

Matrix: Solid | Lab File ID: 2018.04.07LLA_014.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/06/2018 07:20

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.08(g) | Date Analyzed: 04/07/2018 10:19

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 22.9 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.26	U	0.38	0.26	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.26	U	0.38	0.26	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.26	U M Q	0.38	0.26	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.23	0.075
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.17	J	0.38	0.26	0.079
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.64	U	1.3	0.64	0.31

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	58		50-150
STL01892	13C4-PFHpA	74		50-150
STL00990	13C4 PFOA	71		50-150
STL00995	13C5 PFNA	72		50-150
STL00994	18O2 PFHxS	63		50-150
STL00991	13C4 PFOS	63		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_014.d
Lims ID: 320-36960-A-7-A
Client ID: BNA03-SB1-01D
Sample Type: Client
Inject. Date: 07-Apr-2018 10:19:27 ALS Bottle#: 8 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-7-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:22:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	54745	1.35		58.0	317	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.738	1.740	-0.002	1.005	24466	0.0132			84.2	
298.90 > 99.00	1.738	1.740	-0.002	1.005	8933		2.74(1.25-3.74)		45.8	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.308	-0.001	1.000	3469356	1.84		73.8	82479	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.321	-0.001	1.000	3484118	1.49		62.8	70292	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.323	-0.003	1.000	108032	0.0657			301	
399.00 > 99.00	2.320	2.323	-0.003	1.000	31304		3.45(1.50-4.49)		104	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	3273404	1.77		70.8	83621	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.661	-0.001		4931400	2.50			99857	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.669	-0.009	1.000	15817	0.0102			4.8	
413.00 > 169.00	2.653	2.669	-0.016	0.997	9862		1.60(0.84-2.52)		19.6	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.023	0.006	1.000	2457964	1.51		63.1	15386	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.030	-0.001	1.000	2822691	1.80		72.2	58237	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.036	3.032	0.004	1.002	60681	0.0516			200	
499.00 > 99.00	3.029	3.032	-0.003	1.000	12707		4.78(2.31-6.93)		88.1	

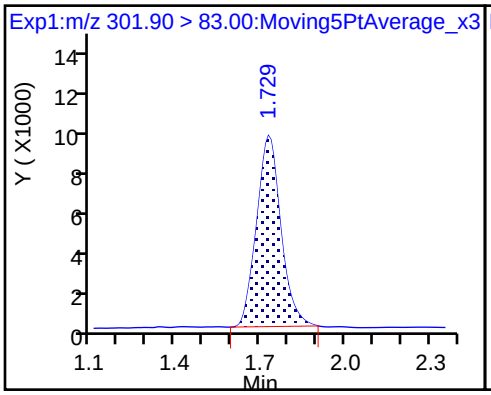
Report Date: 09-Apr-2018 08:26:55 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

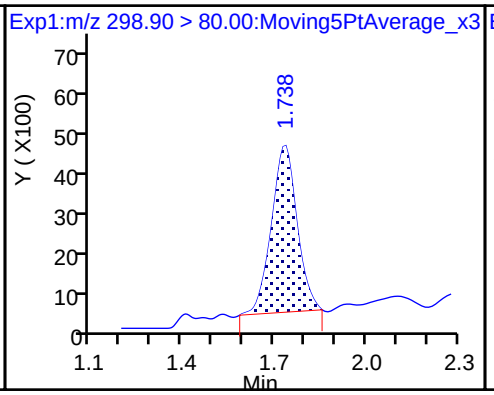
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_014.d

Injection Date:	07-Apr-2018 10:19:27	Instrument ID:	A8_N		
Lims ID:	320-36960-A-7-A	Lab Sample ID:	320-36960-7		
Client ID:	BNA03-SB1-01D				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

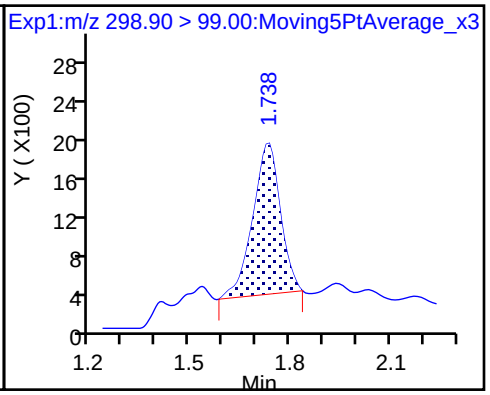
D 47 13C3-PFBS



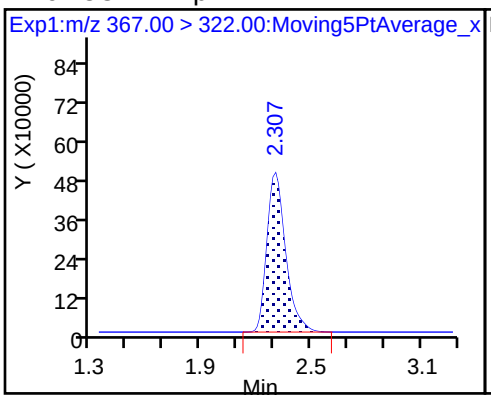
5 Perfluorobutanesulfonic acid



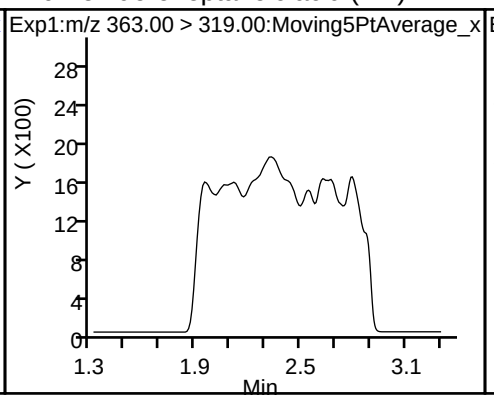
5 Perfluorobutanesulfonic acid



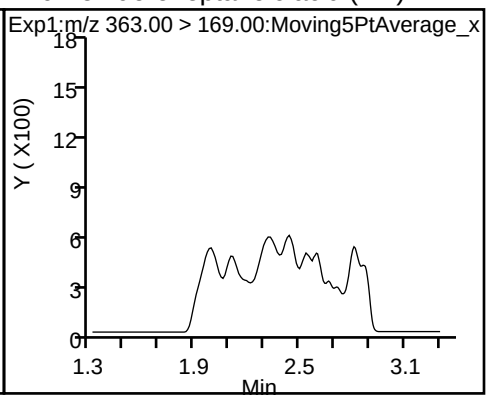
D 9 13C4-PFHpA



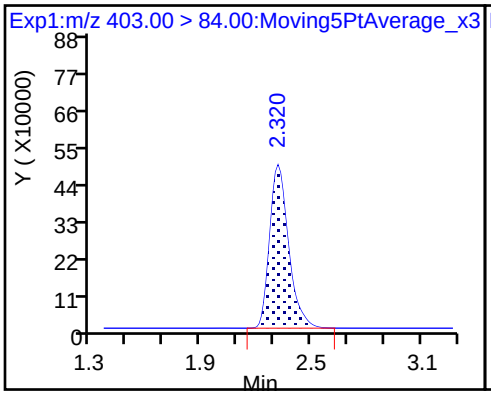
10 Perfluoroheptanoic acid (ND)



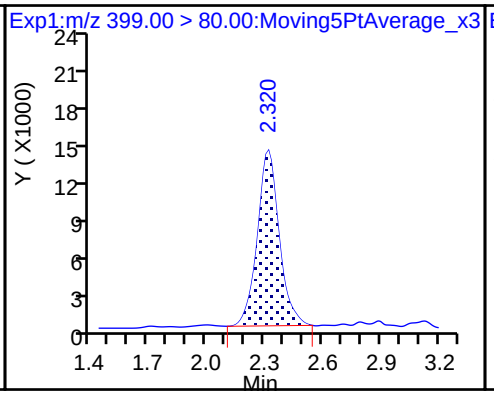
10 Perfluoroheptanoic acid (ND)



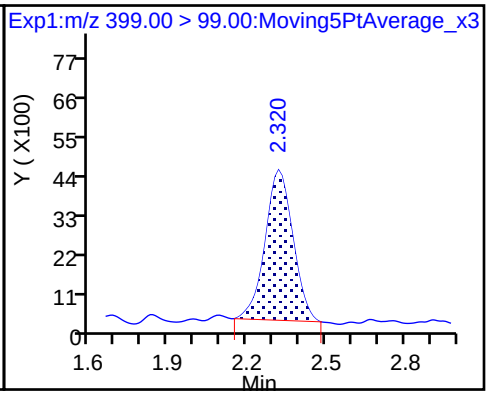
D 11 18O2 PFHxS



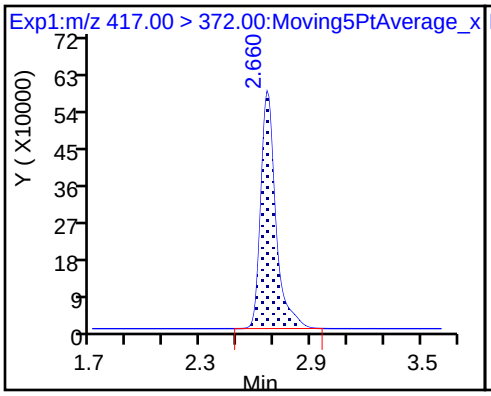
8 Perfluorohexanesulfonic acid



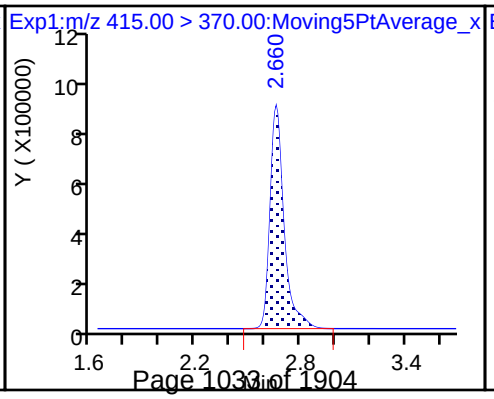
8 Perfluorohexanesulfonic acid



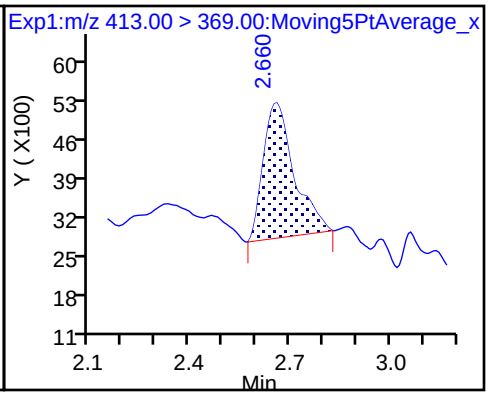
D 14 13C4 PFOA



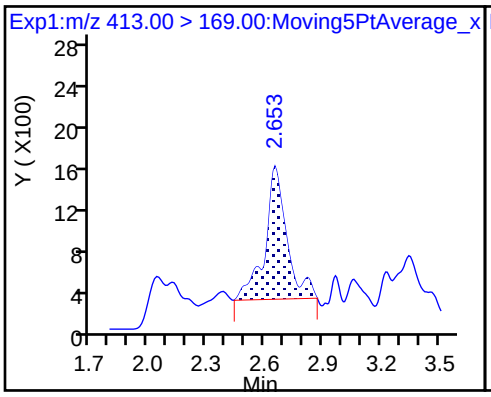
* 62 13C2-PFOA



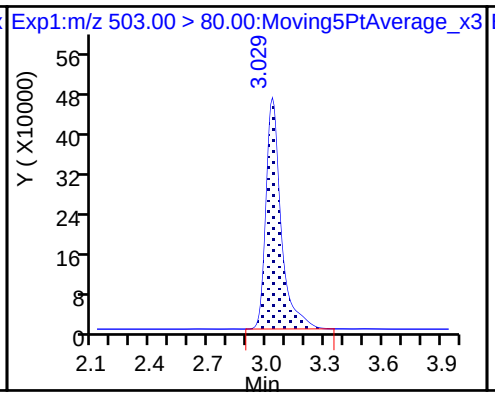
15 Perfluorooctanoic acid



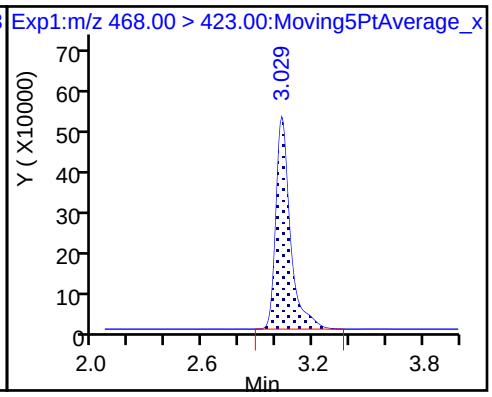
15 Perfluorooctanoic acid



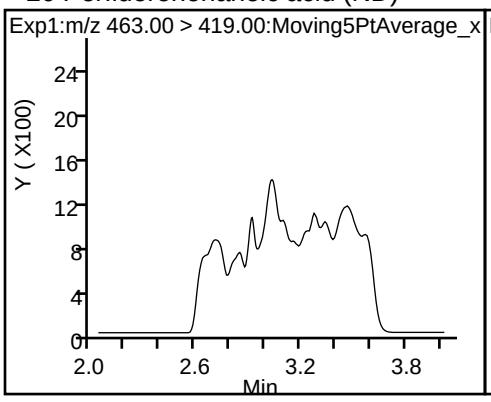
D 18 13C4 PFOS



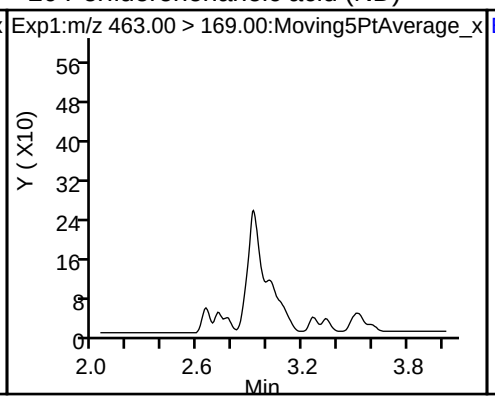
D 19 13C5 PFNA



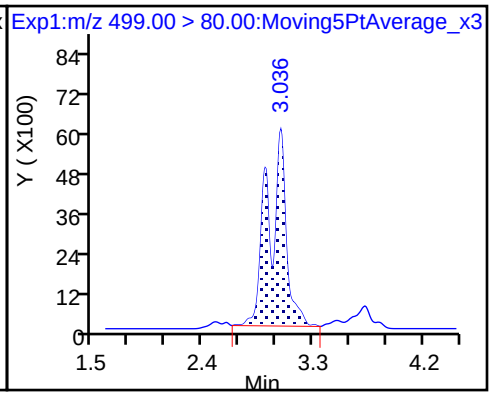
20 Perfluorononanoic acid (ND)



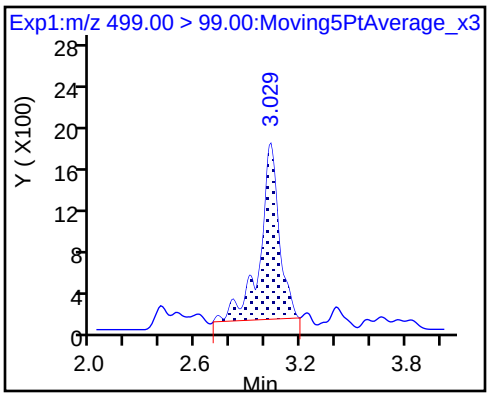
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA03-SB1-02 | Lab Sample ID: 320-36960-8

Matrix: Solid | Lab File ID: 2018.04.07LLA_015.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/06/2018 07:35

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.03(g) | Date Analyzed: 04/07/2018 10:27

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 22.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.26	U	0.39	0.26	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.26	U	0.39	0.26	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.26	U M Q	0.39	0.26	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.52	0.23	0.076
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.26	U	0.39	0.26	0.080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.64	U	1.3	0.64	0.31

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	65		50-150
STL01892	13C4-PFHpA	71		50-150
STL00990	13C4 PFOA	75		50-150
STL00995	13C5 PFNA	78		50-150
STL00994	18O2 PFHxS	65		50-150
STL00991	13C4 PFOS	65		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_015.d
Lims ID: 320-36960-A-8-A
Client ID: BNA03-SB1-02
Sample Type: Client
Inject. Date: 07-Apr-2018 10:27:15 ALS Bottle#: 9 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-8-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:22:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.730	1.730	0.0	1.000	60674	1.52		65.5	380	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.308	-0.002	1.000	3291872	1.79		71.4	92004	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.321	-0.002	1.000	3558266	1.55		65.4	84066	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.306	2.323	-0.017	0.994	20836	0.0124			51.6	
399.00 > 99.00	2.306	2.323	-0.017	0.994	5853		3.56(1.50-4.49)		22.6	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	3411121	1.88		75.3	87435	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.661	-0.001		4835997	2.50			108154	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.023	-0.002	1.000	2490172	1.56		65.2	21068	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.030	-0.009	1.000	2974414	1.94		77.6	110790	

Report Date: 09-Apr-2018 08:26:56 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_015.d

Injection Date: 07-Apr-2018 10:27:15 Instrument ID: A8_N

Lims ID: 320-36960-A-8-A Lab Sample ID: 320-36960-8

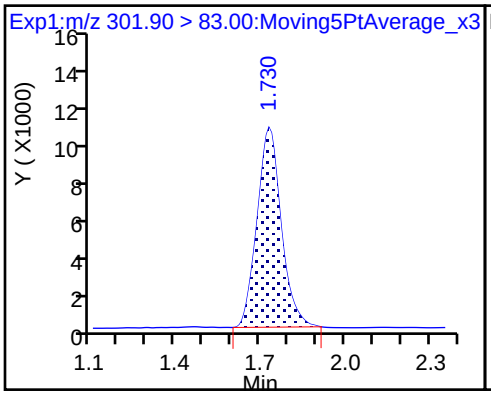
Client ID: BNA03-SB1-02

Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 12

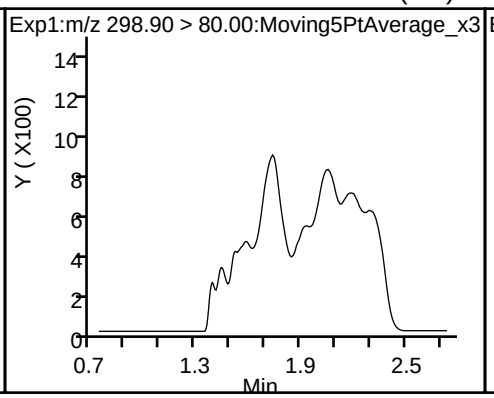
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

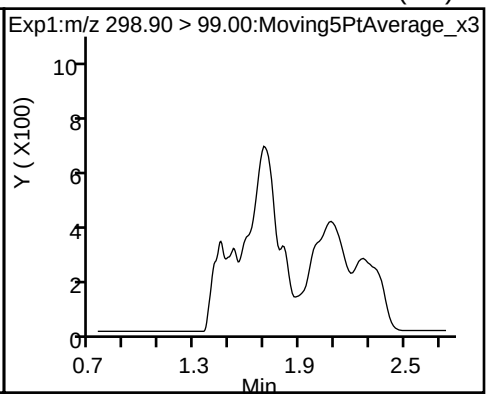
D 47 13C3-PFBS



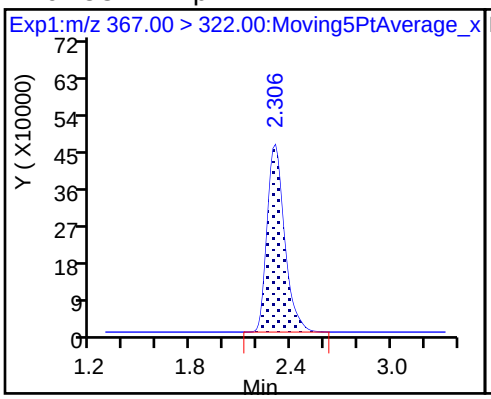
5 Perfluorobutanesulfonic acid (ND)



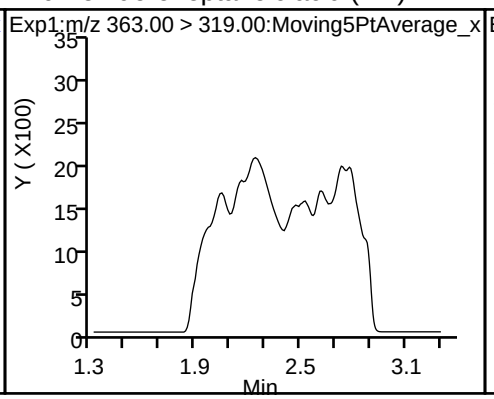
5 Perfluorobutanesulfonic acid (ND)



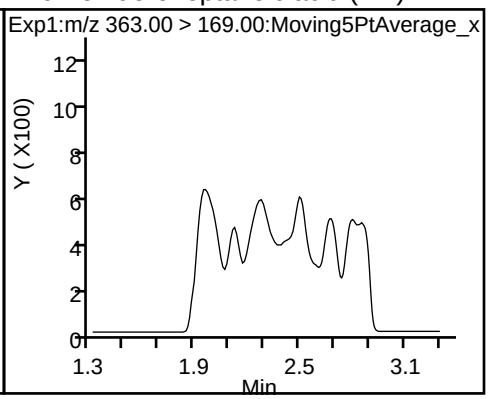
D 9 13C4-PFHpA



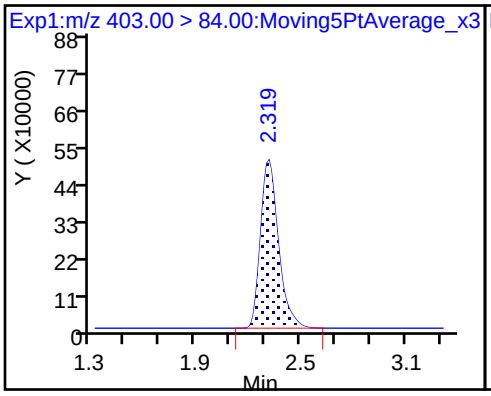
10 Perfluoroheptanoic acid (ND)



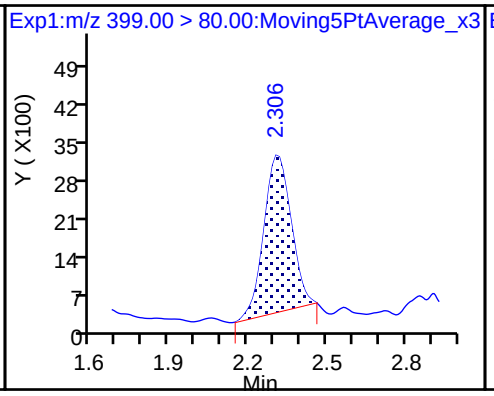
10 Perfluoroheptanoic acid (ND)



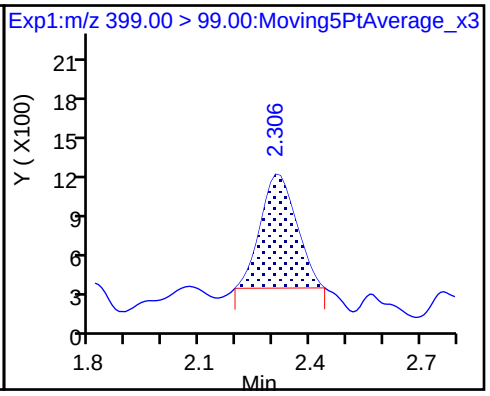
D 11 18O2 PFHxS



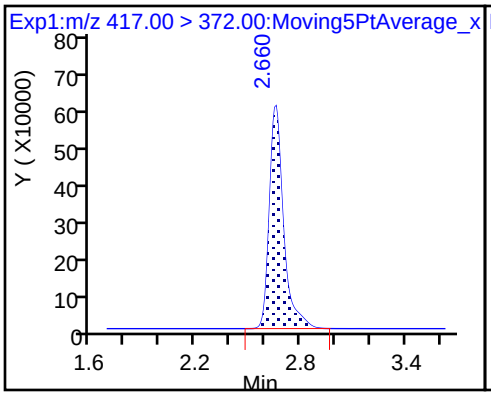
8 Perfluorohexanesulfonic acid



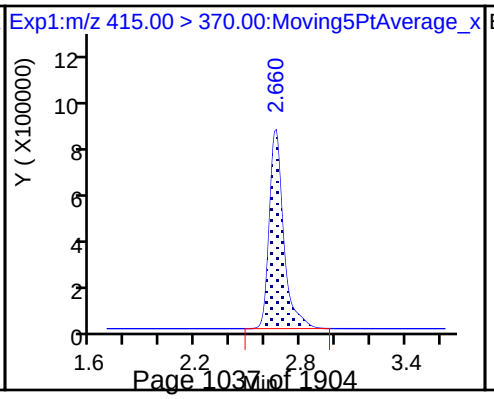
8 Perfluorohexanesulfonic acid



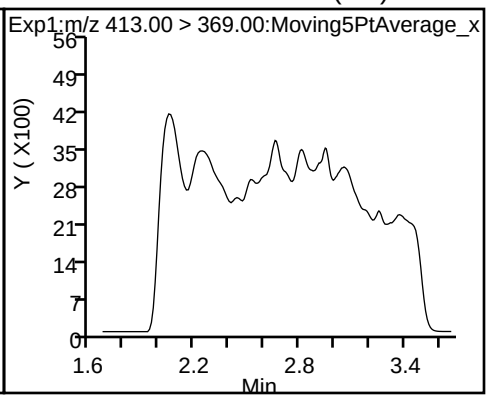
D 14 13C4 PFOA



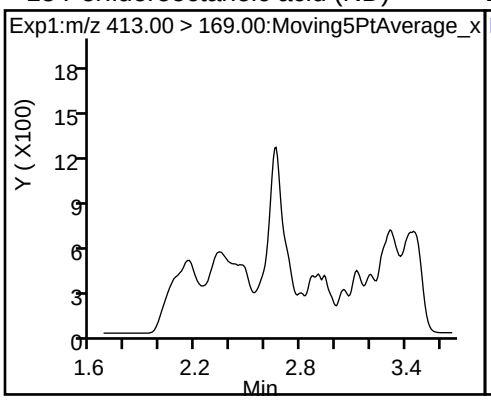
* 62 13C2-PFOA



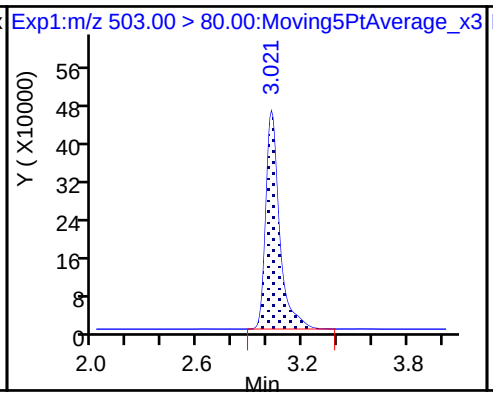
15 Perfluorooctanoic acid (ND)



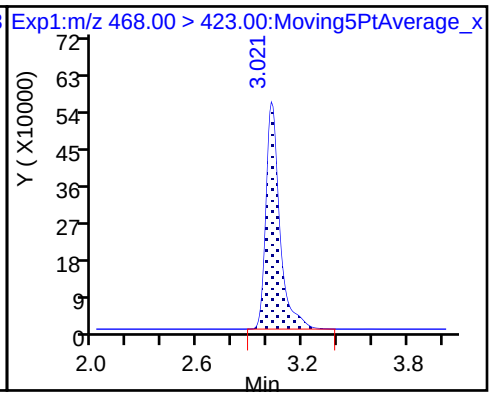
15 Perfluorooctanoic acid (ND)



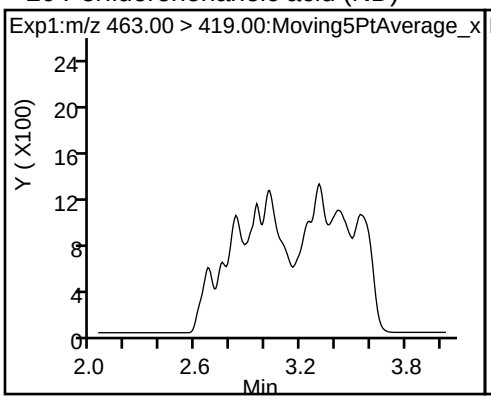
D 18 13C4 PFOS



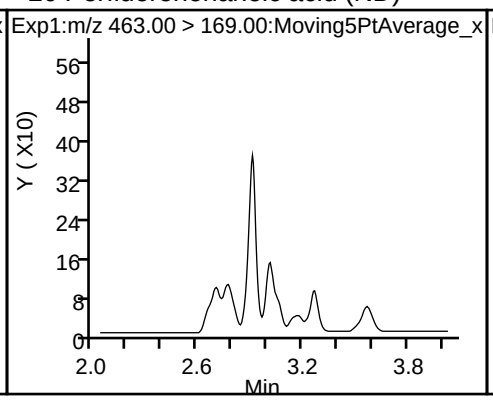
D 19 13C5 PFNA



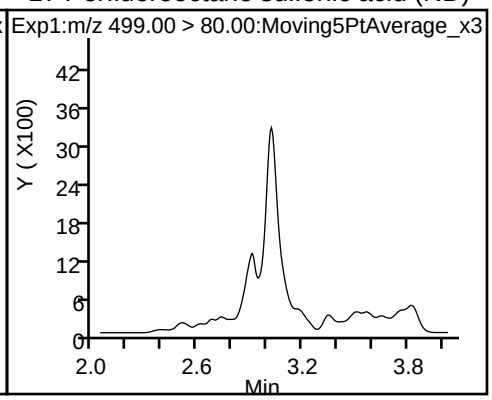
20 Perfluorononanoic acid (ND)



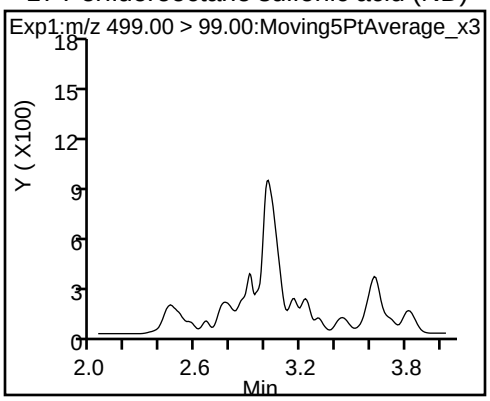
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA03-SB2-01 | Lab Sample ID: 320-36960-9

Matrix: Solid | Lab File ID: 2018.04.07LLA_016.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/06/2018 09:20

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.98(g) | Date Analyzed: 04/07/2018 10:35

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 24.2 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.26	U	0.40	0.26	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.26	U M	0.40	0.26	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.26	U Q	0.40	0.26	0.11
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.24	U	0.53	0.24	0.078
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.10	J M	0.40	0.26	0.082
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.66	U M	1.3	0.66	0.32

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	60		50-150
STL01892	13C4-PFHpA	70		50-150
STL00990	13C4 PFOA	68		50-150
STL00995	13C5 PFNA	73		50-150
STL00994	18O2 PFHxS	63		50-150
STL00991	13C4 PFOS	63		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_016.d
Lims ID: 320-36960-A-9-A
Client ID: BNA03-SB2-01
Sample Type: Client
Inject. Date: 07-Apr-2018 10:35:03 ALS Bottle#: 10 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-9-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:23:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	56878	1.39		59.7	312	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.308	-0.001	1.000	3333908	1.76		70.4	67973	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.321	-0.001	1.000	3514289	1.49		62.9	49875	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.320	2.323	-0.003	1.000	62527	0.0377			168	M
399.00 > 99.00	2.320	2.323	-0.003	1.000	15570		4.02(1.50-4.49)		49.8	
D 14 13C4 PFOA										
417.00 > 372.00	2.661	2.660	0.001	1.000	3177045	1.71		68.2	70027	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.661	0.0		4969857	2.50			89573	
D 18 13C4 PFOS										
503.00 > 80.00	3.030	3.023	0.007	1.000	2453424	1.49		62.5	22987	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.030	0.0	1.000	2893507	1.84		73.4	108027	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 09-Apr-2018 08:26:57 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_016.d

Injection Date: 07-Apr-2018 10:35:03 Instrument ID: A8_N

Lims ID: 320-36960-A-9-A Lab Sample ID: 320-36960-9

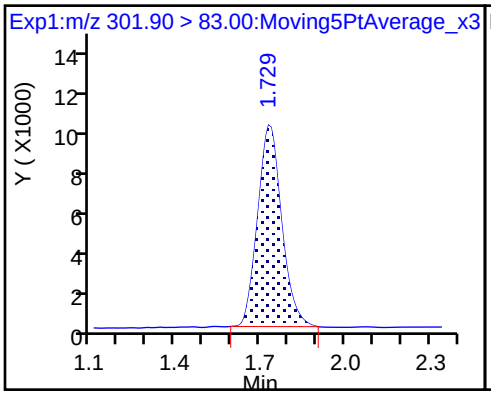
Client ID: BNA03-SB2-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 13

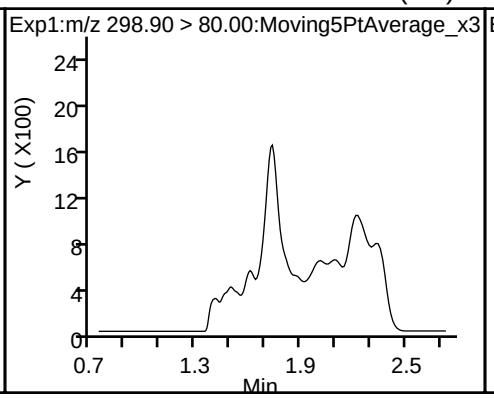
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

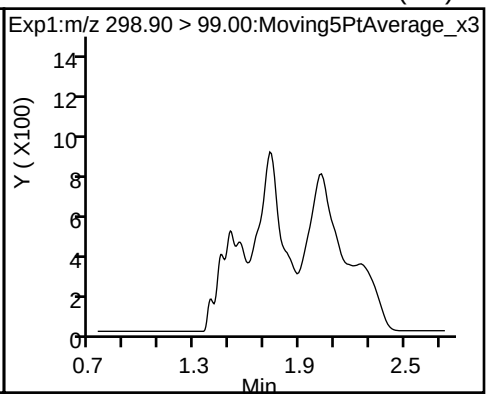
D 47 13C3-PFBS



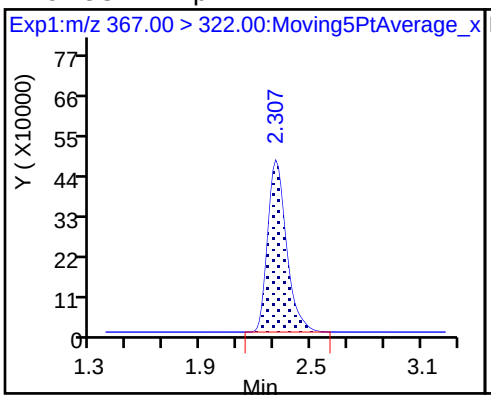
5 Perfluorobutanesulfonic acid (ND)



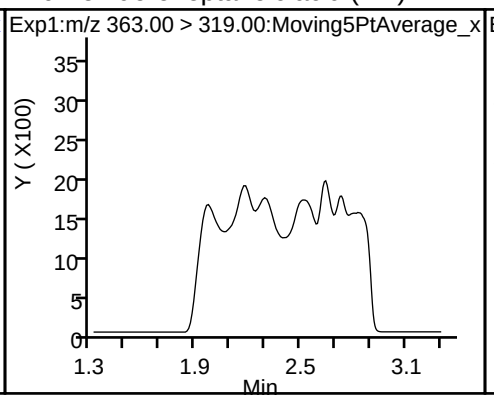
5 Perfluorobutanesulfonic acid (ND)



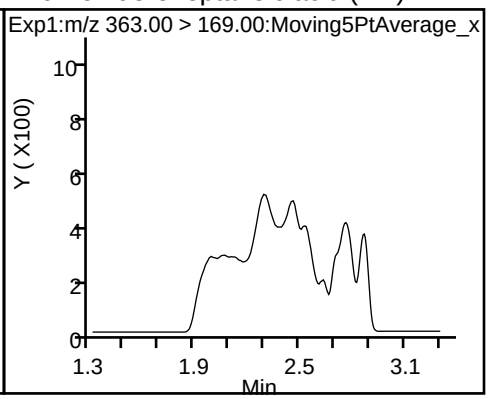
D 9 13C4-PFHpA



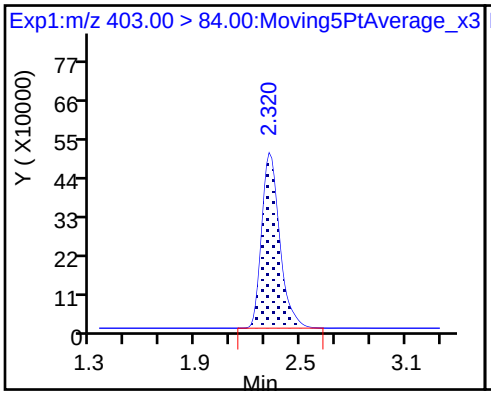
10 Perfluoroheptanoic acid (ND)



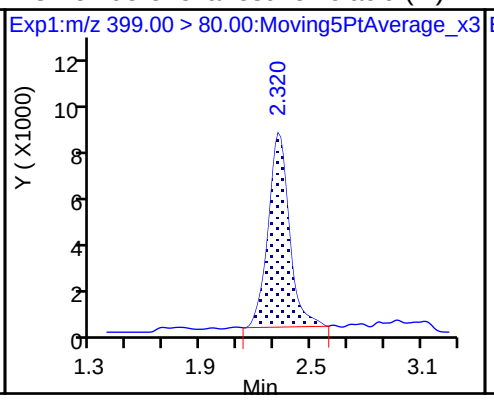
10 Perfluoroheptanoic acid (ND)



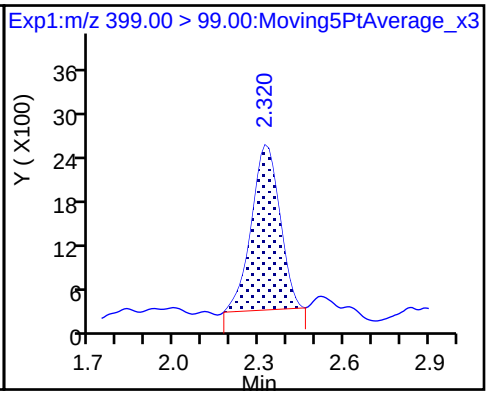
D 11 18O2 PFHxS



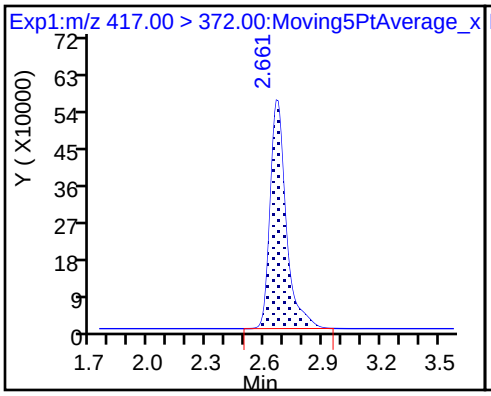
8 Perfluorohexanesulfonic acid (M)



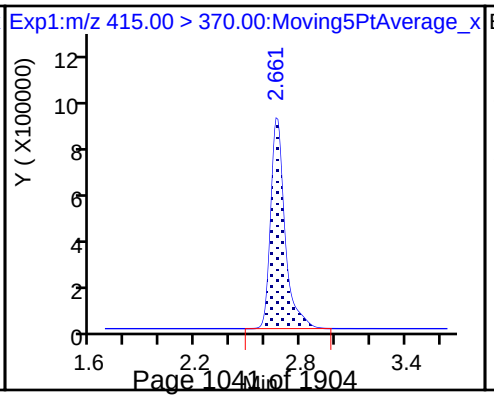
8 Perfluorohexanesulfonic acid



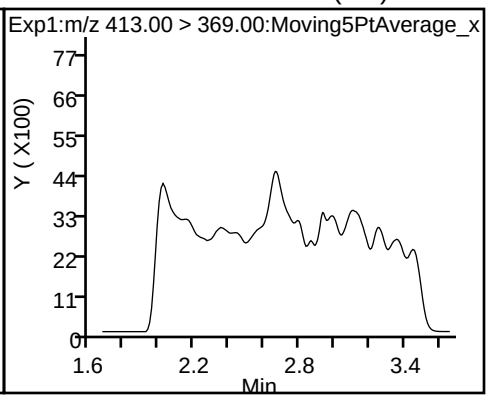
D 14 13C4 PFOA



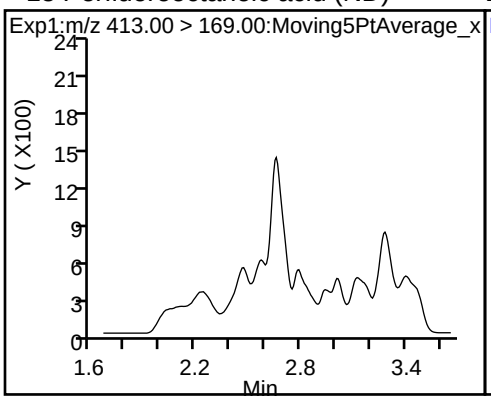
* 62 13C2-PFOA



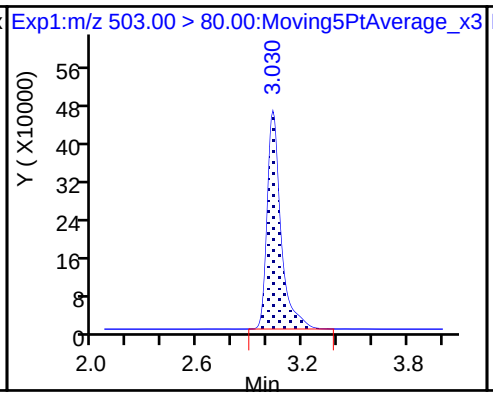
15 Perfluorooctanoic acid (ND)



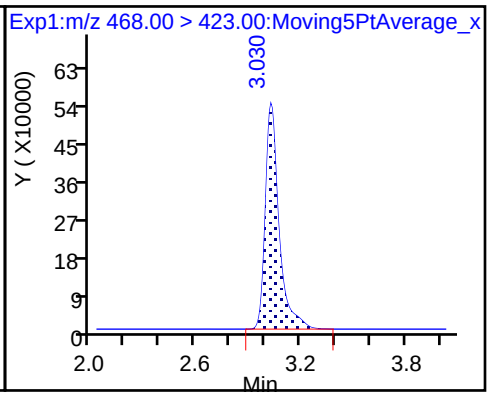
15 Perfluorooctanoic acid (ND)



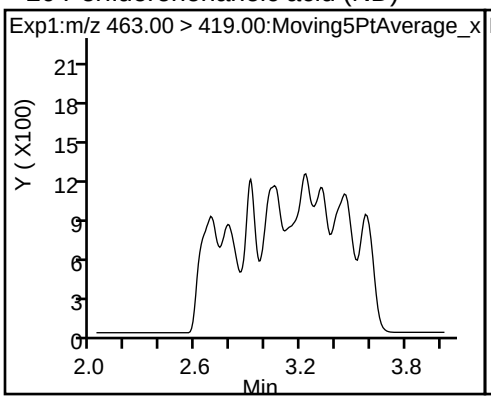
D 18 13C4 PFOS



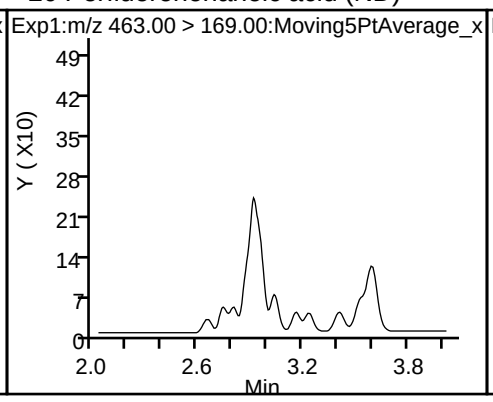
D 19 13C5 PFNA



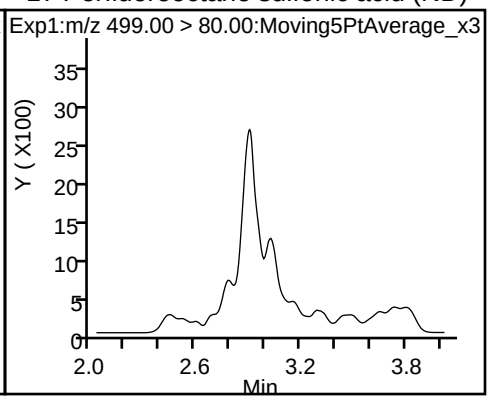
20 Perfluorononanoic acid (ND)



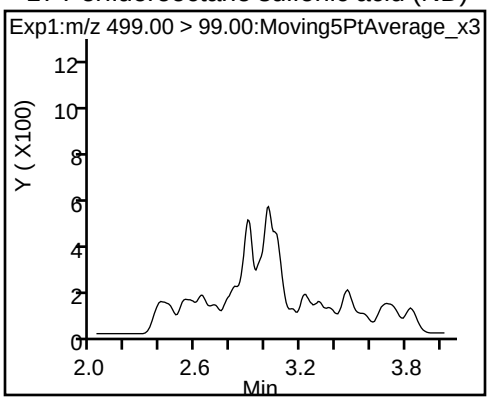
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

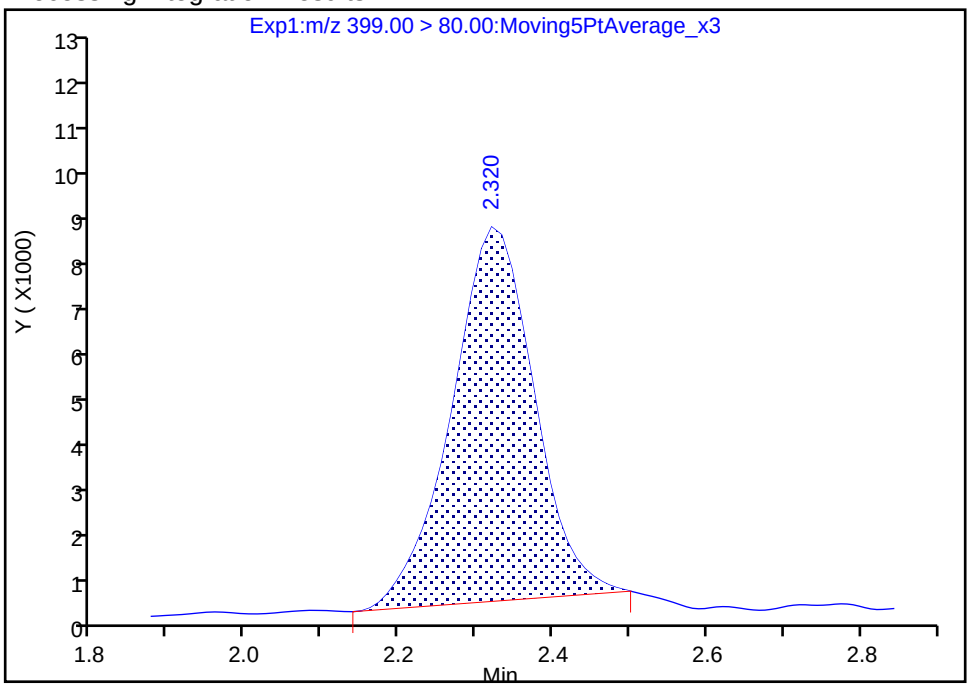
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_016.d				
Injection Date:	07-Apr-2018 10:35:03	Instrument ID:	A8_N		
Lims ID:	320-36960-A-9-A	Lab Sample ID:	320-36960-9		
Client ID:	BNA03-SB2-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

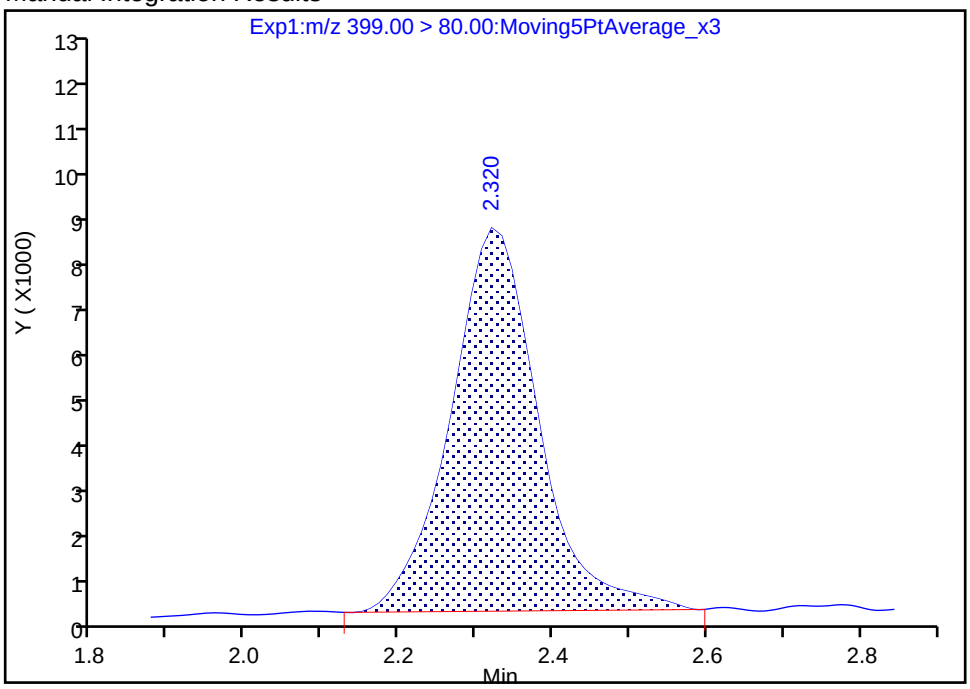
Processing Integration Results

RT: 2.32
Area: 57586
Amount: 0.034696
Amount Units: ng/ml



Manual Integration Results

RT: 2.32
Area: 62527
Amount: 0.037673
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:22:58

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA03-SB2-01D | Lab Sample ID: 320-36960-10

Matrix: Solid | Lab File ID: 2018.04.07LLA_018.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/06/2018 09:20

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.97(g) | Date Analyzed: 04/07/2018 10:50

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 25.4 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.27	U	0.40	0.27	0.11
335-67-1	Perfluorooctanoic acid (PFOA)	0.27	U M	0.40	0.27	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.27	U M Q	0.40	0.27	0.11
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.24	U	0.54	0.24	0.080
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.095	J	0.40	0.27	0.084
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.67	U M	1.3	0.67	0.32

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	64		50-150
STL01892	13C4-PFHpA	71		50-150
STL00990	13C4 PFOA	70		50-150
STL00995	13C5 PFNA	73		50-150
STL00994	18O2 PFHxS	65		50-150
STL00991	13C4 PFOS	66		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_018.d
Lims ID: 320-36960-A-10-A
Client ID: BNA03-SB2-01D
Sample Type: Client
Inject. Date: 07-Apr-2018 10:50:40 ALS Bottle#: 11 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-10-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:58 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:23:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	58692	1.48		63.6	447	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.308	-0.001	1.000	3248280	1.77		70.8	92373	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.321	-0.001	1.000	3516935	1.54		65.0	99217	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.323	-0.003	1.000	58725	0.0354			160	
399.00 > 99.00	2.333	2.323	0.010	1.006	19009		3.09(1.50-4.49)		63.8	
D 14 13C4 PFOA										
417.00 > 372.00	2.668	2.660	0.008	1.000	3173222	1.76		70.3	93926	
* 62 13C2-PFOA										
415.00 > 370.00	2.668	2.661	0.007		4815643	2.50			144500	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.023	0.006	1.000	2498222	1.57		65.7	20300	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.030	-0.001	1.000	2768971	1.81		72.5	83837	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.913	3.032	-0.119	0.962	46718	0.0391			127	
499.00 > 99.00	3.022	3.032	-0.010	0.998	5355		8.72(2.31-6.93)		53.6	M

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 09-Apr-2018 08:27:01 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_018.d

Injection Date: 07-Apr-2018 10:50:40 Instrument ID: A8_N

Lims ID: 320-36960-A-10-A Lab Sample ID: 320-36960-10

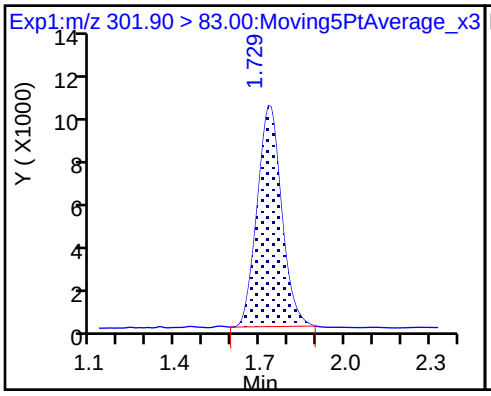
Client ID: BNA03-SB2-01D

Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 15

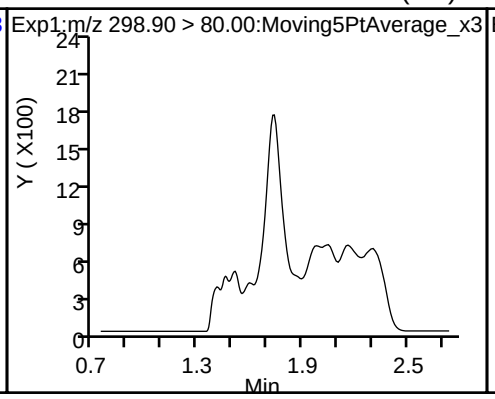
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

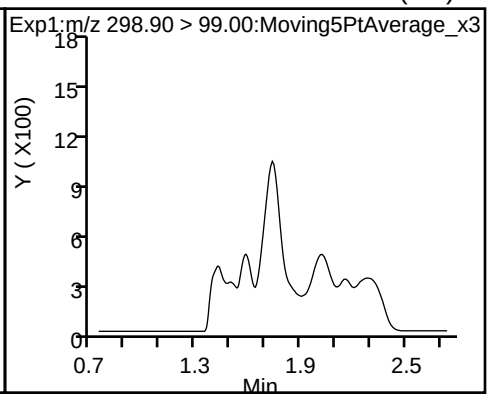
D 47 13C3-PFBS



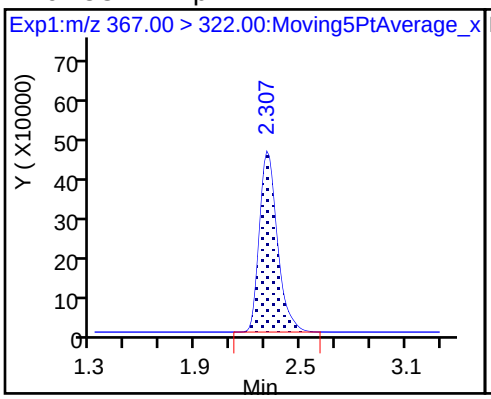
5 Perfluorobutanesulfonic acid (ND)



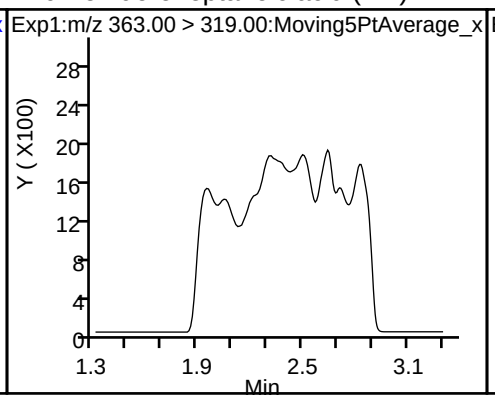
5 Perfluorobutanesulfonic acid (ND)



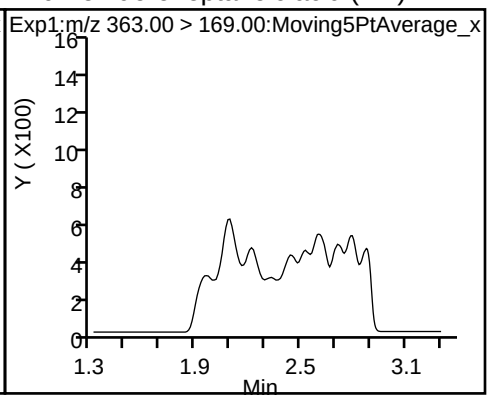
D 9 13C4-PFHpA



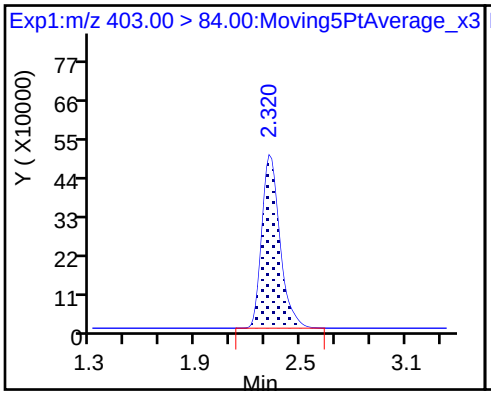
10 Perfluoroheptanoic acid (ND)



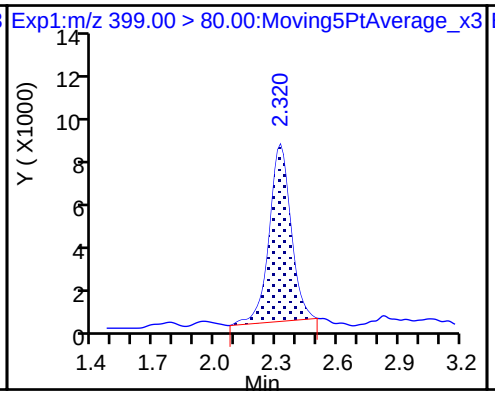
10 Perfluoroheptanoic acid (ND)



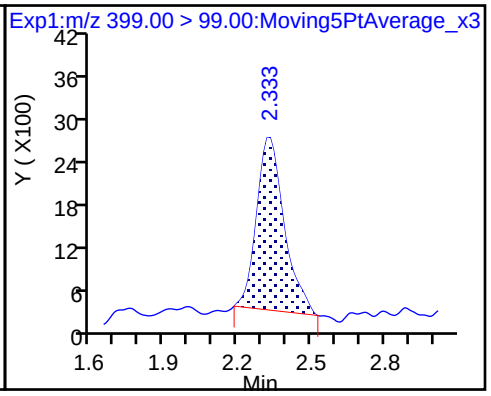
D 11 18O2 PFHxS



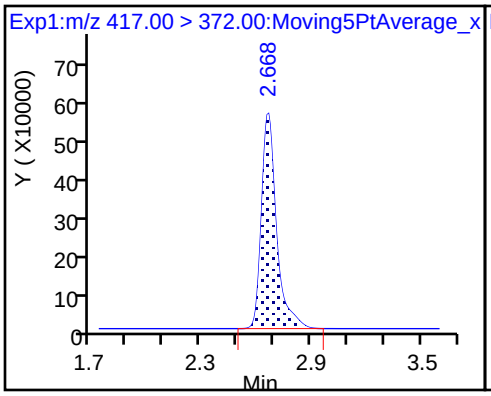
8 Perfluorohexanesulfonic acid



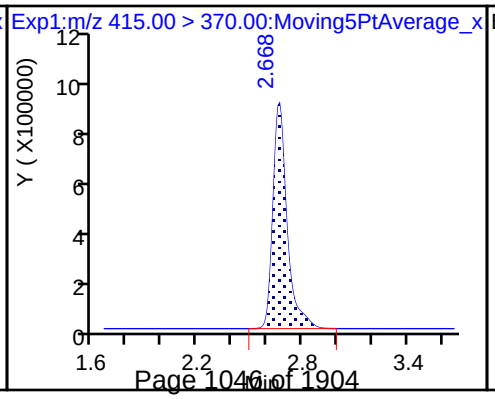
8 Perfluorohexanesulfonic acid



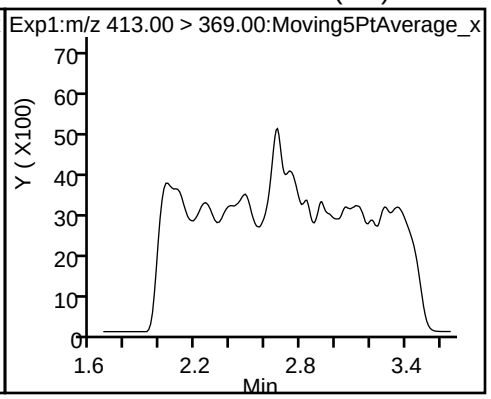
D 14 13C4 PFOA



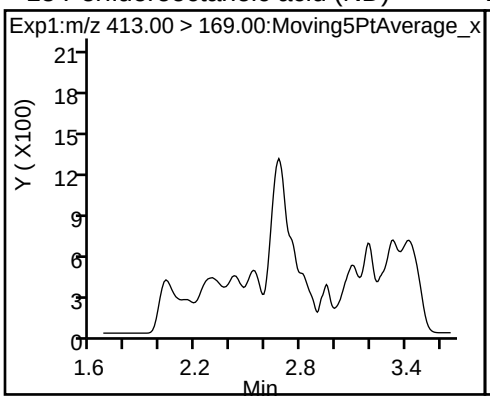
* 62 13C2-PFOA



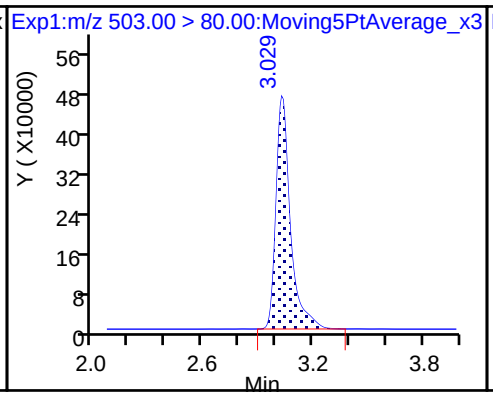
15 Perfluorooctanoic acid (ND)



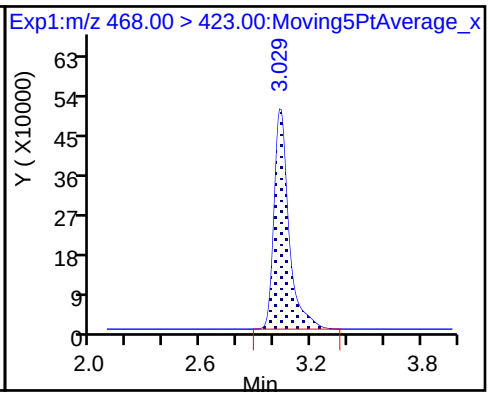
15 Perfluorooctanoic acid (ND)



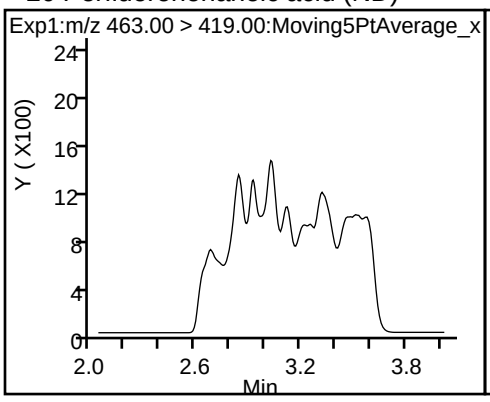
D 18 13C4 PFOS



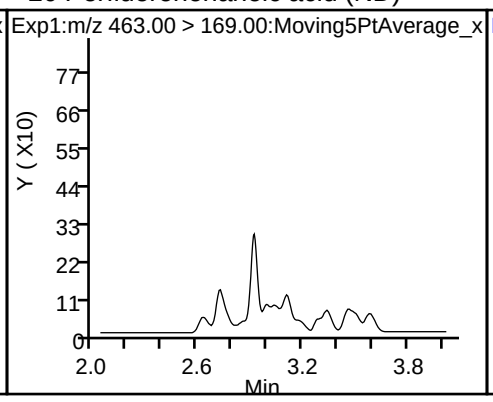
D 19 13C5 PFNA



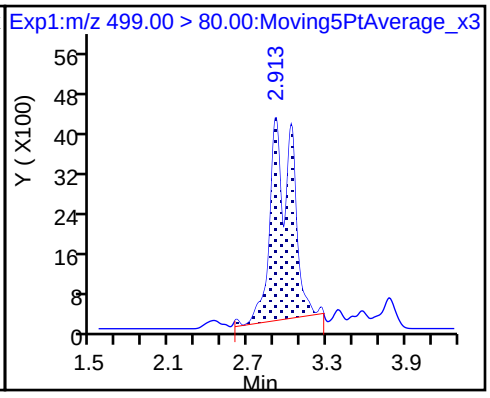
20 Perfluorononanoic acid (ND)



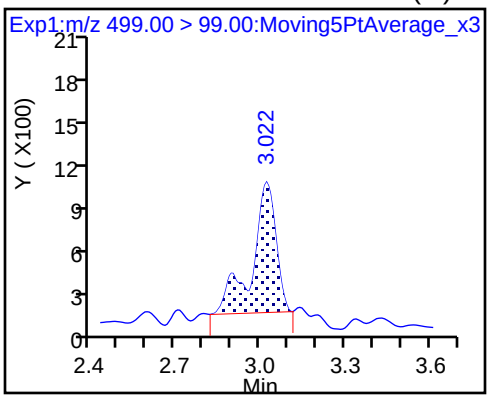
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

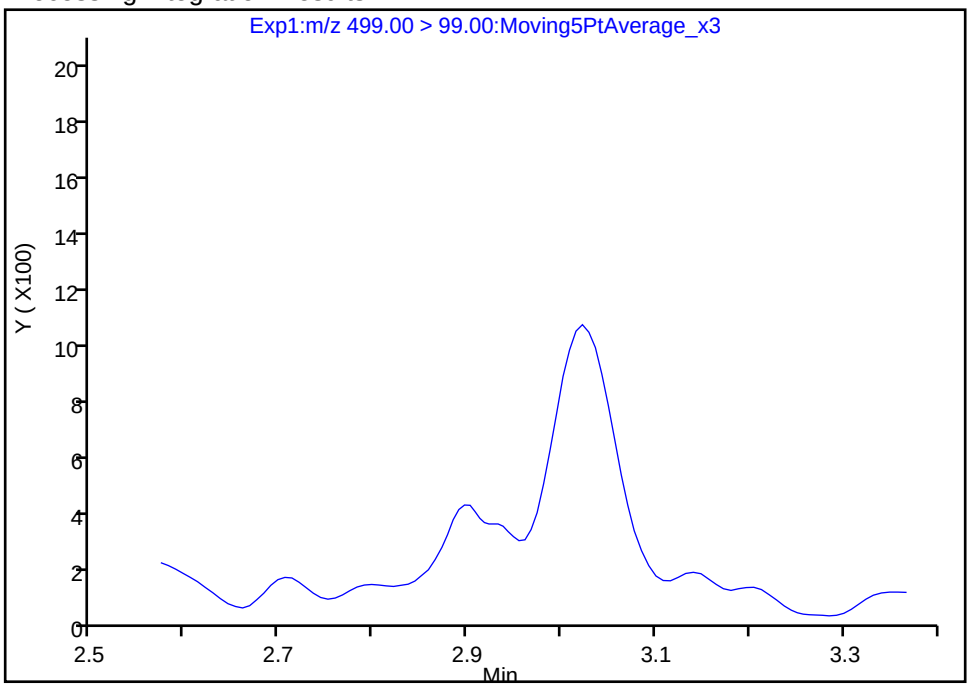
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_018.d				
Injection Date:	07-Apr-2018 10:50:40	Instrument ID:	A8_N		
Lims ID:	320-36960-A-10-A	Lab Sample ID:	320-36960-10		
Client ID:	BNA03-SB2-01D				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

Processing Integration Results

RT: 3.03
Area: 0
Amount: 0.039115
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
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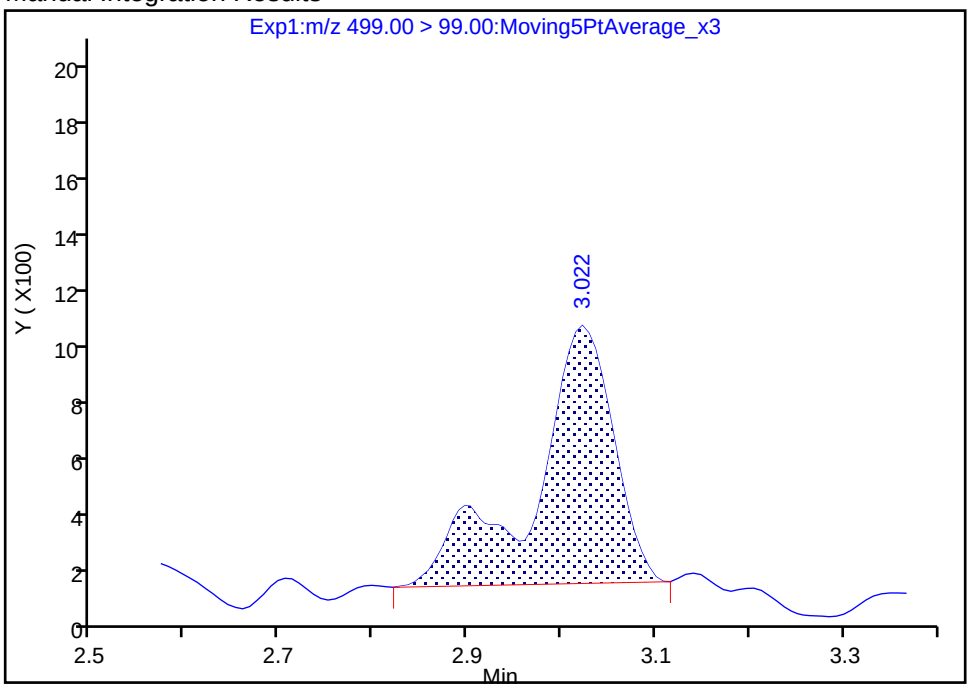
Amount: 0.039115
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:23:44

Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA03-SB2-02 | Lab Sample ID: 320-36960-11

Matrix: Solid | Lab File ID: 2018.04.07LLA_019.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/06/2018 09:40

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.00(g) | Date Analyzed: 04/07/2018 10:58

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 20.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.25	0.098
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U	0.38	0.25	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U Q	0.38	0.25	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.50	0.23	0.074
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.25	U	0.38	0.25	0.078
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.63	U M	1.3	0.63	0.30

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	66		50-150
STL01892	13C4-PFHpA	77		50-150
STL00990	13C4 PFOA	75		50-150
STL00995	13C5 PFNA	77		50-150
STL00994	18O2 PFHxS	74		50-150
STL00991	13C4 PFOS	68		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_019.d
Lims ID: 320-36960-A-11-A
Client ID: BNA03-SB2-02
Sample Type: Client
Inject. Date: 07-Apr-2018 10:58:29 ALS Bottle#: 12 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-11-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:58 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:24:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.730	1.730	0.0	1.000	59909	1.53		65.9	382	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.308	0.0	1.000	3493714	1.93		77.3	82995	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.321	0.0	1.000	3939822	1.75		73.9	95066	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.323	-0.002	1.000	35344	0.0190			96.6	
399.00 > 99.00	2.321	2.323	-0.002	1.000	8798		4.02(1.50-4.49)		34.1	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	3329568	1.87		74.9	73744	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.661	-0.001		4742800	2.50			104413	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.669	-0.009	1.000	15276	0.009673			5.0	
413.00 > 169.00	2.660	2.669	-0.009	1.000	11944		1.28(0.84-2.52)		24.1	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.023	0.006	1.000	2545398	1.62		68.0	25286	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.030	-0.001	1.000	2905092	1.93		77.2	89674	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.029	3.032	-0.003	1.000	61975	0.0509			298	
499.00 > 99.00	3.036	3.032	0.004	1.002	10457		5.93(2.31-6.93)		94.4	M

QC Flag Legend

Review Flags

M - Manually Integrated

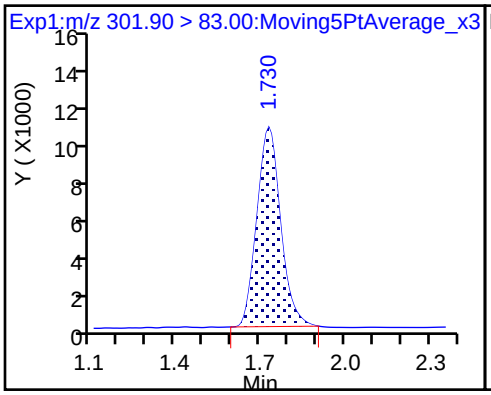
Report Date: 09-Apr-2018 08:27:02 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

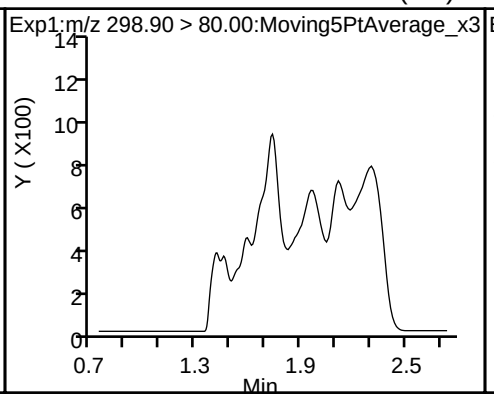
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_019.d

Injection Date:	07-Apr-2018 10:58:29	Instrument ID:	A8_N		
Lims ID:	320-36960-A-11-A	Lab Sample ID:	320-36960-11		
Client ID:	BNA03-SB2-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

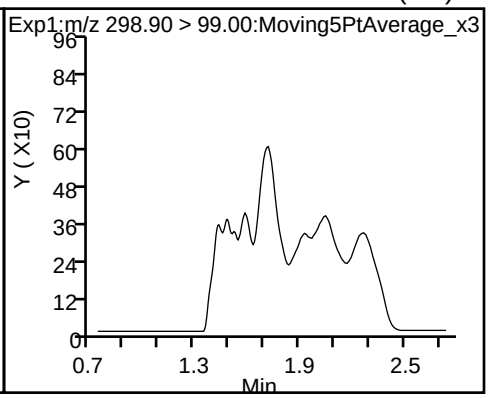
D 47 13C3-PFBS



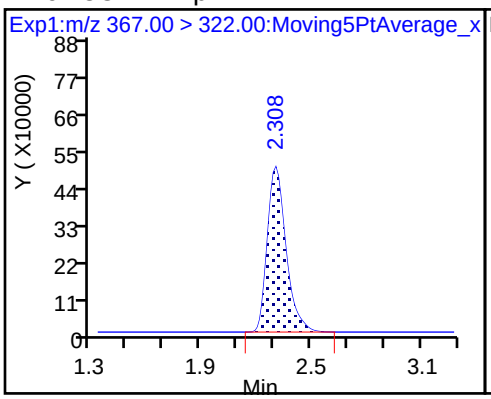
5 Perfluorobutanesulfonic acid (ND)



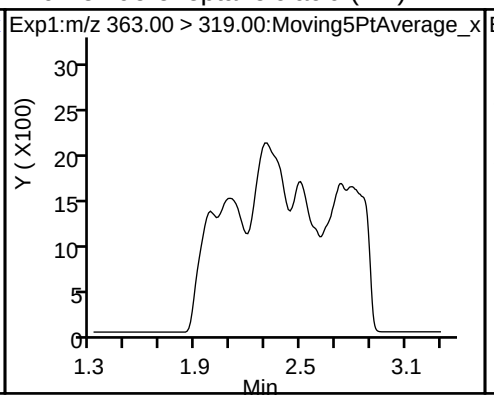
5 Perfluorobutanesulfonic acid (ND)



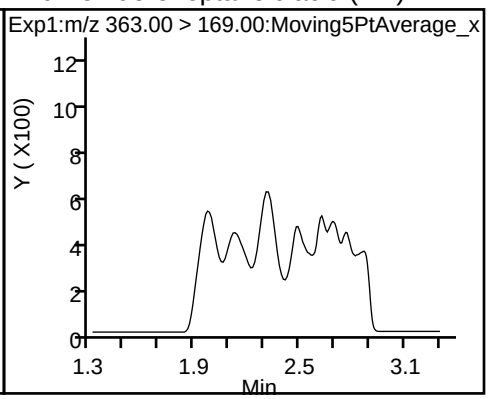
D 9 13C4-PFHpA



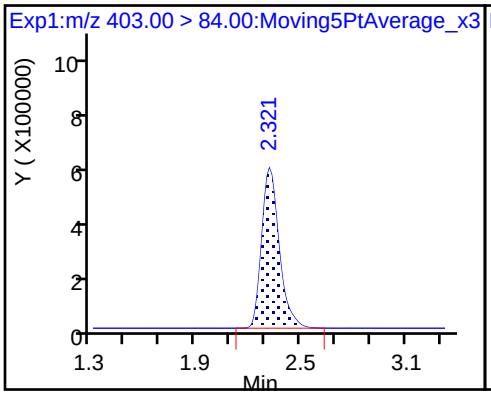
10 Perfluoroheptanoic acid (ND)



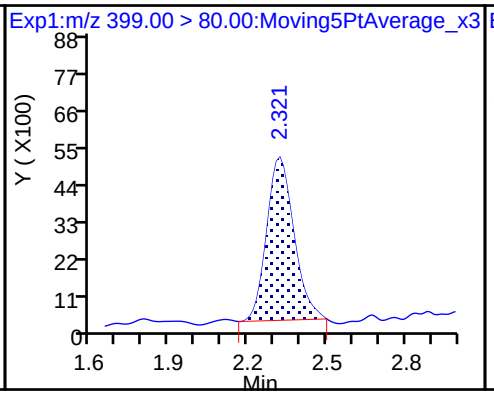
10 Perfluoroheptanoic acid (ND)



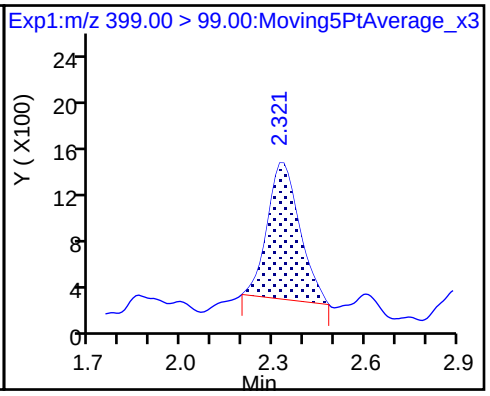
D 11 18O2 PFHxS



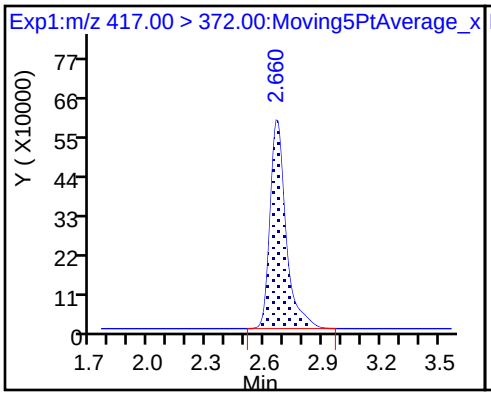
8 Perfluorohexanesulfonic acid



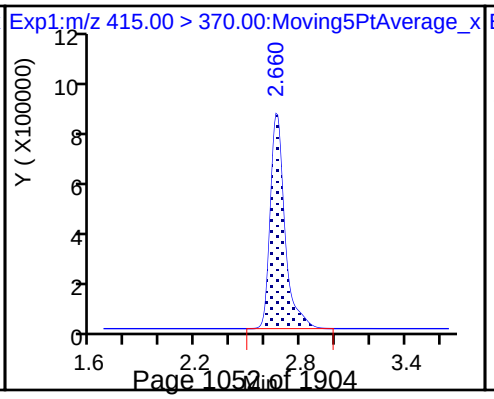
8 Perfluorohexanesulfonic acid



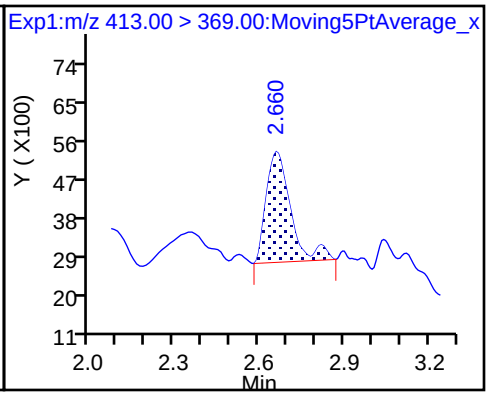
D 14 13C4 PFOA



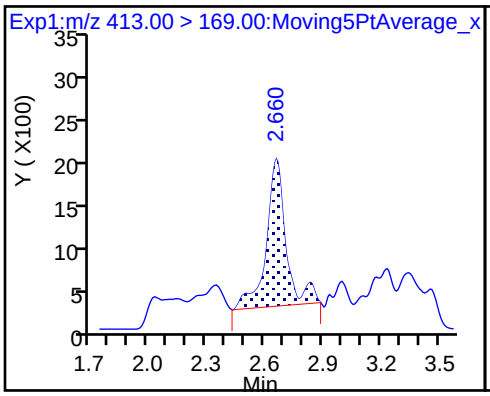
* 62 13C2-PFOA



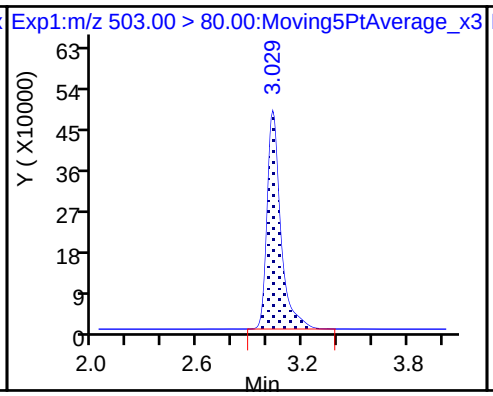
15 Perfluorooctanoic acid



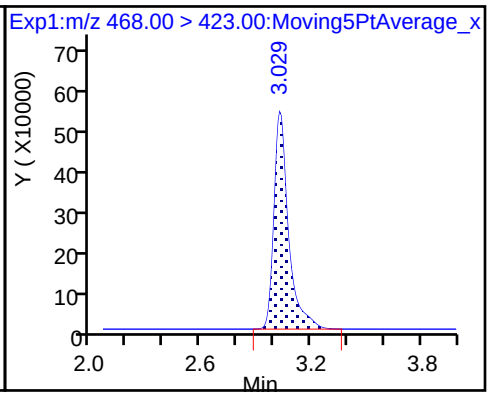
15 Perfluorooctanoic acid



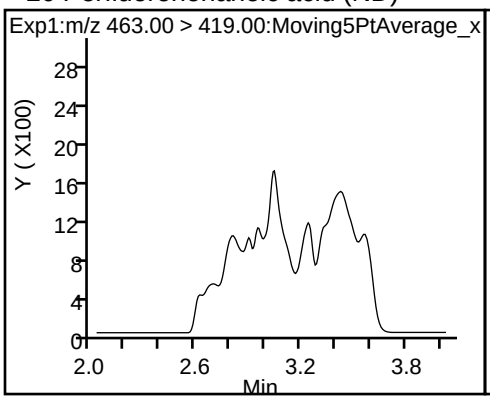
D 18 13C4 PFOS



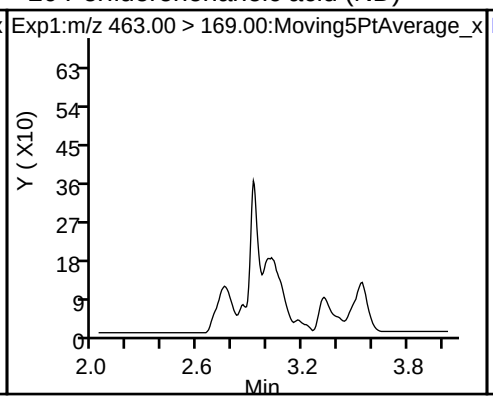
D 19 13C5 PFNA



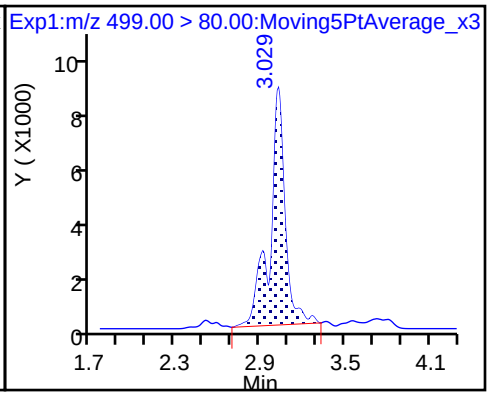
20 Perfluorononanoic acid (ND)



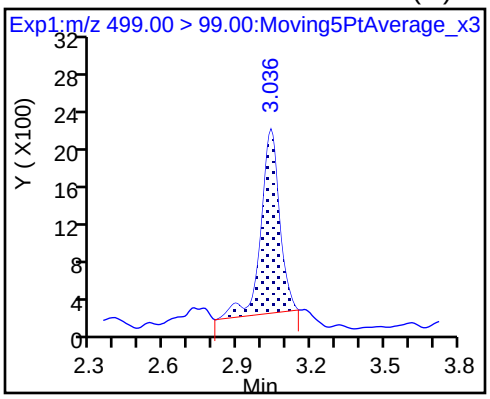
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

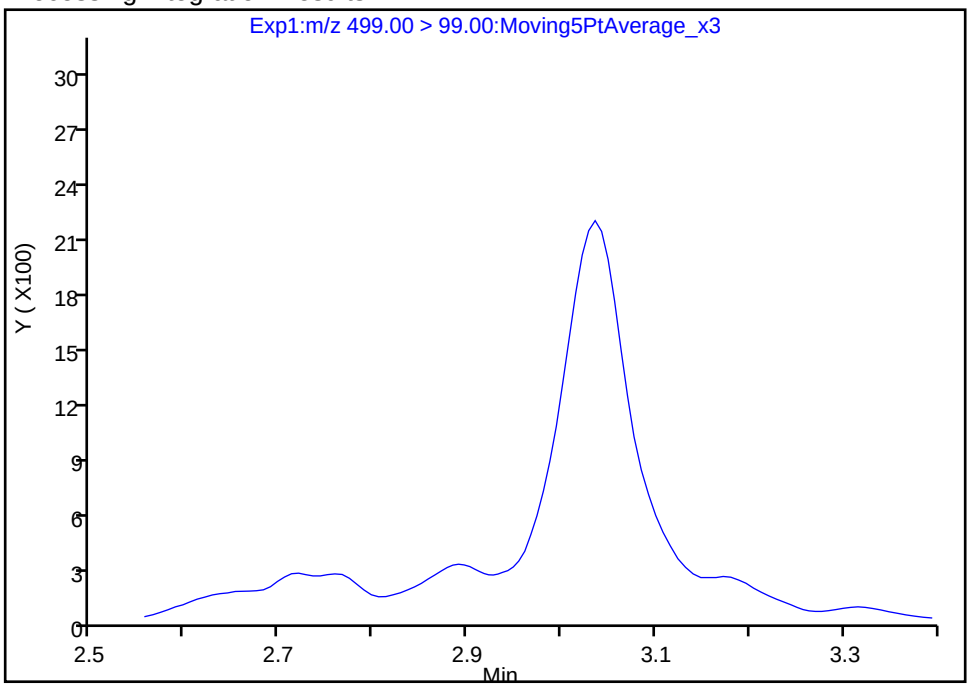
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_019.d				
Injection Date:	07-Apr-2018 10:58:29	Instrument ID:	A8_N		
Lims ID:	320-36960-A-11-A	Lab Sample ID:	320-36960-11		
Client ID:	BNA03-SB2-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

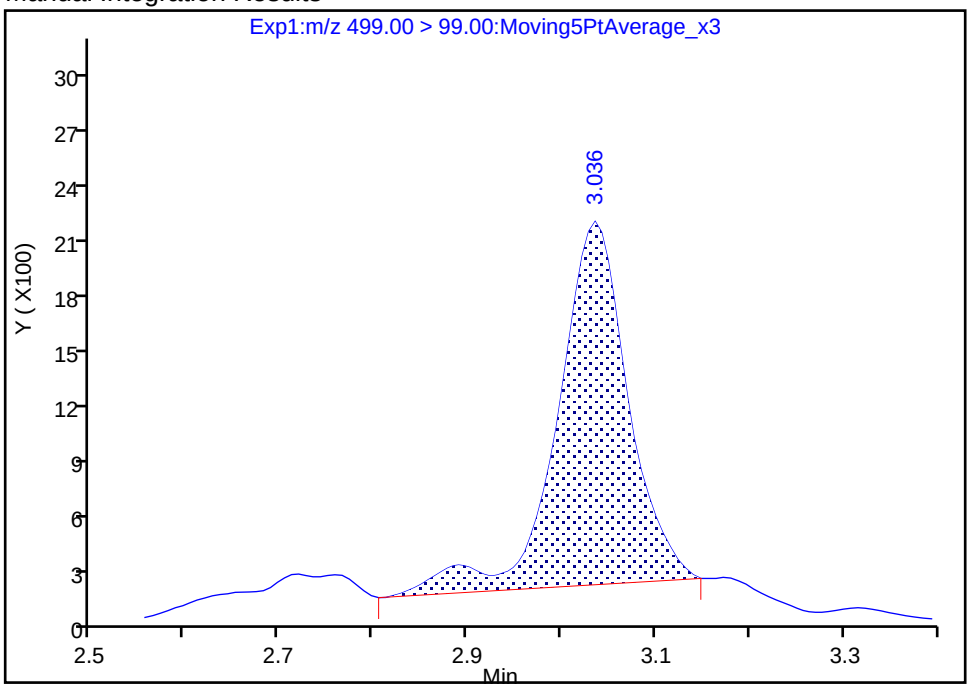
Processing Integration Results

RT: 3.03
Area: 0
Amount: 0.050927
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 10457
Amount: 0.050927
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:24:00

Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA04-SB1-01 | Lab Sample ID: 320-36960-12

Matrix: Solid | Lab File ID: 2018.04.07LLA_020.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/06/2018 13:30

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.93(g) | Date Analyzed: 04/07/2018 11:06

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 21.2 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.26	U	0.39	0.26	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.26	U M	0.39	0.26	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.26	U M Q	0.39	0.26	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.51	0.23	0.076
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.26	U M	0.39	0.26	0.080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.64	U	1.3	0.64	0.31

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	60		50-150
STL01892	13C4-PFHpA	71		50-150
STL00990	13C4 PFOA	69		50-150
STL00995	13C5 PFNA	71		50-150
STL00994	18O2 PFHxS	65		50-150
STL00991	13C4 PFOS	65		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_020.d
Lims ID: 320-36960-A-12-A
Client ID: BNA04-SB1-01
Sample Type: Client
Inject. Date: 07-Apr-2018 11:06:21 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-12-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:58 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:24:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.730	1.730	0.0	1.000	54893	1.39		59.9	373	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.308	-0.001	1.000	3223544	1.77		70.7	64882	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.321	-0.001	1.000	3519331	1.55		65.4	83785	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.320	2.323	-0.003	1.000	20783	0.0125			54.8	M
399.00 > 99.00	2.320	2.323	-0.003	1.000	7029		2.96(1.50-4.49)		24.6	M
D 14 13C4 PFOA										
417.00 > 372.00	2.661	2.660	0.001	1.000	3099069	1.73		69.1	79942	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.661	0.0		4785311	2.50			142922	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.023	0.0	1.000	2452001	1.55		64.9	20967	
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.030	-0.007	1.000	2709738	1.79		71.4	70583	

QC Flag Legend

Review Flags
M - Manually Integrated

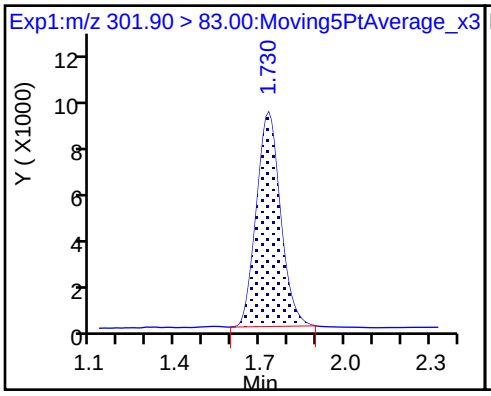
Report Date: 09-Apr-2018 08:27:03 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

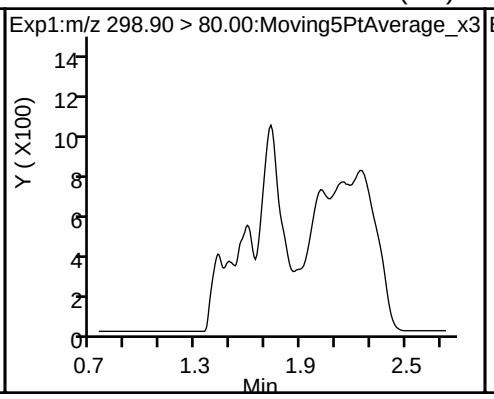
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_020.d

Injection Date:	07-Apr-2018 11:06:21	Instrument ID:	A8_N		
Lims ID:	320-36960-A-12-A	Lab Sample ID:	320-36960-12		
Client ID:	BNA04-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

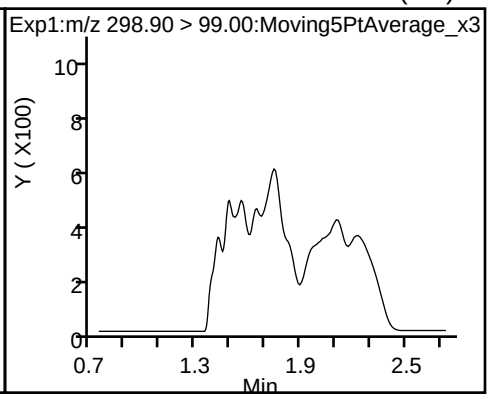
D 47 13C3-PFBS



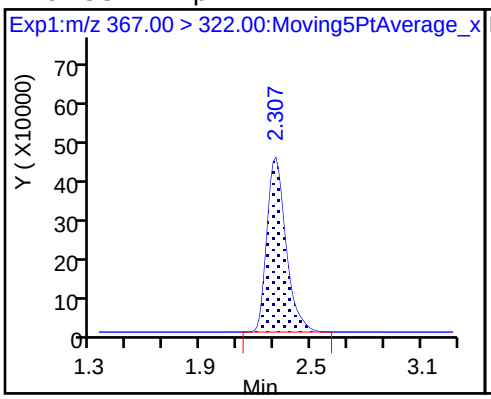
5 Perfluorobutanesulfonic acid (ND)



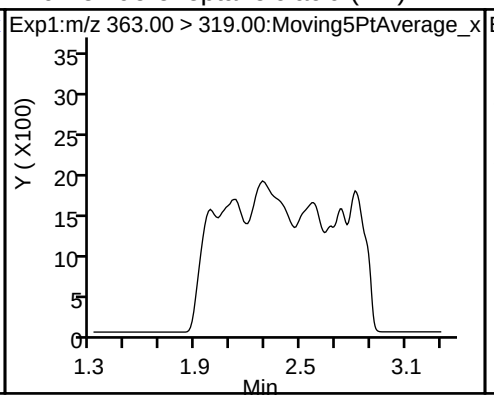
5 Perfluorobutanesulfonic acid (ND)



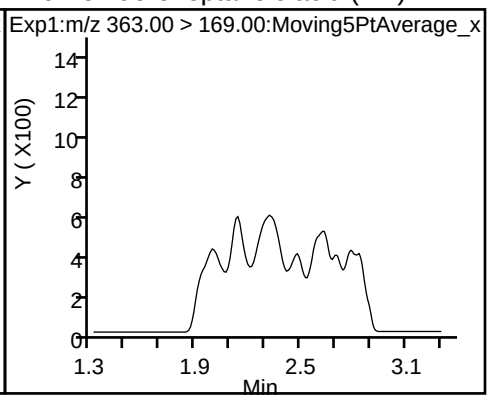
D 9 13C4-PFHpA



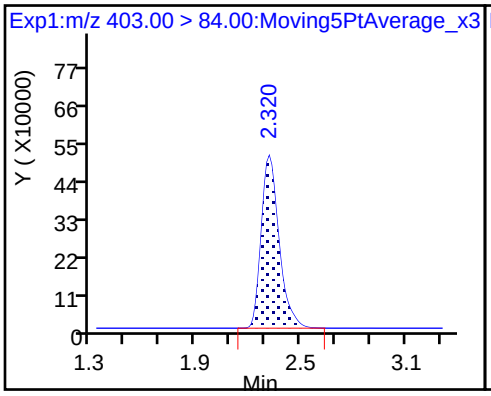
10 Perfluoroheptanoic acid (ND)



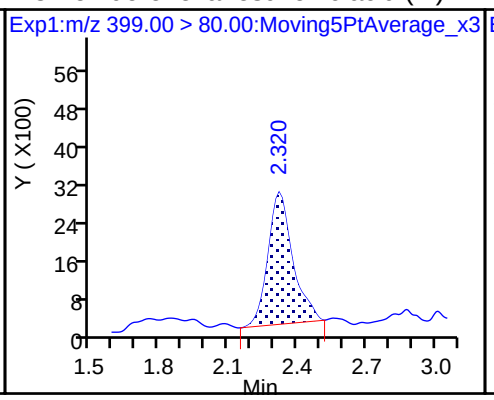
10 Perfluoroheptanoic acid (ND)



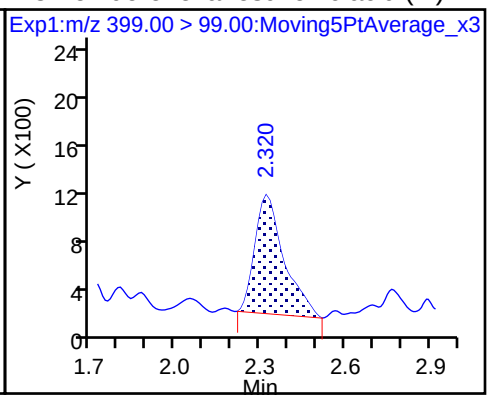
D 11 18O2 PFHxS



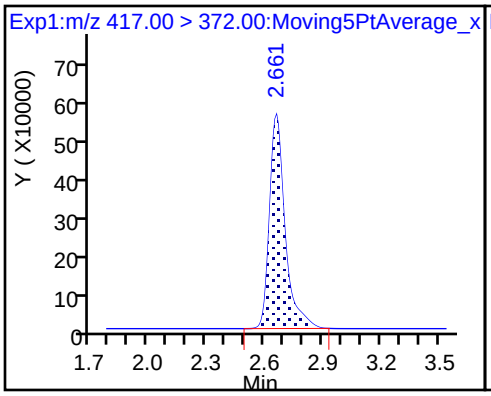
8 Perfluorohexanesulfonic acid (M)



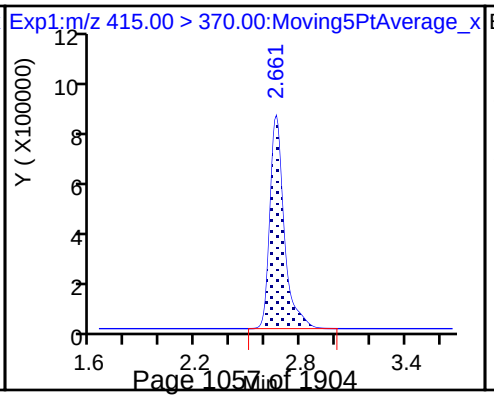
8 Perfluorohexanesulfonic acid (M)



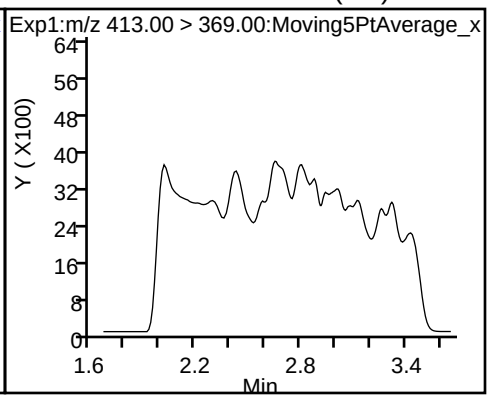
D 14 13C4 PFOA



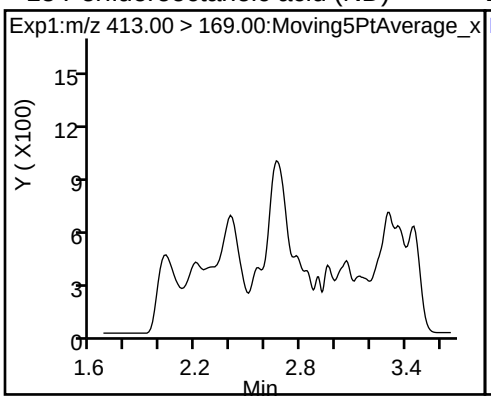
* 62 13C2-PFOA



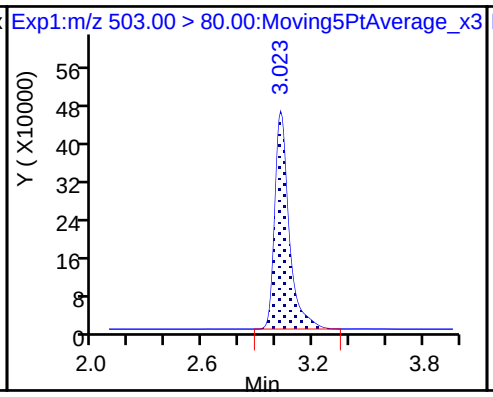
15 Perfluorooctanoic acid (ND)



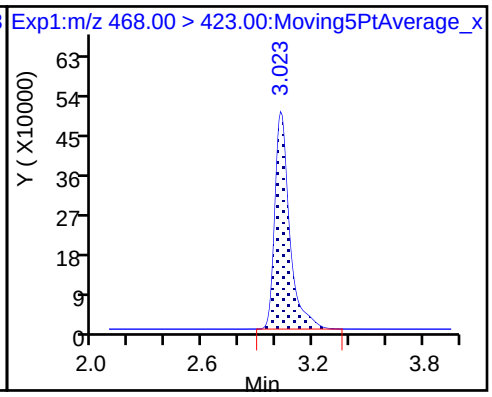
15 Perfluorooctanoic acid (ND)



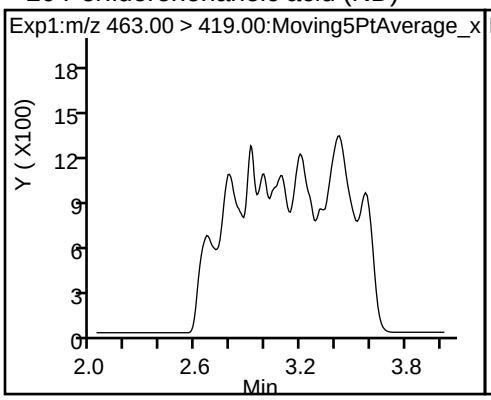
D 18 13C4 PFOS



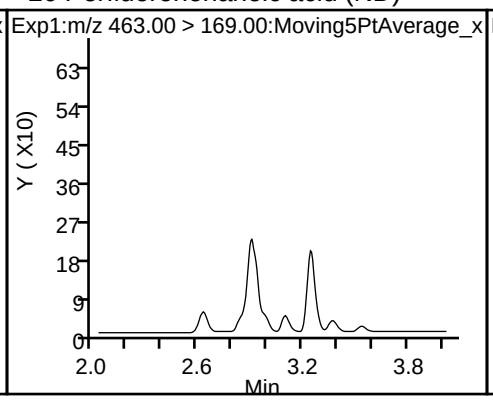
D 19 13C5 PFNA



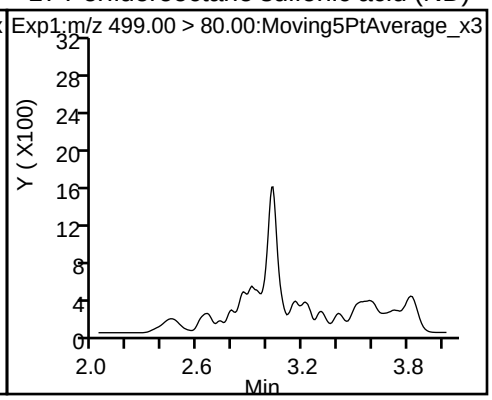
20 Perfluorononanoic acid (ND)



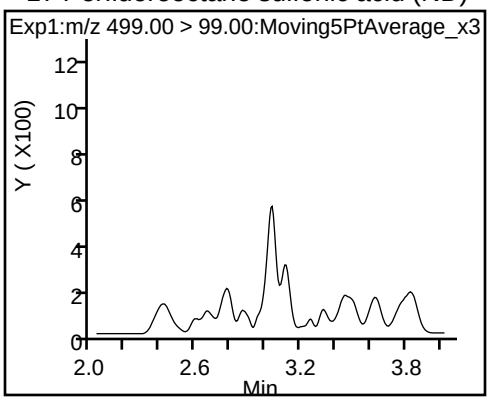
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

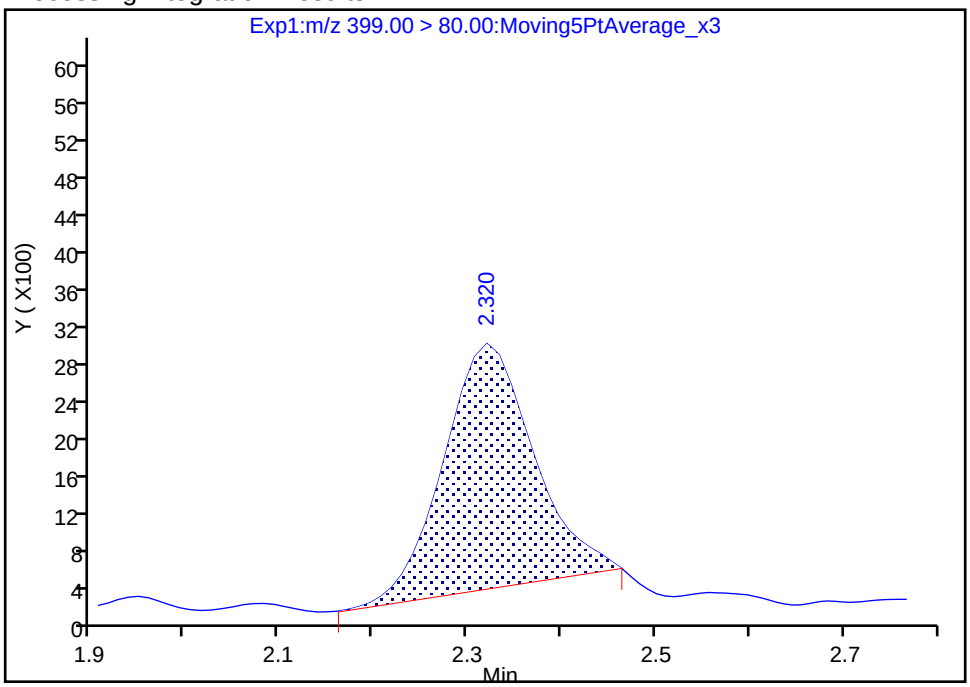
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_020.d				
Injection Date:	07-Apr-2018 11:06:21	Instrument ID:	A8_N		
Lims ID:	320-36960-A-12-A	Lab Sample ID:	320-36960-12		
Client ID:	BNA04-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

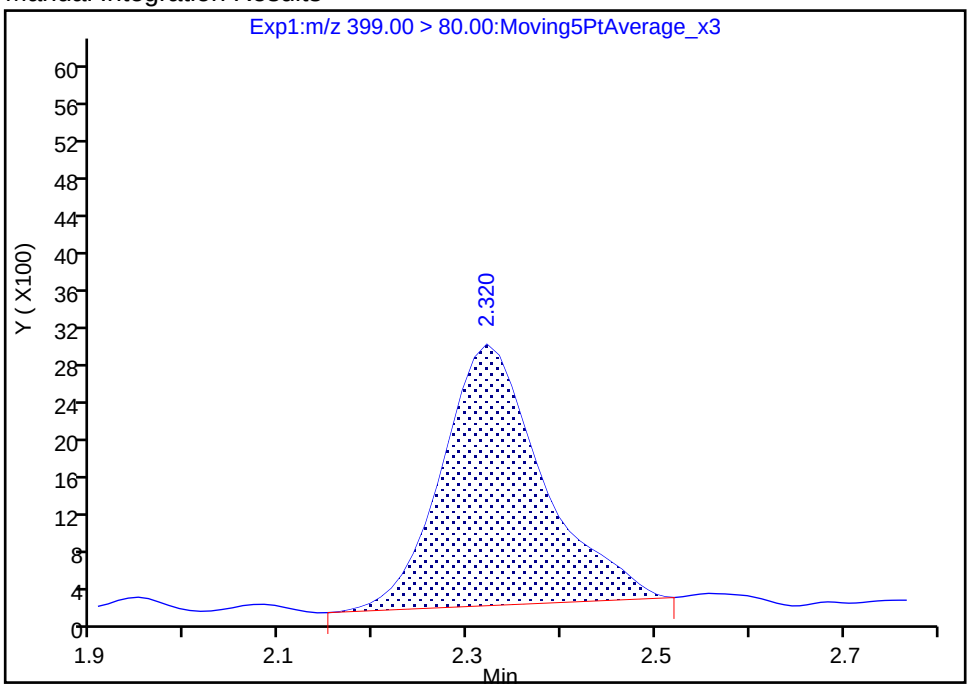
Processing Integration Results

RT: 2.32
Area: 17501
Amount: 0.010529
Amount Units: ng/ml



Manual Integration Results

RT: 2.32
Area: 20783
Amount: 0.012504
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:24:14

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

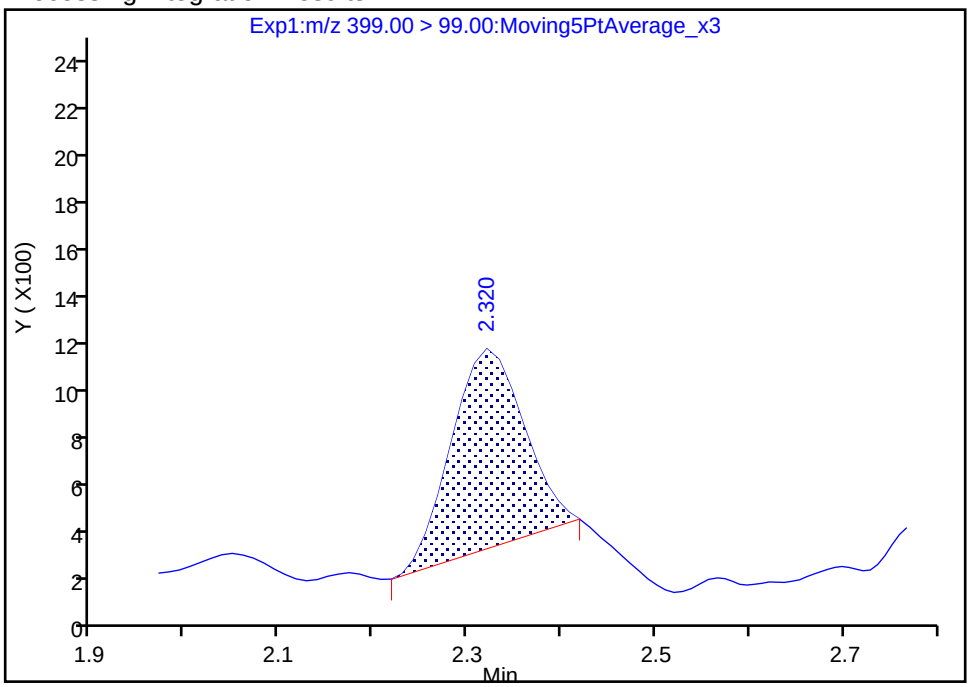
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_020.d
Injection Date: 07-Apr-2018 11:06:21 Instrument ID: A8_N
Lims ID: 320-36960-A-12-A Lab Sample ID: 320-36960-12
Client ID: BNA04-SB1-01
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

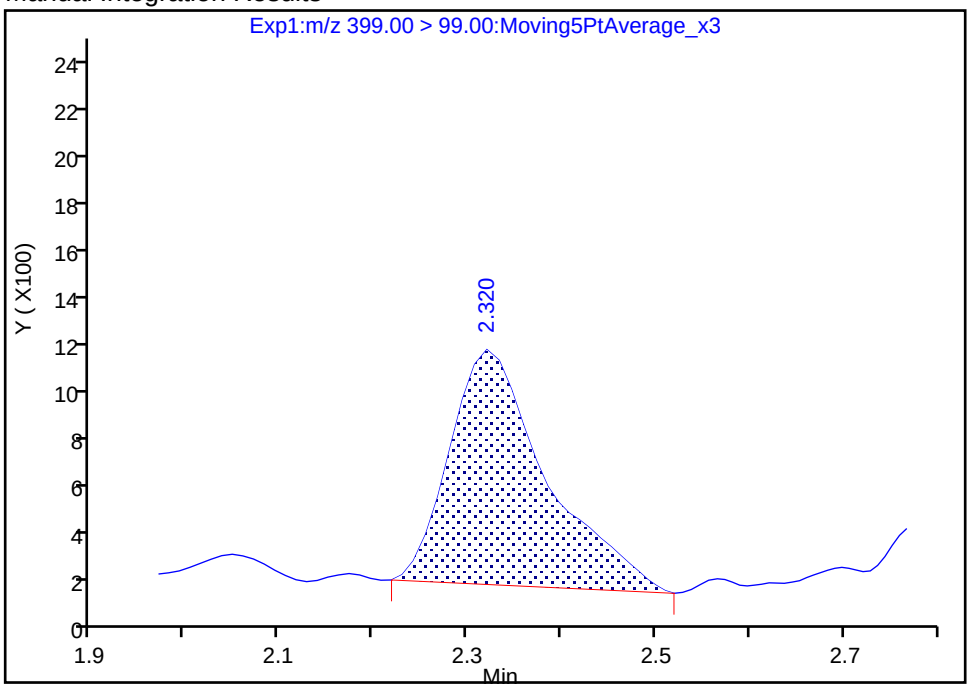
Processing Integration Results

RT: 2.32
Area: 4511
Amount: 0.010529
Amount Units: ng/ml



Manual Integration Results

RT: 2.32
Area: 7029
Amount: 0.012504
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:24:16
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA04-SB1-02 | Lab Sample ID: 320-36960-13

Matrix: Solid | Lab File ID: 2018.04.07LLA_021.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/06/2018 14:20

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.96(g) | Date Analyzed: 04/07/2018 11:14

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 29.3 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.29	U	0.43	0.29	0.11
335-67-1	Perfluorooctanoic acid (PFOA)	0.29	U M	0.43	0.29	0.14
375-95-1	Perfluorononanoic acid (PFNA)	0.29	U Q	0.43	0.29	0.12
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.26	U	0.57	0.26	0.084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.29	U M	0.43	0.29	0.088
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.71	U	1.4	0.71	0.34

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	64		50-150
STL01892	13C4-PFHpA	71		50-150
STL00990	13C4 PFOA	71		50-150
STL00995	13C5 PFNA	75		50-150
STL00994	18O2 PFHxS	64		50-150
STL00991	13C4 PFOS	65		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_021.d
Lims ID: 320-36960-A-13-A
Client ID: BNA04-SB1-02
Sample Type: Client
Inject. Date: 07-Apr-2018 11:14:11 ALS Bottle#: 14 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-13-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:58 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:24:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	57078	1.48		63.8	277	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.308	-0.002	1.000	3161488	1.77		71.0	89177	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.321	-0.002	1.000	3378583	1.52		64.3	68553	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.319	2.323	-0.004	1.000	17435	0.0109			49.6	M
399.00 > 99.00	2.332	2.323	0.009	1.006	6409		2.72(1.50-4.49)		23.0	M
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	3125292	1.78		71.4	92947	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.661	-0.001		4670918	2.50			104277	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.023	-0.001	1.000	2378782	1.54		64.5	23701	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.030	-0.008	1.000	2785001	1.88		75.2	72813	

QC Flag Legend

Review Flags
M - Manually Integrated

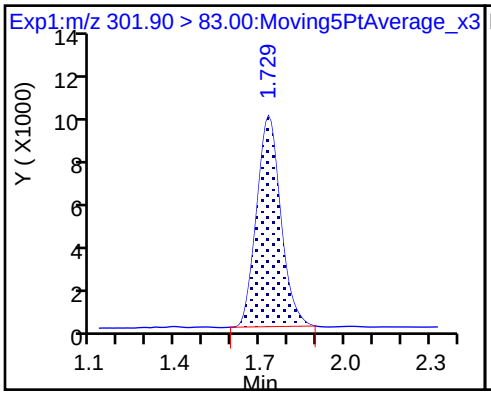
Report Date: 09-Apr-2018 08:27:04 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

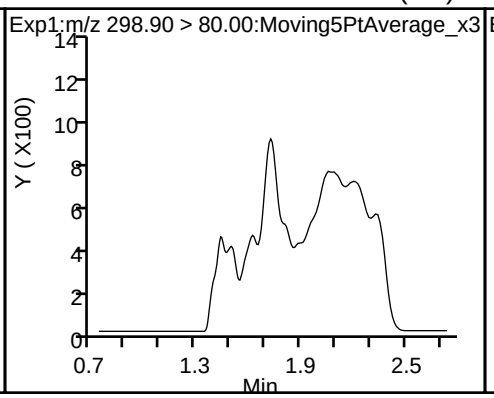
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_021.d

Injection Date:	07-Apr-2018 11:14:11	Instrument ID:	A8_N		
Lims ID:	320-36960-A-13-A	Lab Sample ID:	320-36960-13		
Client ID:	BNA04-SB1-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

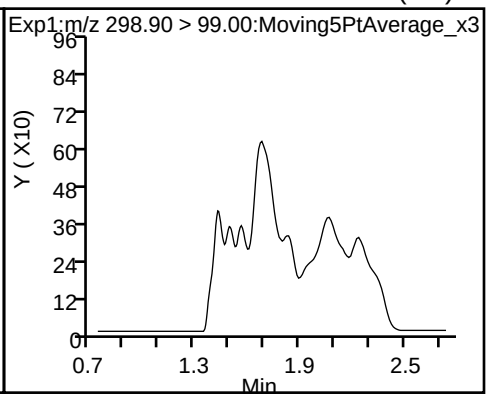
D 47 13C3-PFBS



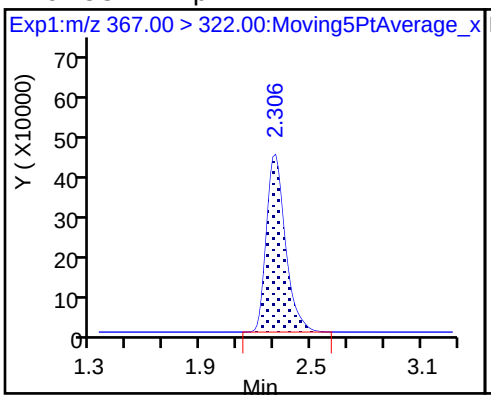
5 Perfluorobutanesulfonic acid (ND)



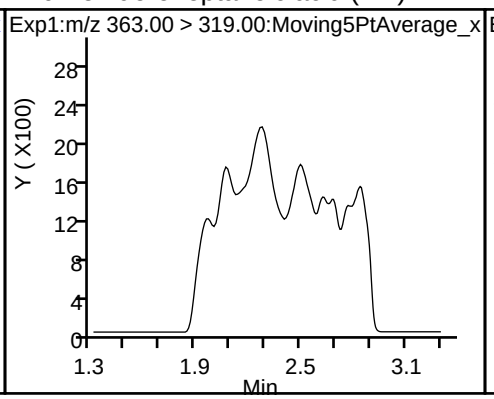
5 Perfluorobutanesulfonic acid (ND)



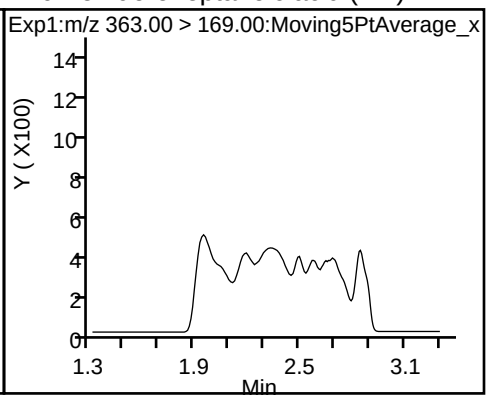
D 9 13C4-PFHpA



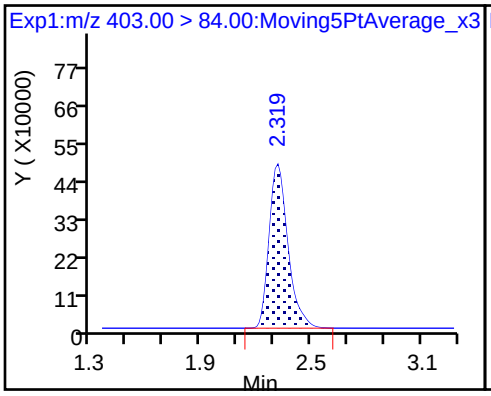
10 Perfluoroheptanoic acid (ND)



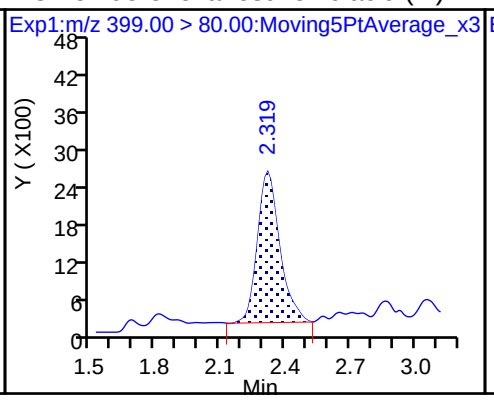
10 Perfluoroheptanoic acid (ND)



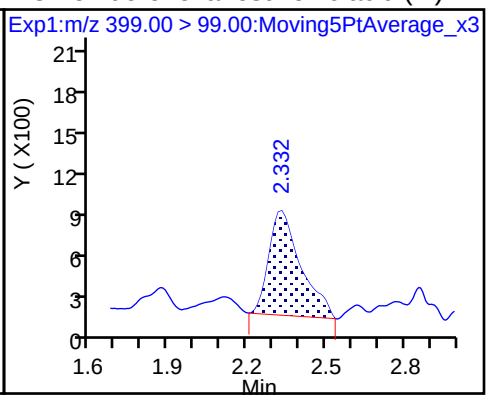
D 11 18O2 PFHxS



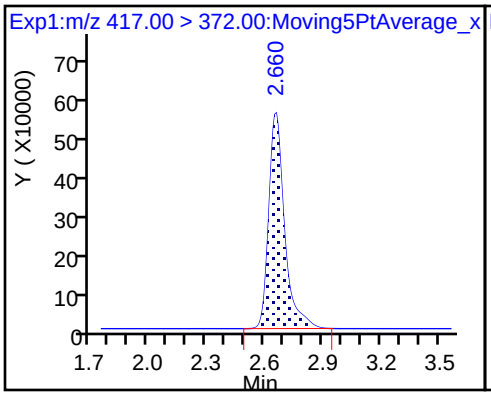
8 Perfluorohexanesulfonic acid (M)



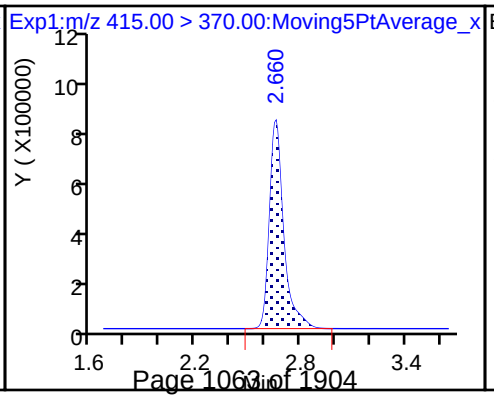
8 Perfluorohexanesulfonic acid (M)



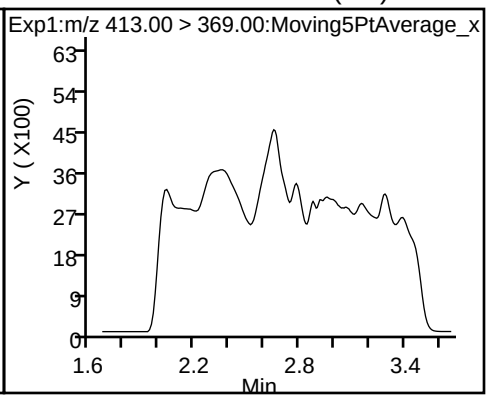
D 14 13C4 PFOA



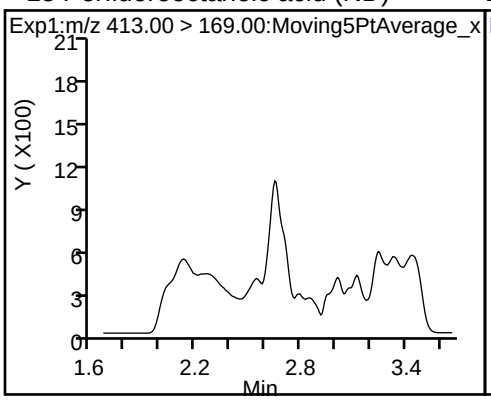
* 62 13C2-PFOA



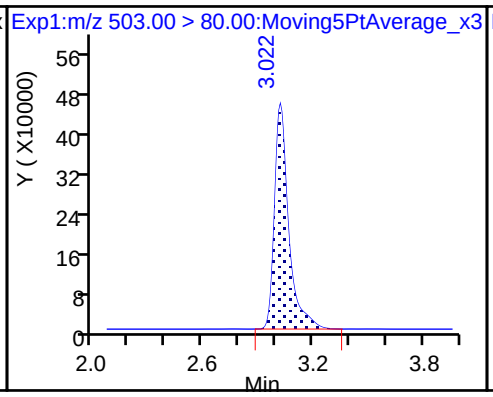
15 Perfluorooctanoic acid (ND)



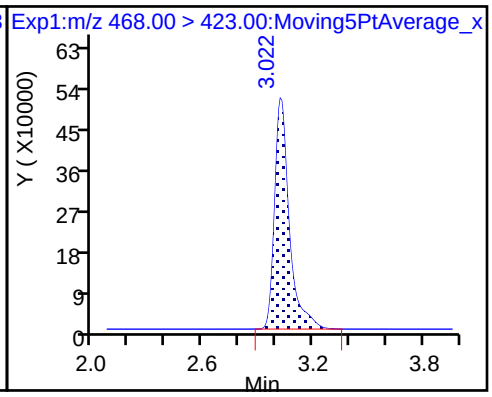
15 Perfluorooctanoic acid (ND)



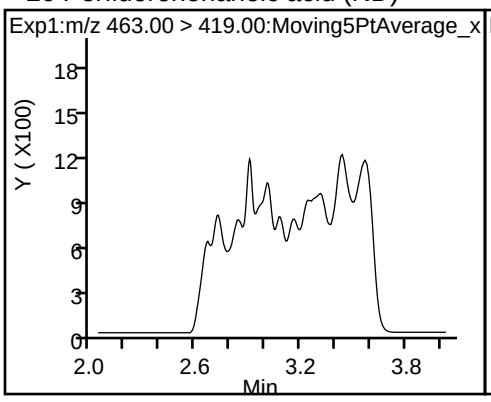
D 18 13C4 PFOS



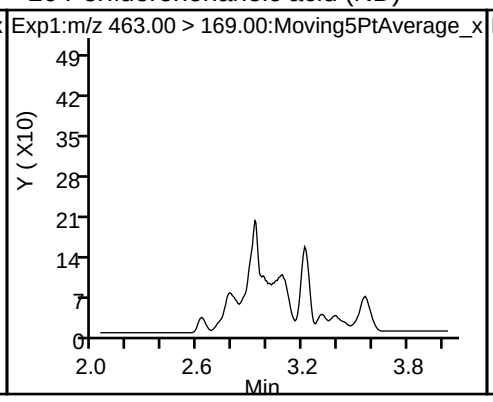
D 19 13C5 PFNA



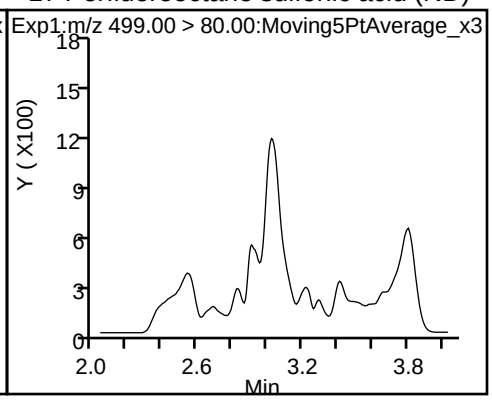
20 Perfluorononanoic acid (ND)



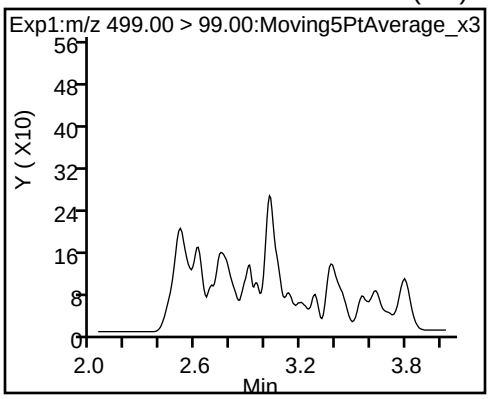
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

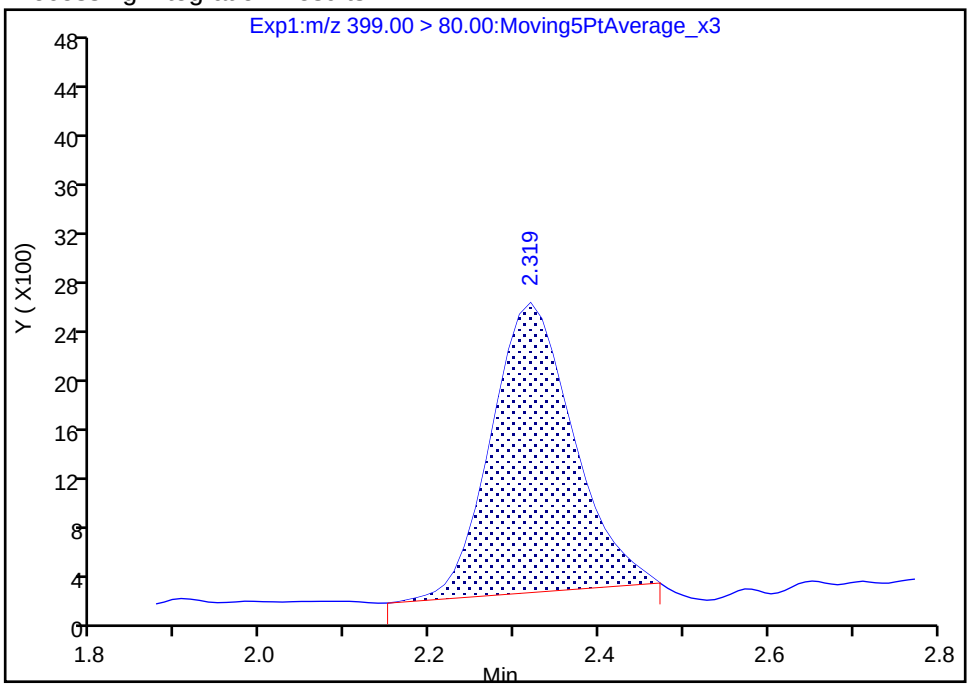
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_021.d				
Injection Date:	07-Apr-2018 11:14:11	Instrument ID:	A8_N		
Lims ID:	320-36960-A-13-A	Lab Sample ID:	320-36960-13		
Client ID:	BNA04-SB1-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

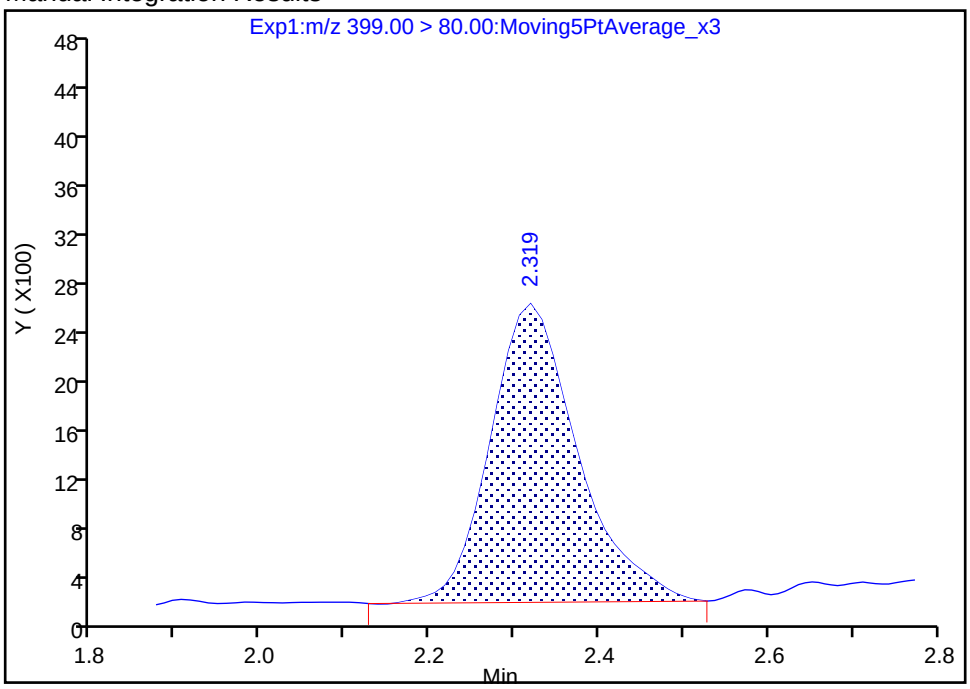
Processing Integration Results

RT: 2.32
Area: 15941
Amount: 0.009990
Amount Units: ng/ml



Manual Integration Results

RT: 2.32
Area: 17435
Amount: 0.010927
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:24:34

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

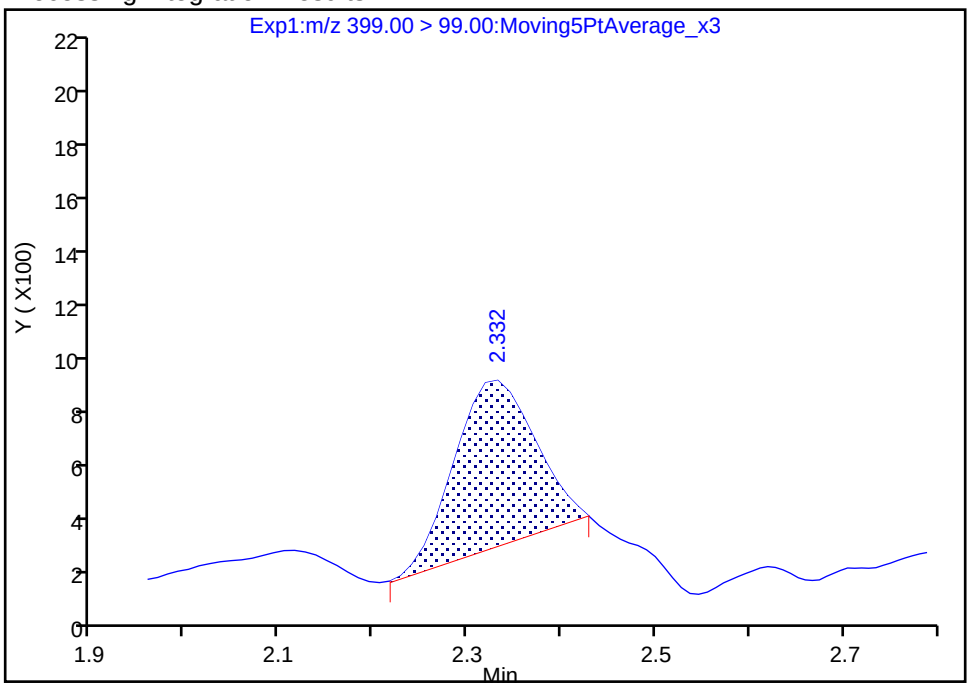
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_021.d				
Injection Date:	07-Apr-2018 11:14:11	Instrument ID:	A8_N		
Lims ID:	320-36960-A-13-A	Lab Sample ID:	320-36960-13		
Client ID:	BNA04-SB1-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

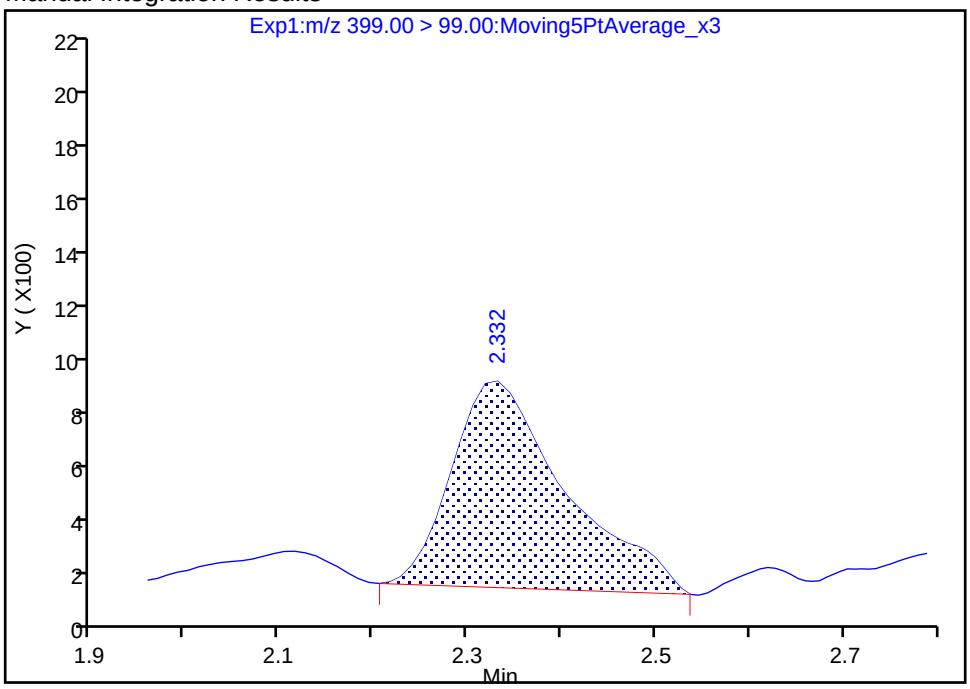
Processing Integration Results

RT: 2.33
Area: 3703
Amount: 0.009990
Amount Units: ng/ml



Manual Integration Results

RT: 2.33
Area: 6409
Amount: 0.010927
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:24:36

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA05-SB1-01 | Lab Sample ID: 320-36960-14

Matrix: Solid | Lab File ID: 2018.04.07LLA_022.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/07/2018 08:25

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.04(g) | Date Analyzed: 04/07/2018 11:22

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 21.0 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.25	U	0.38	0.25	0.098
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U M	0.38	0.25	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U M Q	0.38	0.25	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.50	0.23	0.074
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.26	J	0.38	0.25	0.078
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.8	M	1.3	0.63	0.30

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	66		50-150
STL01892	13C4-PFHpA	75		50-150
STL00990	13C4 PFOA	82		50-150
STL00995	13C5 PFNA	81		50-150
STL00994	18O2 PFHxS	72		50-150
STL00991	13C4 PFOS	63		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_022.d
Lims ID: 320-36960-A-14-A
Client ID: BNA05-SB1-01
Sample Type: Client
Inject. Date: 07-Apr-2018 11:22:01 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-14-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:58 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:25:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.721	1.730	-0.009	1.000	63743	1.52		65.6	140	
D 9 13C4-PFHpA										
367.00 > 322.00	2.294	2.308	-0.014	1.000	3637850	1.88		75.2	63426	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.321	0.0	1.000	4080262	1.69		71.5	83009	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.307	2.323	-0.016	0.994	197211	0.1023			151	
399.00 > 99.00	2.307	2.323	-0.016	0.994	55563		3.55(1.50-4.49)		105	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.660	-0.007	1.000	3911210	2.06		82.2	88609	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.661	-0.001		5075132	2.50			100212	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.660	2.669	-0.009	1.003	45891	0.0247			16.6	M
413.00 > 169.00	2.660	2.669	-0.009	1.003	21615		2.12(0.84-2.52)		44.9	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.023	-0.001	1.000	2512655	1.50		62.7	8908	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.030	-0.008	1.000	3243402	2.01		80.6	98843	
20 Perfluorononanoic acid										M
463.00 > 419.00	3.022	3.032	-0.010	1.000	24546	0.0184			29.2	M
463.00 > 169.00	3.022	3.032	-0.010	1.000	6626		3.70(1.90-5.69)		55.3	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.022	3.032	-0.010	1.000	2278642	1.90			5208	M
499.00 > 99.00	3.022	3.032	-0.010	1.000	534606		4.26(2.31-6.93)		3838	

QC Flag Legend

Review Flags

M - Manually Integrated

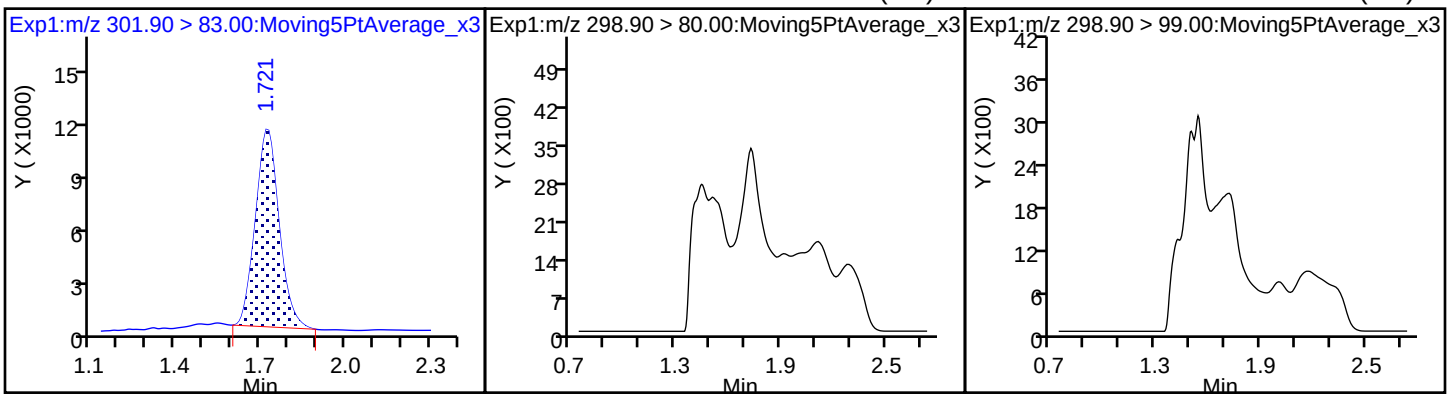
Report Date: 09-Apr-2018 08:27:06 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

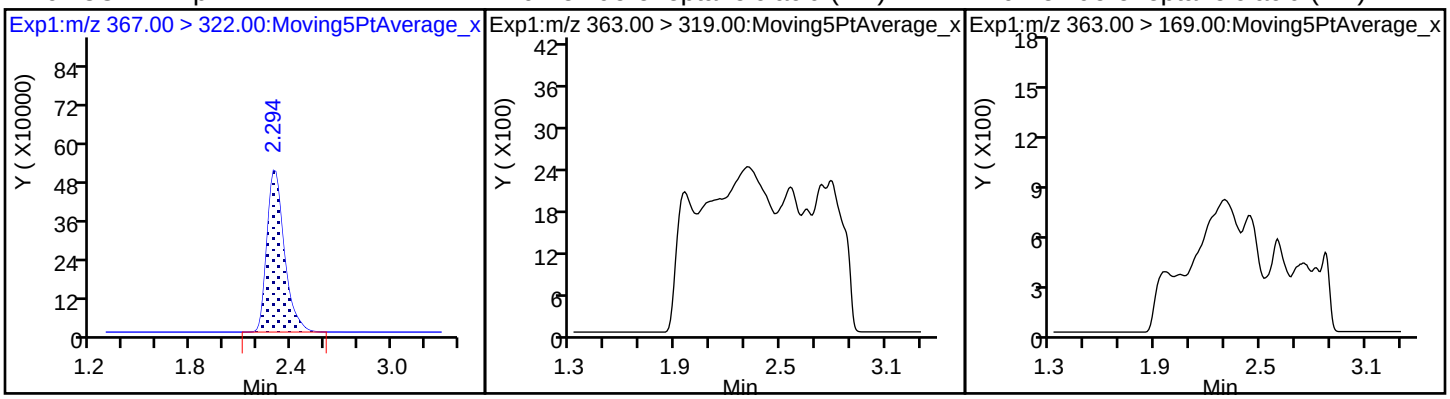
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_022.d

Injection Date:	07-Apr-2018 11:22:01	Instrument ID:	A8_N		
Lims ID:	320-36960-A-14-A	Lab Sample ID:	320-36960-14		
Client ID:	BNA05-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

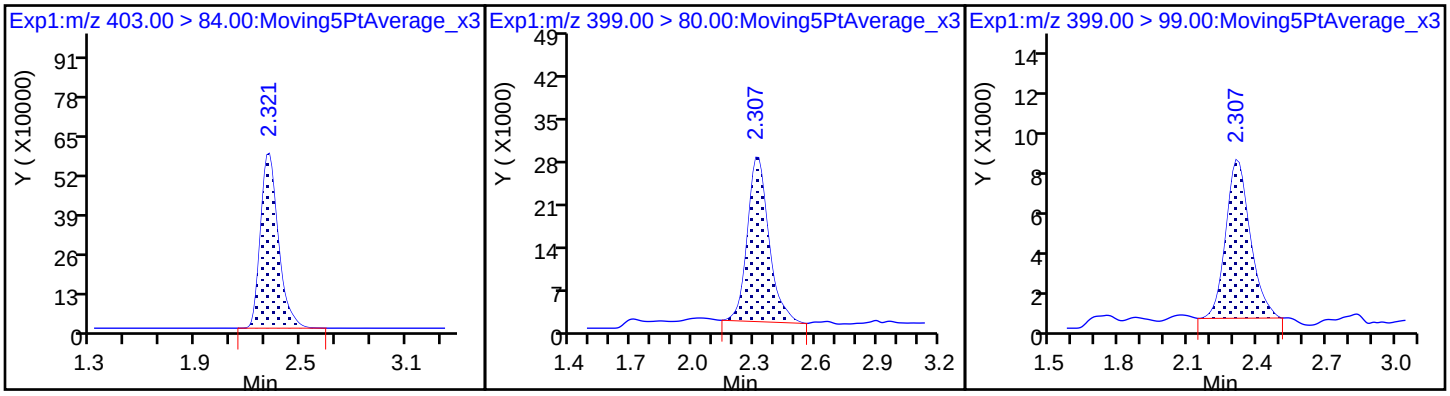
D 47 13C3-PFBS | 5 Perfluorobutanesulfonic acid (ND) | 5 Perfluorobutanesulfonic acid (ND)



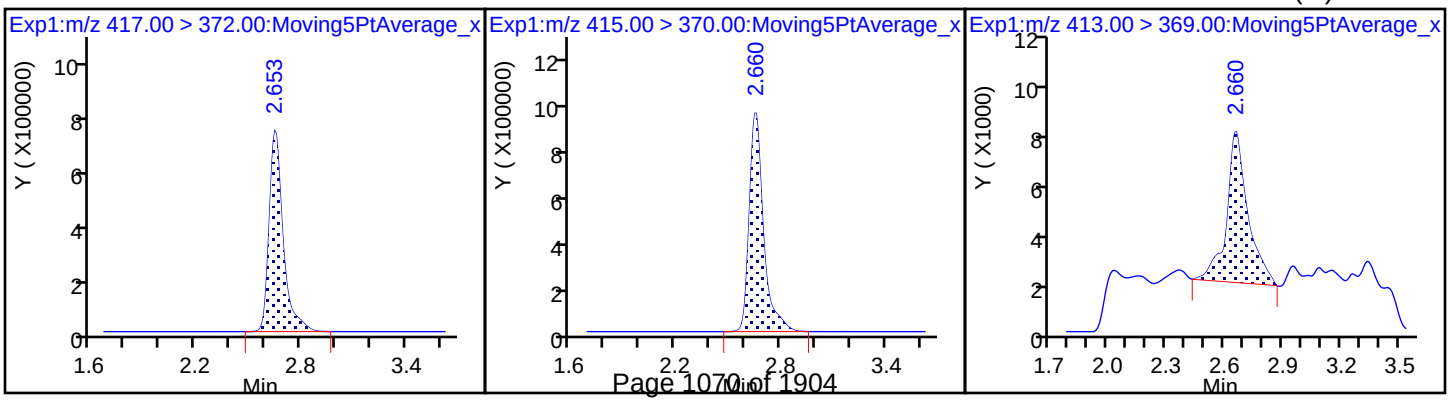
D 9 13C4-PFHpA | 10 Perfluoroheptanoic acid (ND) | 10 Perfluoroheptanoic acid (ND)



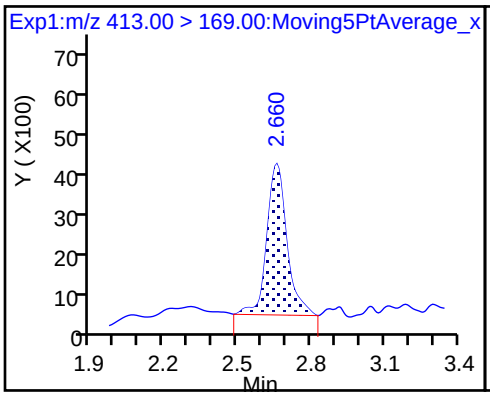
D 11 18O2 PFHxS | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



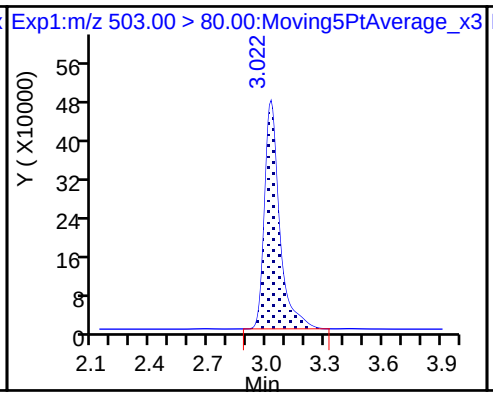
D 14 13C4 PFOA | * 62 13C2-PFOA | 15 Perfluorooctanoic acid (M)



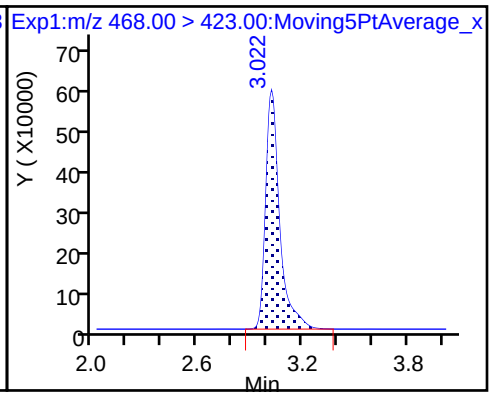
15 Perfluorooctanoic acid



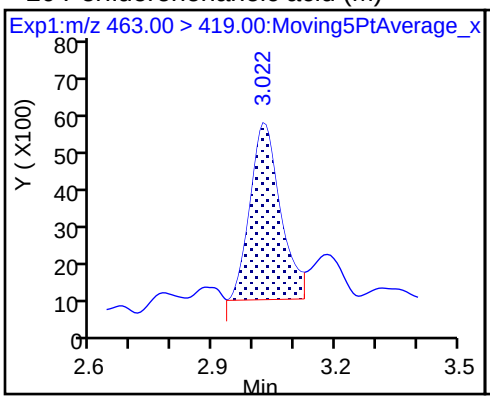
D 18 13C4 PFOS



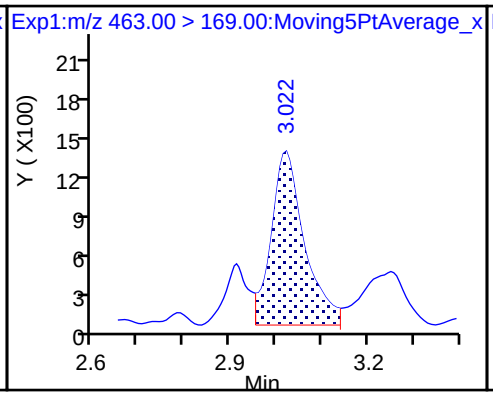
D 19 13C5 PFNA



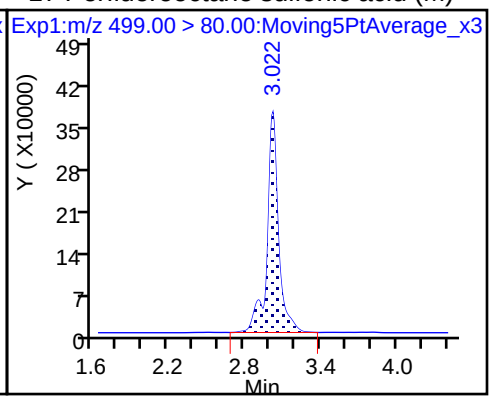
20 Perfluorononanoic acid (M)



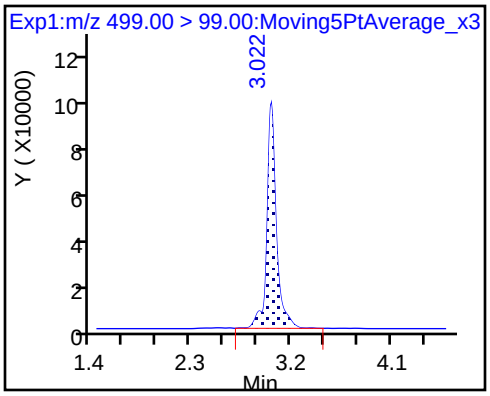
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid (M)



17 Perfluorooctane sulfonic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

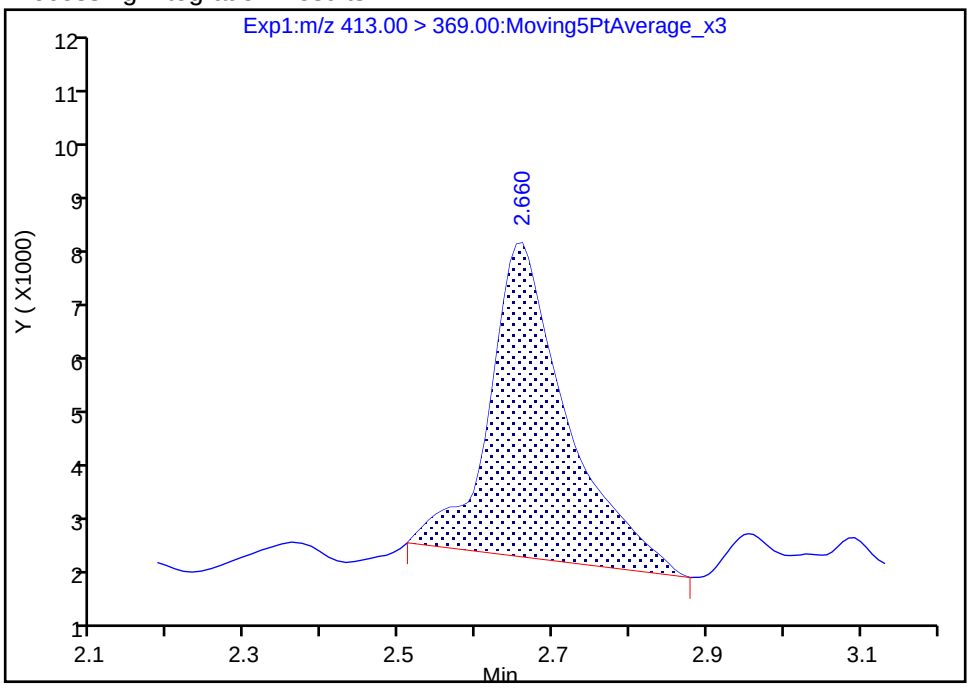
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_022.d				
Injection Date:	07-Apr-2018 11:22:01	Instrument ID:	A8_N		
Lims ID:	320-36960-A-14-A	Lab Sample ID:	320-36960-14		
Client ID:	BNA05-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

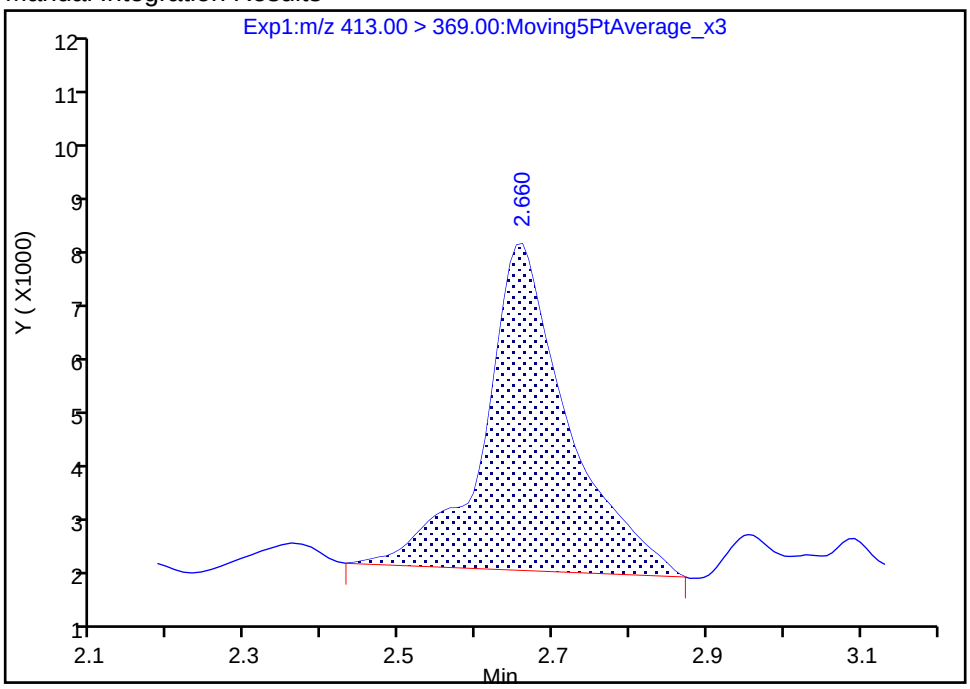
Processing Integration Results

RT: 2.66
Area: 40929
Amount: 0.022062
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 45891
Amount: 0.024737
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:24:54

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

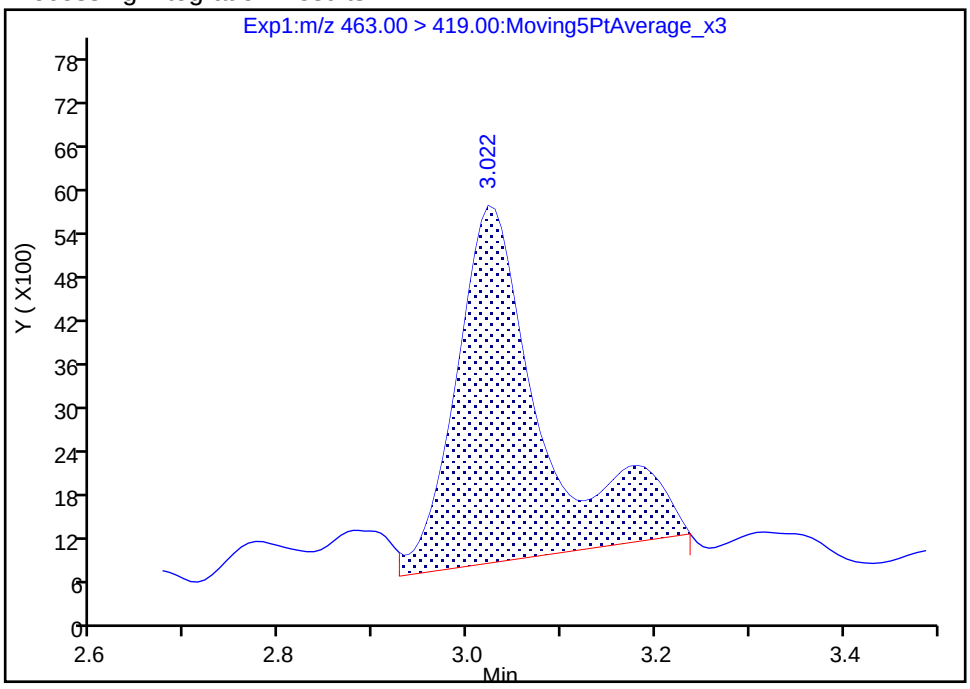
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_022.d				
Injection Date:	07-Apr-2018 11:22:01	Instrument ID:	A8_N		
Lims ID:	320-36960-A-14-A	Lab Sample ID:	320-36960-14		
Client ID:	BNA05-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

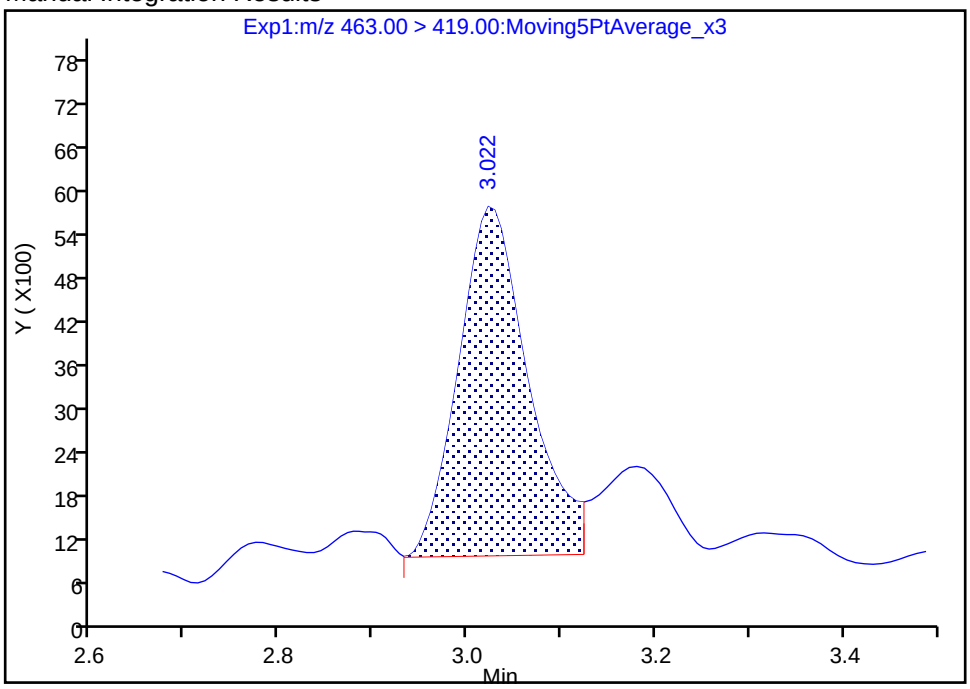
Processing Integration Results

RT: 3.02
Area: 30781
Amount: 0.023057
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 24546
Amount: 0.018387
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:25:09

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

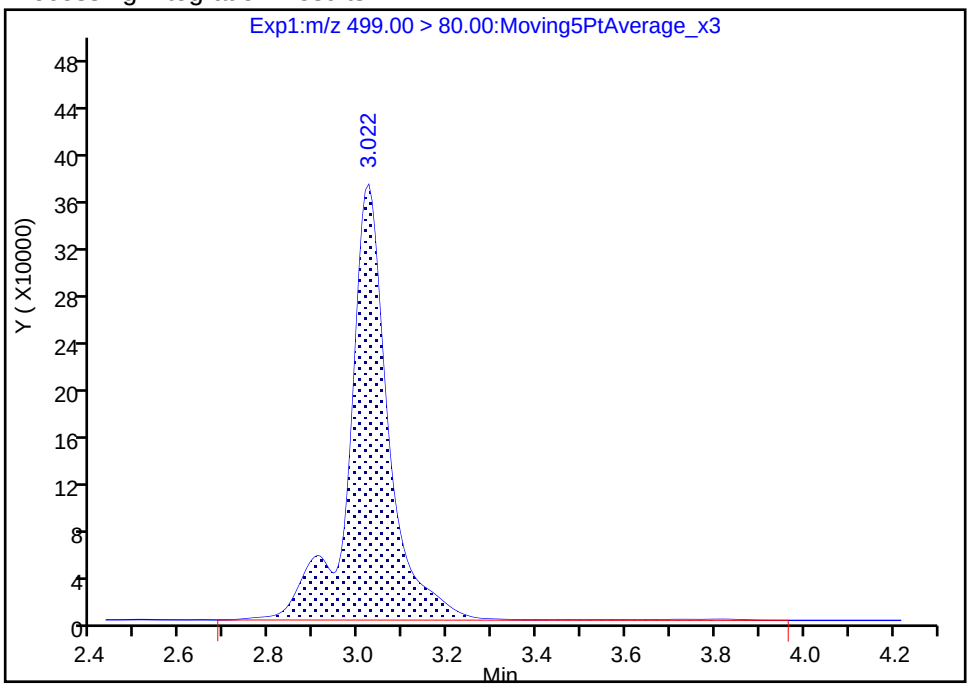
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_022.d				
Injection Date:	07-Apr-2018 11:22:01	Instrument ID:	A8_N		
Lims ID:	320-36960-A-14-A	Lab Sample ID:	320-36960-14		
Client ID:	BNA05-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

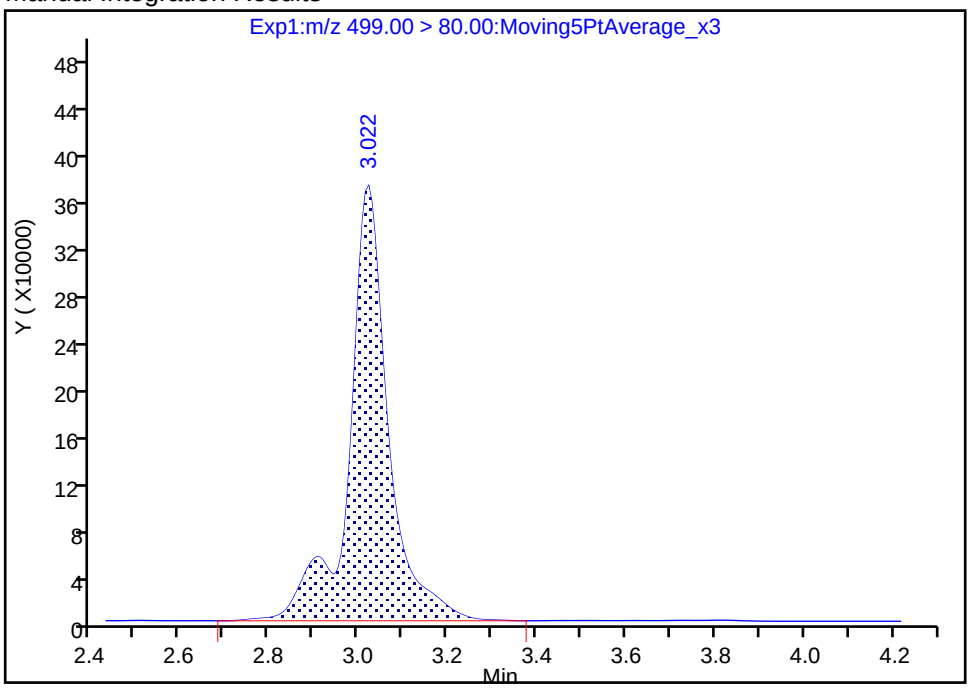
Processing Integration Results

RT: 3.02
Area: 2298901
Amount: 1.913709
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 2278642
Amount: 1.896845
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:25:00

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA05-SB1-02 | Lab Sample ID: 320-36960-15

Matrix: Solid | Lab File ID: 2018.04.07LLA_023.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/07/2018 08:35

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.95(g) | Date Analyzed: 04/07/2018 11:29

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 18.6 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.25	U	0.37	0.25	0.097
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U	0.37	0.25	0.12
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U Q	0.37	0.25	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.22	U	0.50	0.22	0.073
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.66		0.37	0.25	0.077
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.8		1.2	0.62	0.30

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	66		50-150
STL01892	13C4-PFHpA	82		50-150
STL00990	13C4 PFOA	81		50-150
STL00995	13C5 PFNA	82		50-150
STL00994	18O2 PFHxS	73		50-150
STL00991	13C4 PFOS	64		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_023.d
Lims ID: 320-36960-A-15-A
Client ID: BNA05-SB1-02
Sample Type: Client
Inject. Date: 07-Apr-2018 11:29:55 ALS Bottle#: 16 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-15-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:58 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:25:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	61891	1.54		66.1	194	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.308	-0.002	1.000	3837717	2.06		82.3	78368	
10 Perfluoroheptanoic acid										R
363.00 > 319.00	2.306	2.310	-0.004	1.000	17730	0.0106			15.8	R
363.00 > 169.00	2.306	2.310	-0.004	1.000	2711		6.54(1.13-3.40)		11.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.321	-0.002	1.000	4008305	1.72		72.9	63803	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.323	-0.004	1.000	502152	0.2653			780	
399.00 > 99.00	2.319	2.323	-0.004	1.000	153794		3.27(1.50-4.49)		467	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	3689403	2.01		80.5	64901	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.661	-0.001		4888481	2.50			108934	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.652	2.669	-0.017	0.997	77283	0.0442			32.4	
413.00 > 169.00	2.660	2.669	-0.009	1.000	48584		1.59(0.84-2.52)		113	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.023	0.005	1.000	2483957	1.54		64.4	17073	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.030	-0.002	1.000	3194492	2.06		82.4	120333	
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.032	-0.004	1.000	5539	0.004213			11.1	
463.00 > 169.00	3.028	3.032	-0.004	1.000	2044		2.71(1.90-5.69)		27.2	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.022	3.032	-0.010	0.998	847437	0.7136			2926	
499.00 > 99.00	3.028	3.032	-0.004	1.000	170833		4.96(2.31-6.93)		1331	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

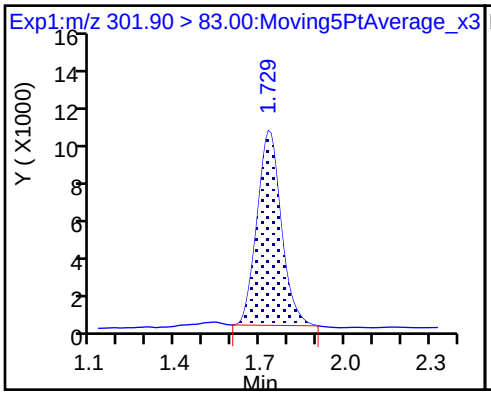
Report Date: 09-Apr-2018 08:27:07 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

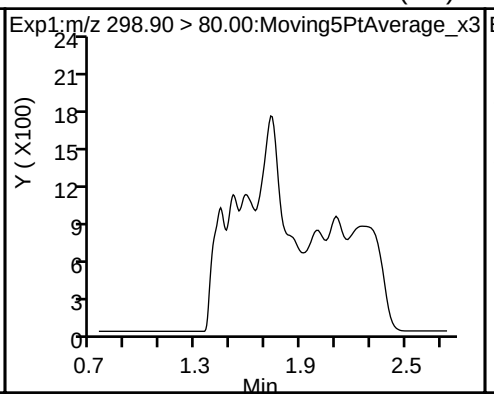
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_023.d

Injection Date:	07-Apr-2018 11:29:55	Instrument ID:	A8_N		
Lims ID:	320-36960-A-15-A	Lab Sample ID:	320-36960-15		
Client ID:	BNA05-SB1-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

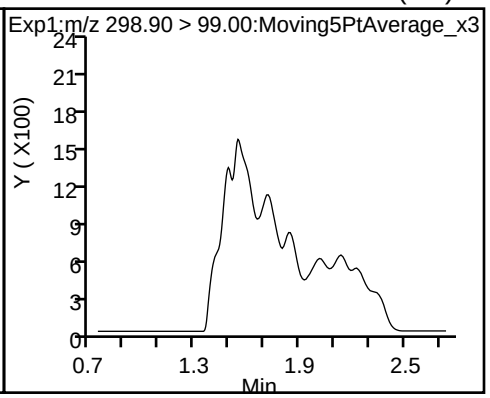
D 47 13C3-PFBS



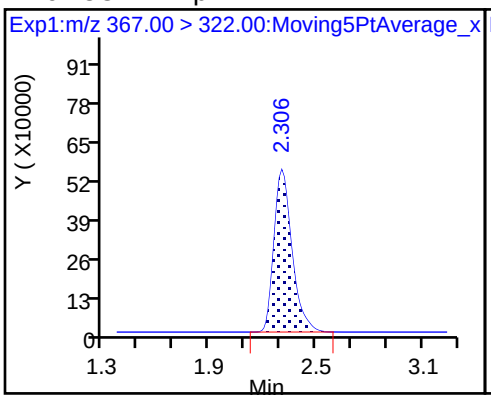
5 Perfluorobutanesulfonic acid (ND)



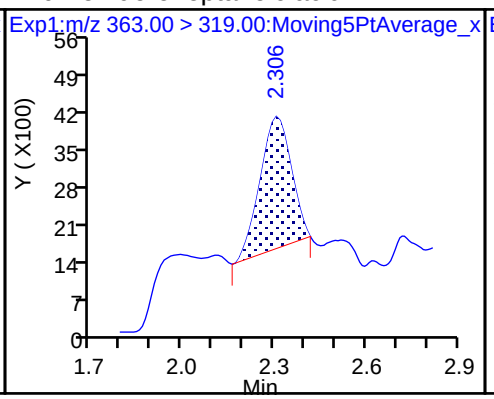
5 Perfluorobutanesulfonic acid (ND)



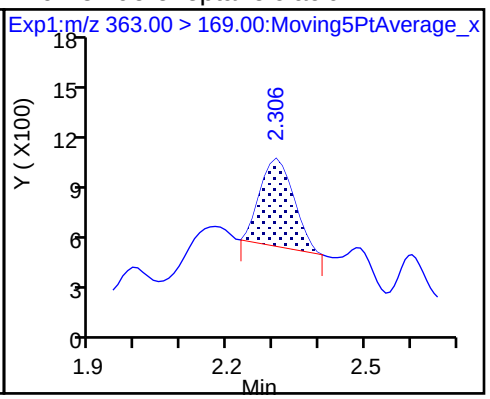
D 9 13C4-PFHpA



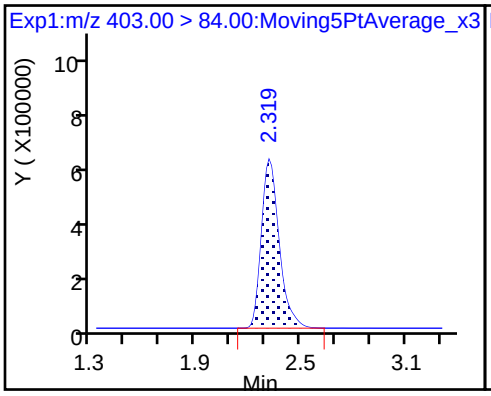
10 Perfluoroheptanoic acid



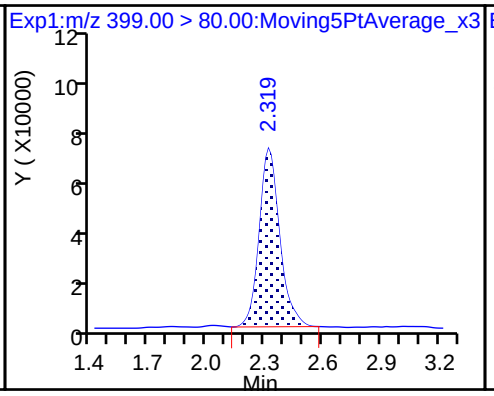
10 Perfluoroheptanoic acid



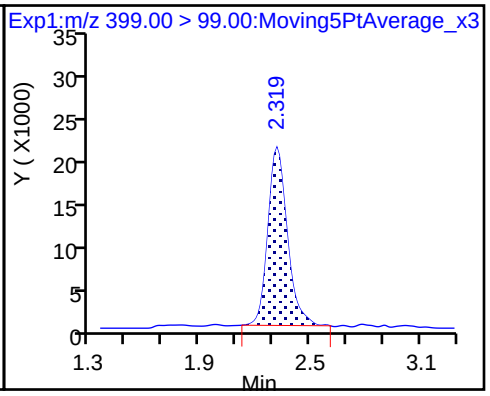
D 11 18O2 PFHxS



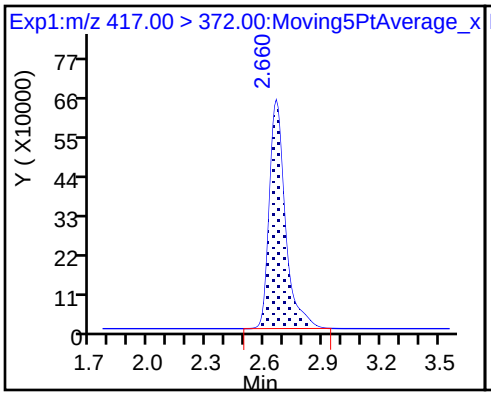
8 Perfluorohexanesulfonic acid



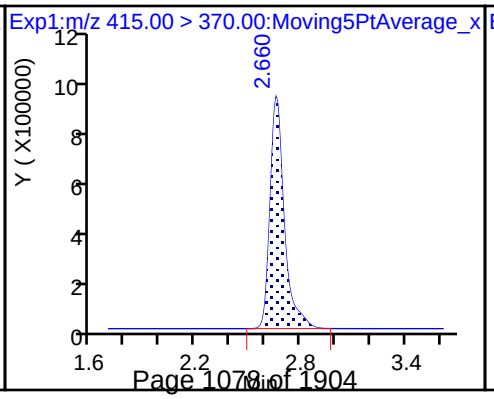
8 Perfluorohexanesulfonic acid



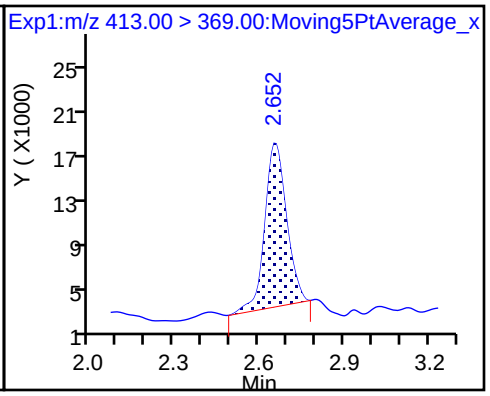
D 14 13C4 PFOA



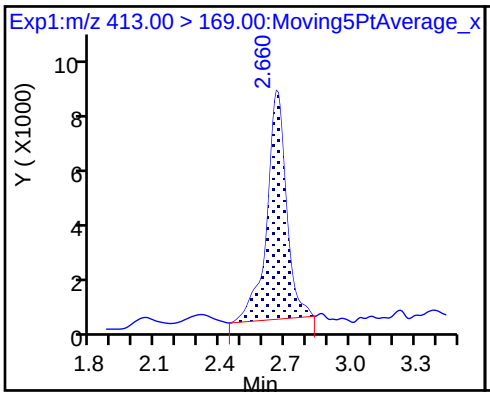
* 62 13C2-PFOA



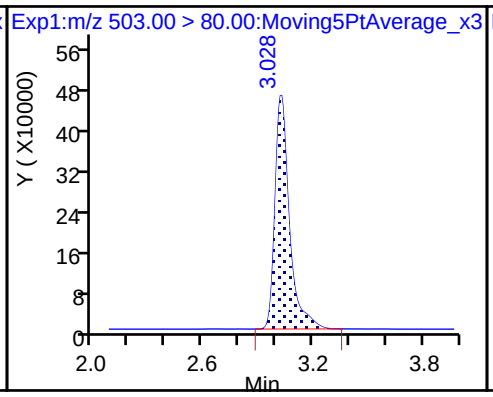
15 Perfluorooctanoic acid



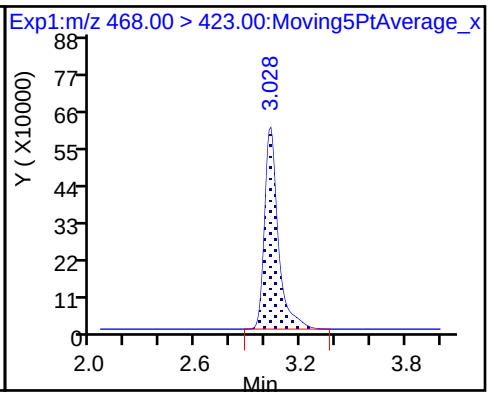
15 Perfluorooctanoic acid



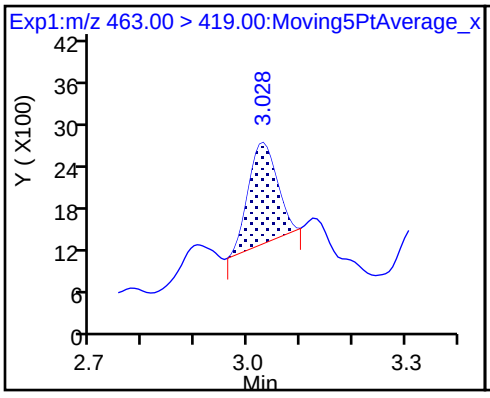
D 18 13C4 PFOS



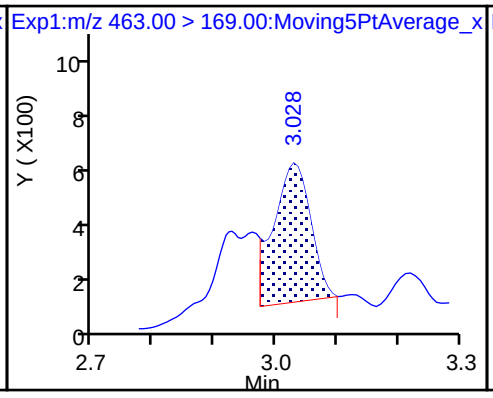
D 19 13C5 PFNA



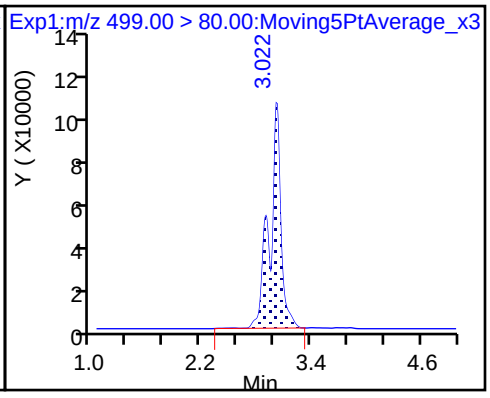
20 Perfluorononanoic acid



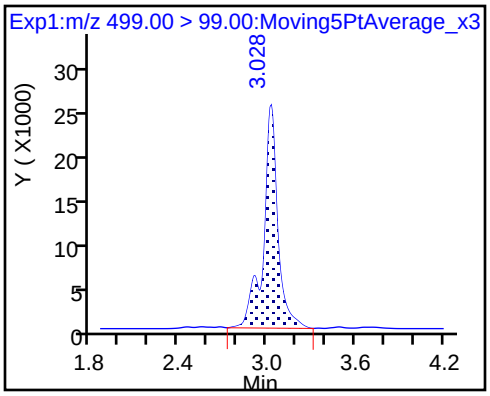
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA05-SW1-01 | Lab Sample ID: 320-36960-16

Matrix: Water | Lab File ID: 2018.03.24LLAA_009.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/08/2018 11:45

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 291.4(mL) | Date Analyzed: 03/24/2018 19:42

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4		1.7	1.3	0.52
335-67-1	Perfluorooctanoic acid (PFOA)	21	M	1.7	1.3	0.46
375-95-1	Perfluorononanoic acid (PFNA)	1.3	J M	1.7	1.3	0.45
375-73-5	Perfluorobutanesulfonic acid (PFBS)	22		1.7	0.86	0.39
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	190		1.7	0.86	0.33
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	250		3.4	2.6	0.94

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	79		50-150
STL01892	13C4-PFHpA	79		50-150
STL00990	13C4 PFOA	77		50-150
STL00995	13C5 PFNA	78		50-150
STL00994	18O2 PFHxS	79		50-150
STL00991	13C4 PFOS	76		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_009.d
Lims ID: 320-36960-B-16-A
Client ID: BNA05-SW1-01
Sample Type: Client
Inject. Date: 24-Mar-2018 19:42:24 ALS Bottle#: 3 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-b-16-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:46:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.762	1.762	0.0	0.648	92239	1.85		79.5	300	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.762	1.767	-0.005	1.000	2006322	0.6508			831	
298.90 > 99.00	1.762	1.767	-0.005	1.000	873095		2.30(1.25-3.74)		1701	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.354	2.348	0.006	1.000	478506	0.2445			266	
363.00 > 169.00	2.354	2.348	0.006	1.000	183518		2.61(1.13-3.40)		487	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.368	2.361	0.007	1.000	14605081	5.63			13272	
399.00 > 99.00	2.368	2.361	0.007	1.000	4636472		3.15(1.50-4.49)		8496	
D 9 13C4-PFHpA										
367.00 > 322.00	2.354	2.368	-0.014	0.865	4729352	1.98		79.3	106605	
D 11 18O2 PFHxS										
403.00 > 84.00	2.368	2.380	-0.012	0.870	5510758	1.87		79.1	112698	
* 62 13C2-PFOA										
415.00 > 370.00	2.720	2.714	0.006		6511999	2.50			200705	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.720	2.714	0.006	1.000	1299275	0.6112			367	M
413.00 > 169.00	2.720	2.714	0.006	1.000	742337		1.75(0.84-2.52)		2276	M
D 14 13C4 PFOA										
417.00 > 372.00	2.720	2.728	-0.008	1.000	4704067	1.93		77.1	96511	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.096	3.090	0.006	1.000	13443328	7.38			30100	
499.00 > 99.00	3.096	3.090	0.006	1.000	2873082		4.68(2.31-6.93)		29384	
20 Perfluorononanoic acid										M
463.00 > 419.00	3.096	3.090	0.006	1.000	61420	0.0366			57.7	
463.00 > 169.00	3.096	3.090	0.006	1.000	17759		3.46(1.90-5.69)		254	M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.096	3.112	-0.016	1.138	4204074	1.95		78.1	74314	
D 18 13C4 PFOS										
503.00 > 80.00	3.096	3.112	-0.016	1.138	3909994	1.83		76.4	42361	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 25-Mar-2018 10:51:11 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_009.d

Injection Date: 24-Mar-2018 19:42:24 Instrument ID: A8_N

Lims ID: 320-36960-B-16-A Lab Sample ID: 320-36960-16

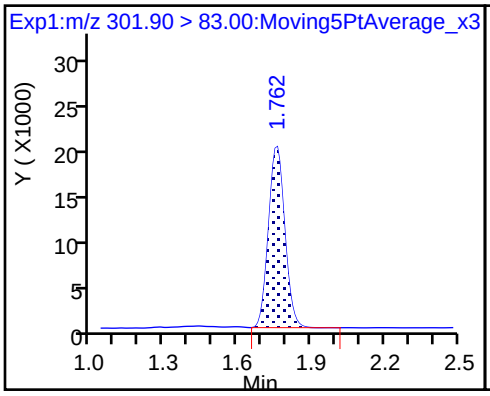
Client ID: BNA05-SW1-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 7

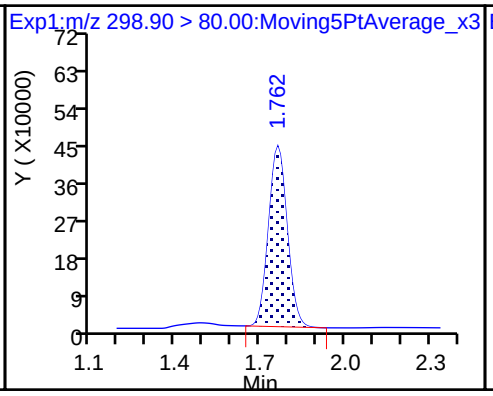
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

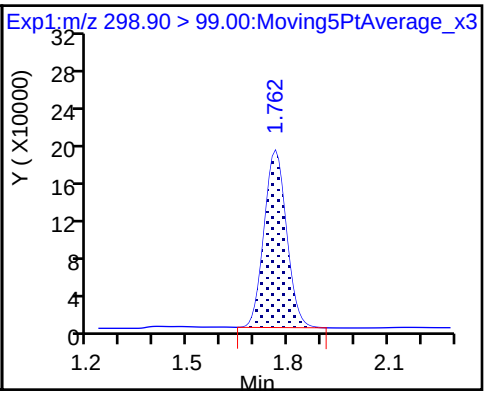
D 47 13C3-PFBS



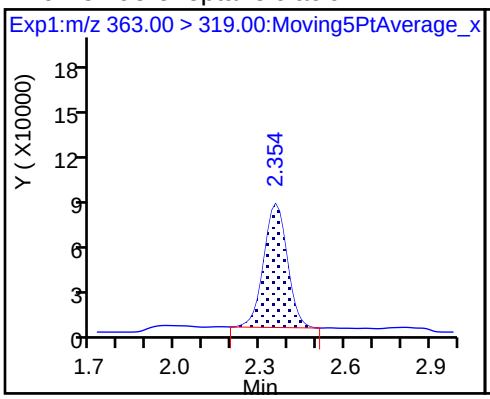
5 Perfluorobutanesulfonic acid



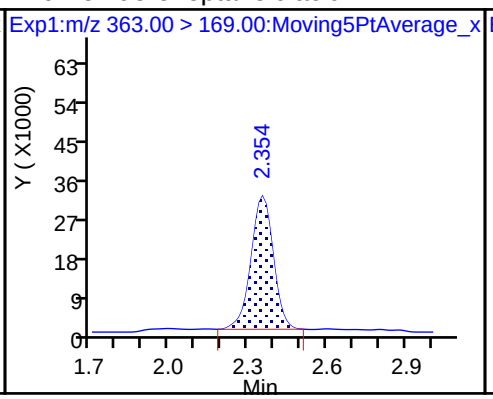
5 Perfluorobutanesulfonic acid



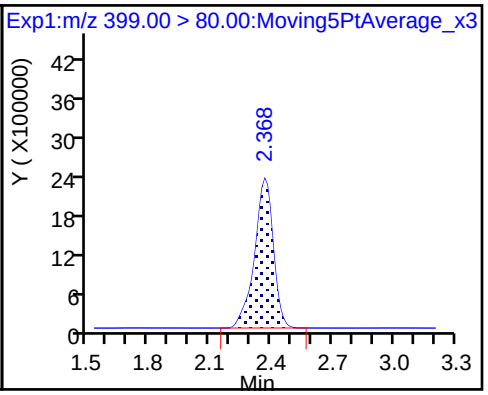
10 Perfluoroheptanoic acid



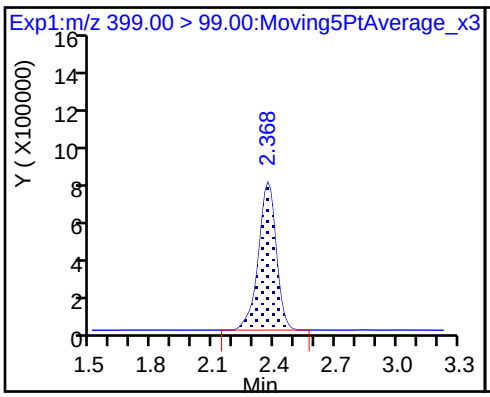
10 Perfluoroheptanoic acid



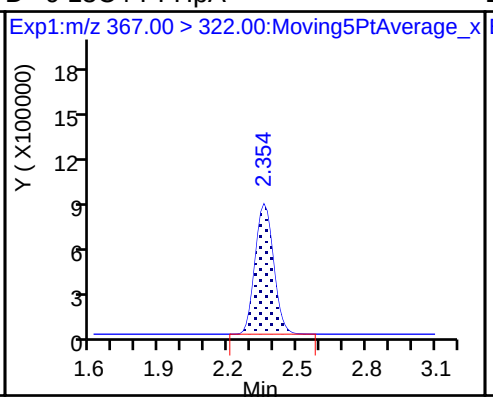
8 Perfluorohexanesulfonic acid



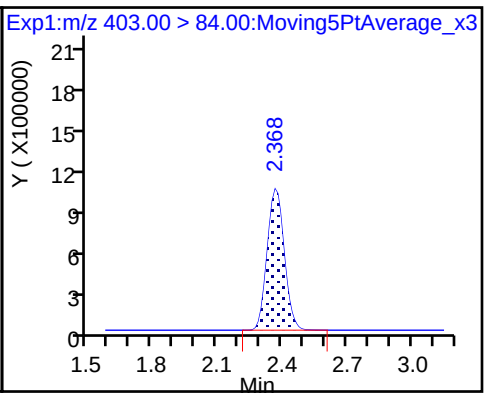
8 Perfluorohexanesulfonic acid



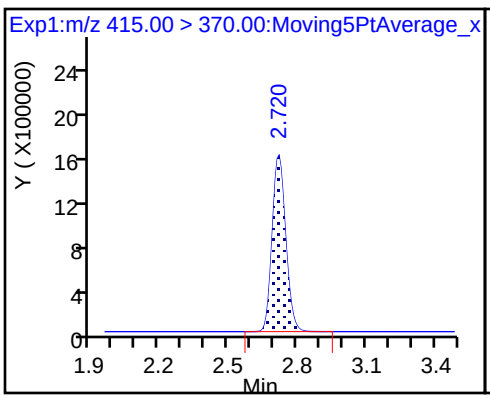
D 9 13C4-PFHpA



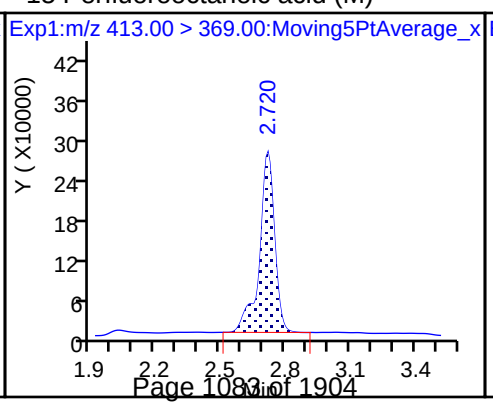
D 11 18O2 PFHxS



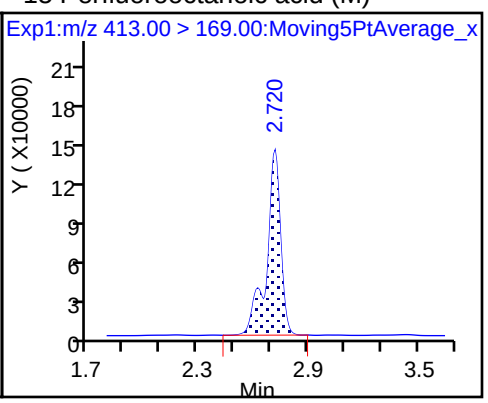
* 62 13C2-PFOA



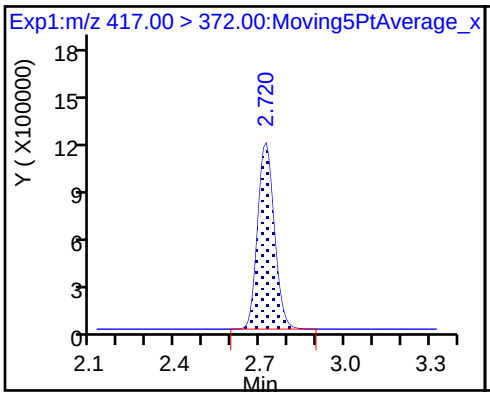
15 Perfluorooctanoic acid (M)



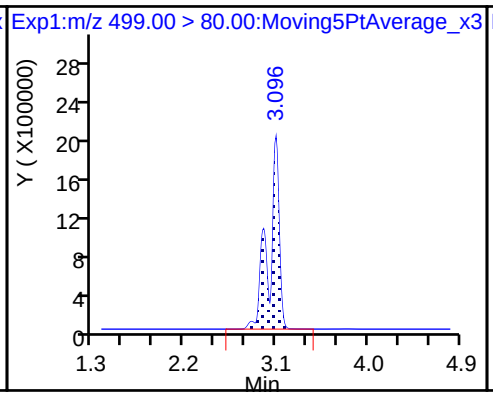
15 Perfluorooctanoic acid (M)



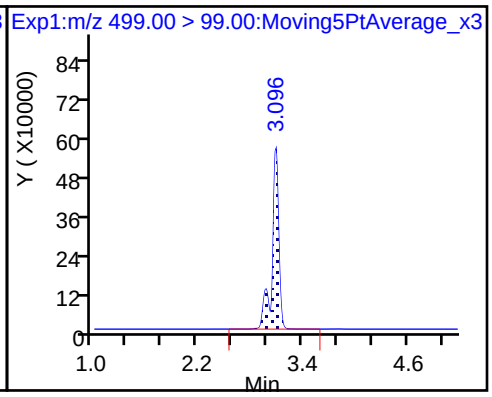
D 14 13C4 PFOA



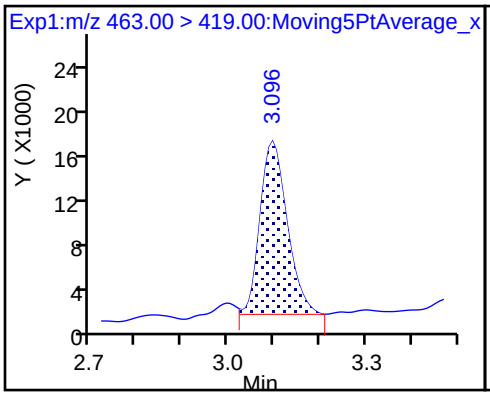
17 Perfluorooctane sulfonic acid



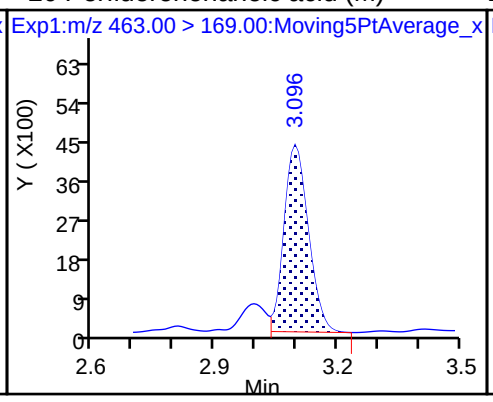
17 Perfluorooctane sulfonic acid



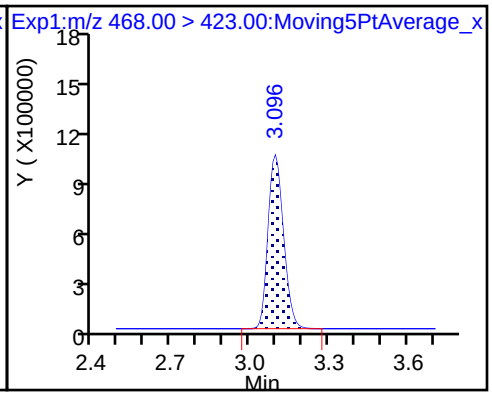
20 Perfluorononanoic acid



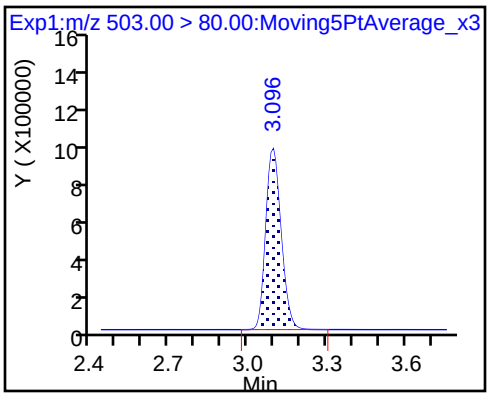
20 Perfluorononanoic acid (M)



D 19 13C5 PFNA



D 18 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

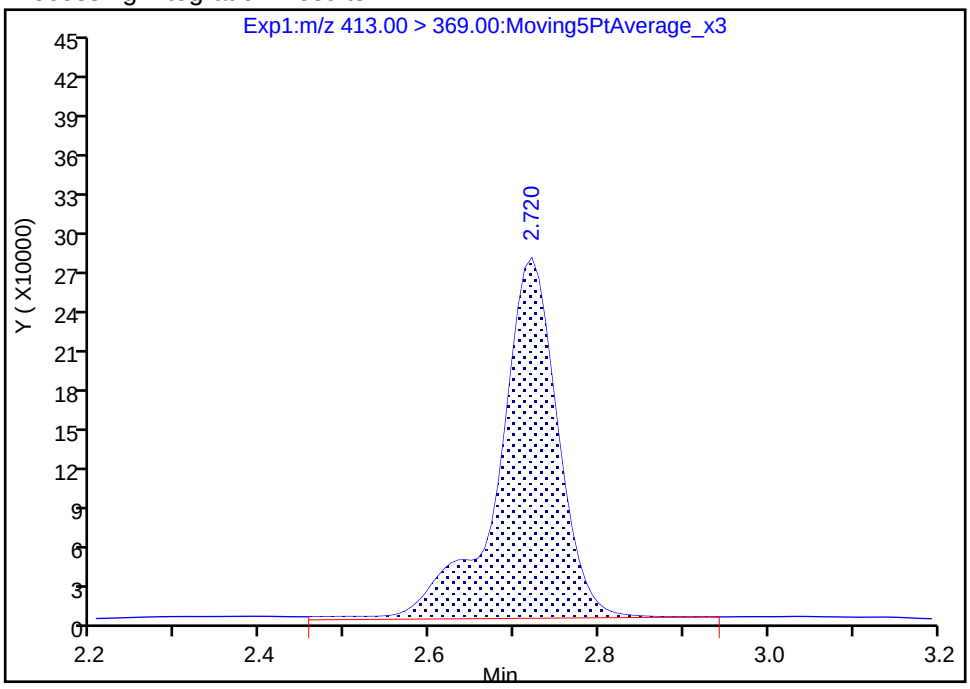
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_009.d				
Injection Date:	24-Mar-2018 19:42:24	Instrument ID:	A8_N		
Lims ID:	320-36960-B-16-A	Lab Sample ID:	320-36960-16		
Client ID:	BNA05-SW1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

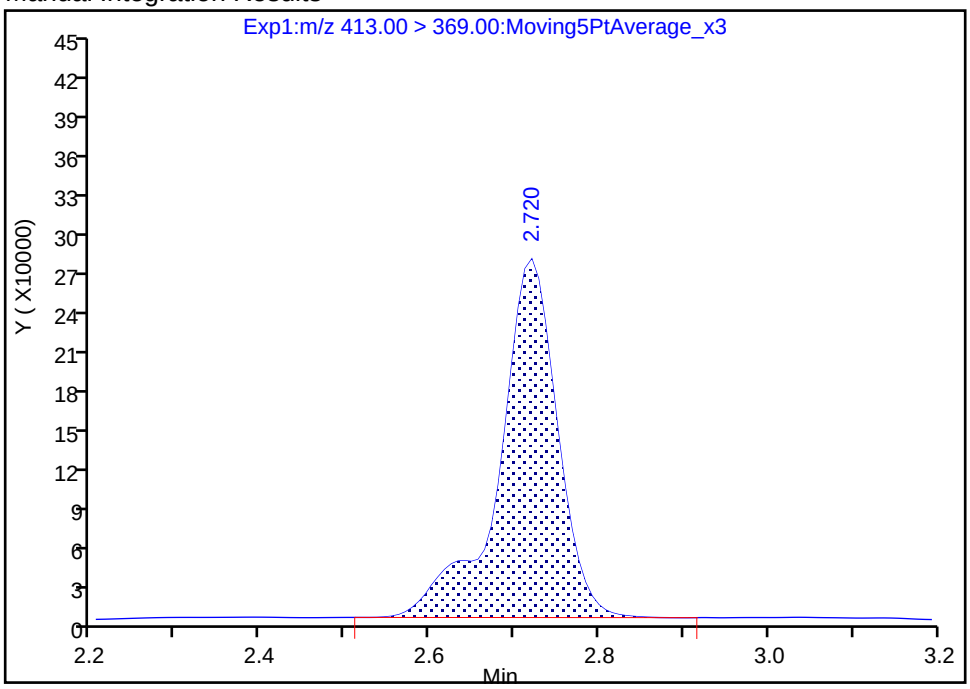
Processing Integration Results

RT: 2.72
Area: 1336948
Amount: 0.628967
Amount Units: ng/ml



Manual Integration Results

RT: 2.72
Area: 1299275
Amount: 0.611244
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:46:39

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

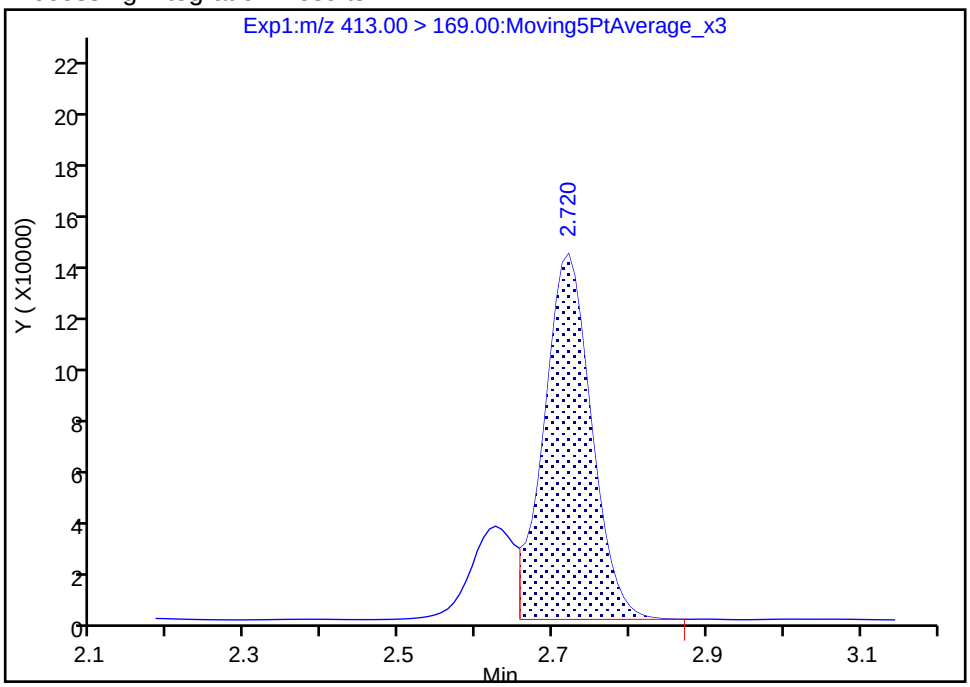
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_009.d				
Injection Date:	24-Mar-2018 19:42:24	Instrument ID:	A8_N		
Lims ID:	320-36960-B-16-A	Lab Sample ID:	320-36960-16		
Client ID:	BNA05-SW1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

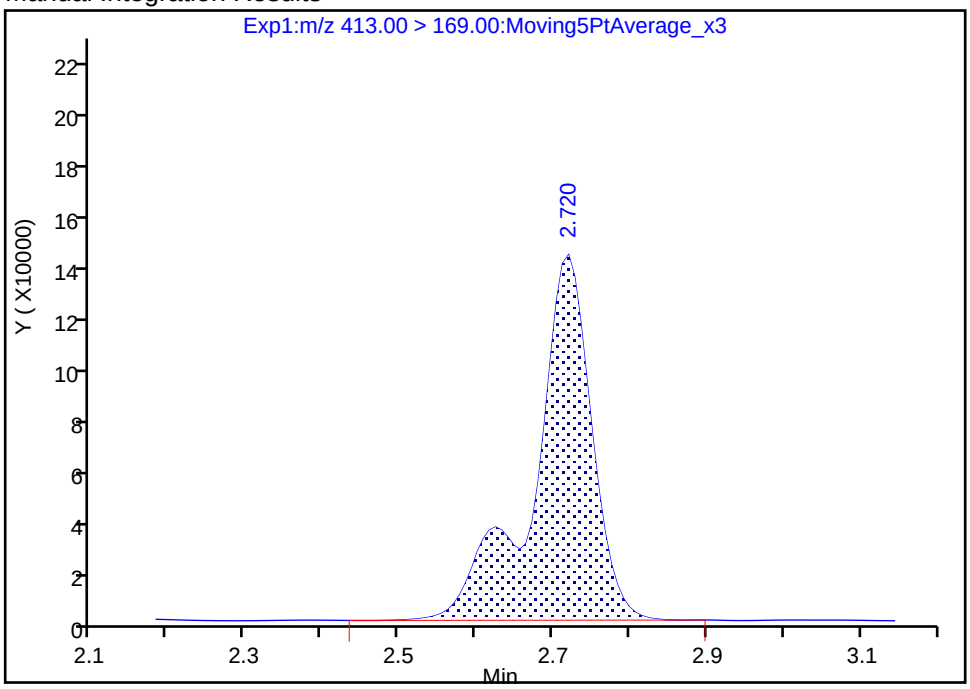
Processing Integration Results

RT: 2.72
Area: 601042
Amount: 0.628967
Amount Units: ng/ml



Manual Integration Results

RT: 2.72
Area: 742337
Amount: 0.611244
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:46:42

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

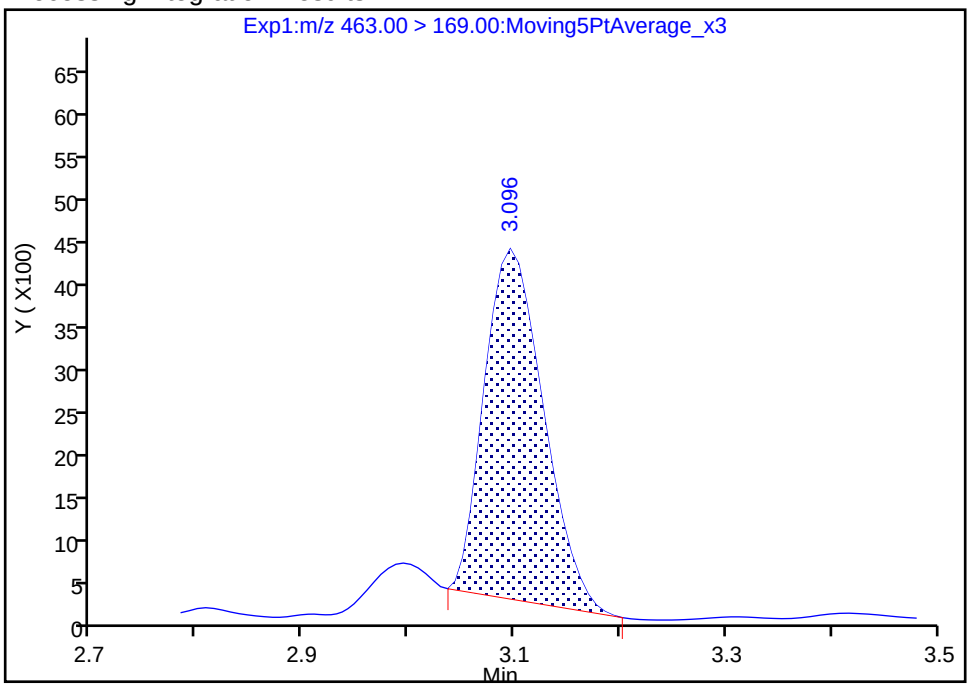
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_009.d				
Injection Date:	24-Mar-2018 19:42:24	Instrument ID:	A8_N		
Lims ID:	320-36960-B-16-A	Lab Sample ID:	320-36960-16		
Client ID:	BNA05-SW1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 2

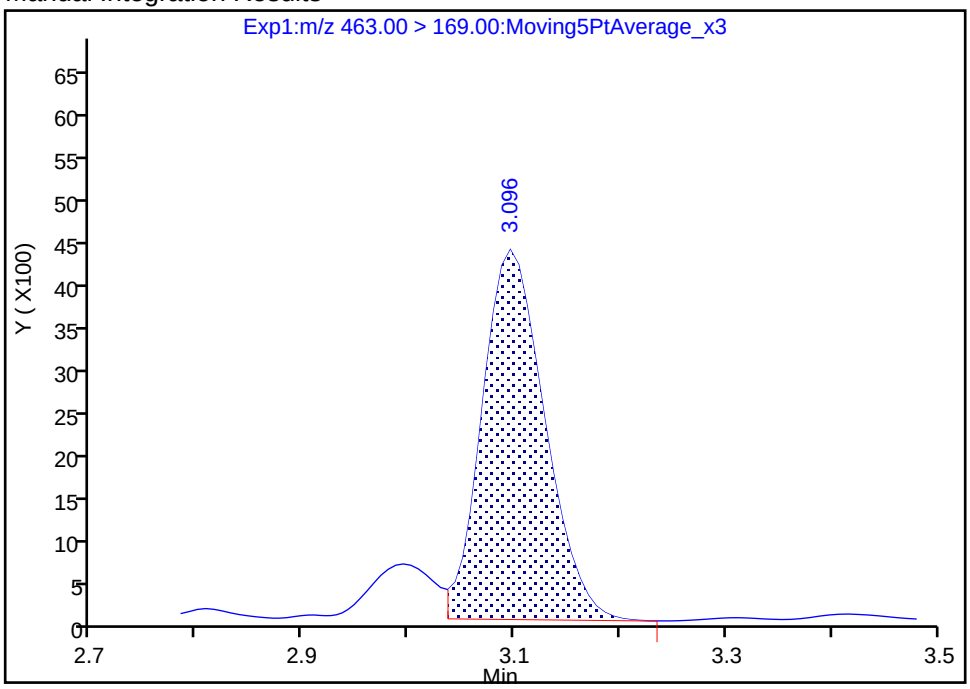
Processing Integration Results

RT: 3.10
Area: 15926
Amount: 0.036615
Amount Units: ng/ml



Manual Integration Results

RT: 3.10
Area: 17759
Amount: 0.036615
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:46:54

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA05-ER-SD-01 | Lab Sample ID: 320-36960-17

Matrix: Water | Lab File ID: 2018.03.19LLAX_041.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/08/2018 12:05

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 245.7(mL) | Date Analyzed: 03/19/2018 19:57

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.62
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	1.5	0.55
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.53
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	1.0	0.47
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	U M	2.0	1.0	0.39
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.1	U	4.1	3.1	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	93		50-150
STL01892	13C4-PFHpA	91		50-150
STL00990	13C4 PFOA	94		50-150
STL00995	13C5 PFNA	92		50-150
STL00994	18O2 PFHxS	94		50-150
STL00991	13C4 PFOS	92		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_041.d
Lims ID: 320-36960-A-17-A
Client ID: BNA05-ER-SD-01
Sample Type: Client
Inject. Date: 19-Mar-2018 19:57:24 ALS Bottle#: 27 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-17-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:45:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.740	-0.005	0.647	83490	2.17		93.4	410	
D 9 13C4-PFHpA										
367.00 > 322.00	2.324	2.335	-0.011	0.866	3841869	2.27		91.0	134174	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.337	2.348	-0.011	1.000	22064	0.009385			44.3	M
399.00 > 99.00	2.337	2.348	-0.011	1.000	6841		3.23(1.50-4.49)		15.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.337	2.348	-0.011	0.871	4985068	2.21		93.5	125890	
D 14 13C4 PFOA										
417.00 > 372.00	2.683	2.706	-0.023	1.000	3814550	2.34		93.5	132775	
* 62 13C2-PFOA										
415.00 > 370.00	2.683	2.706	-0.023		4324208	2.50			105215	
D 18 13C4 PFOS										
503.00 > 80.00	3.059	3.083	-0.024	1.140	3476638	2.21		92.3	74745	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.059	3.083	-0.024	1.000	31106	0.0198			89.7	
499.00 > 99.00	3.059	3.083	-0.024	1.000	8255		3.77(2.31-6.93)		46.5	
D 19 13C5 PFNA										
468.00 > 423.00	3.059	3.083	-0.024	1.140	3015577	2.31		92.4	76612	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 22-Mar-2018 10:49:31 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_041.d

Injection Date: 19-Mar-2018 19:57:24 Instrument ID: A8_N

Lims ID: 320-36960-A-17-A Lab Sample ID: 320-36960-17

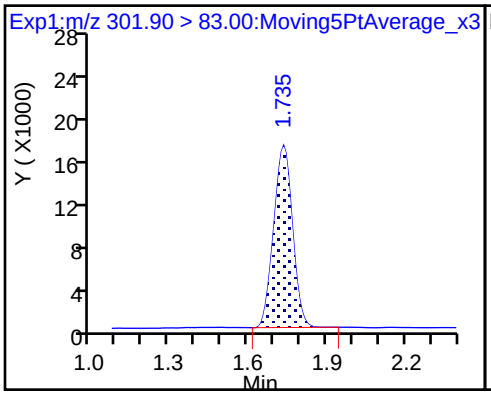
Client ID: BNA05-ER-SD-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 6

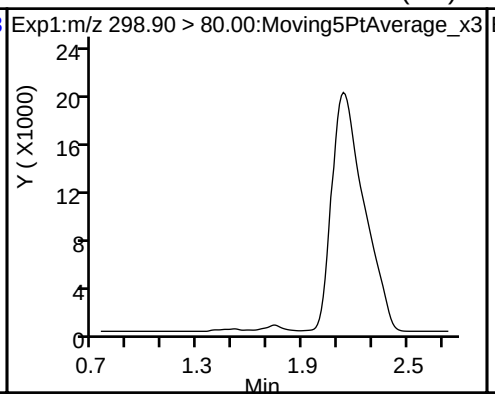
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

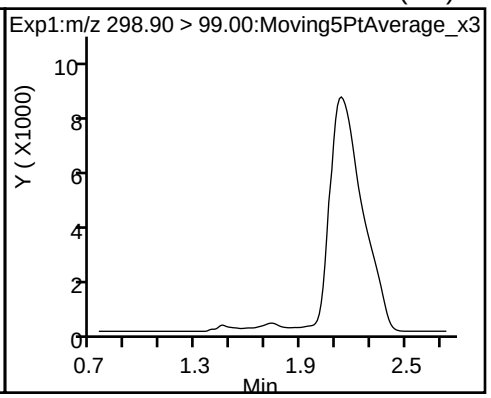
D 47 13C3-PFBS



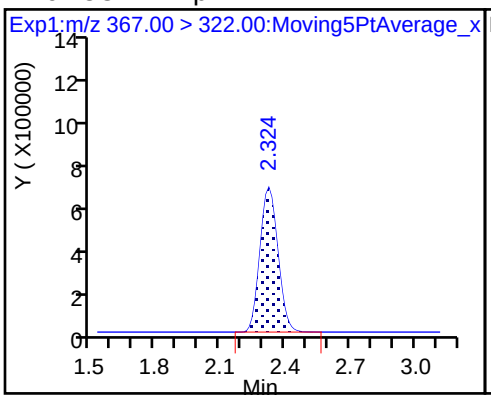
5 Perfluorobutanesulfonic acid (ND)



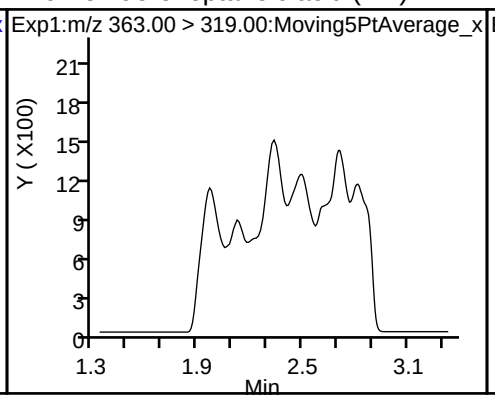
5 Perfluorobutanesulfonic acid (ND)



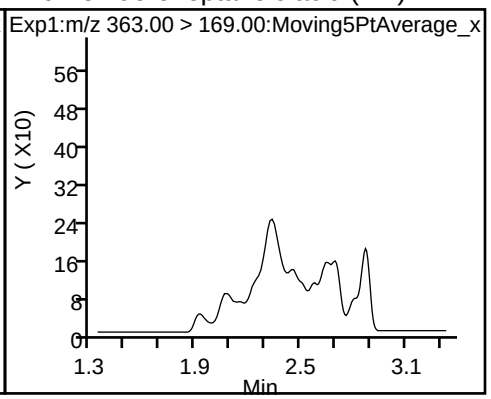
D 9 13C4-PFHpA



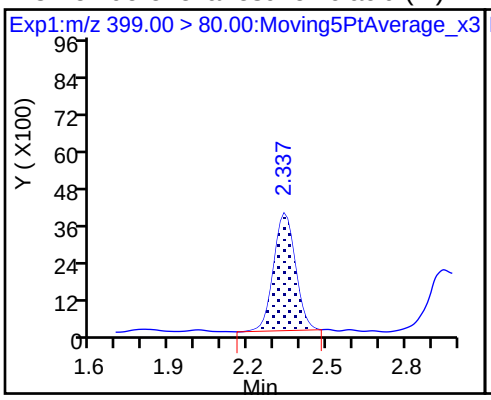
10 Perfluoroheptanoic acid (ND)



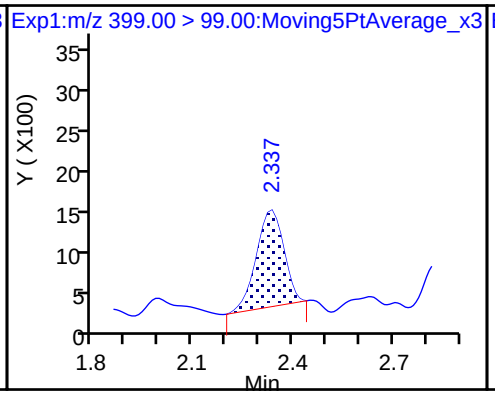
10 Perfluoroheptanoic acid (ND)



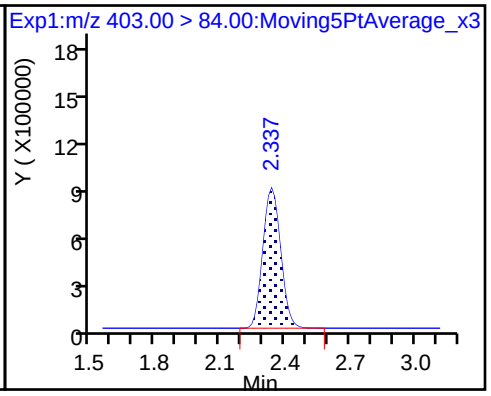
8 Perfluorohexanesulfonic acid (M)



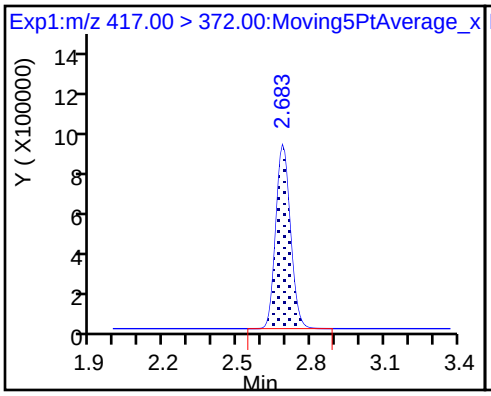
8 Perfluorohexanesulfonic acid



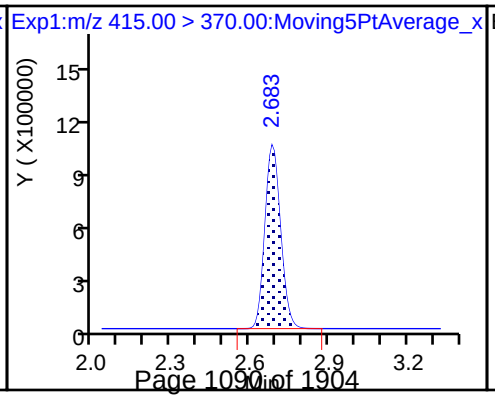
D 11 18O2 PFHxS



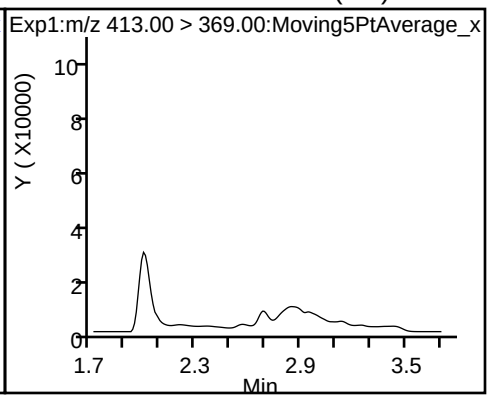
D 14 13C4 PFOA



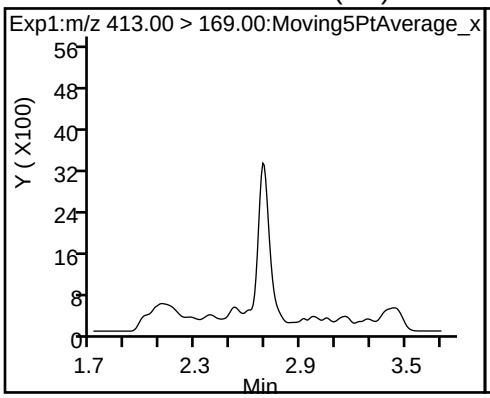
* 62 13C2-PFOA



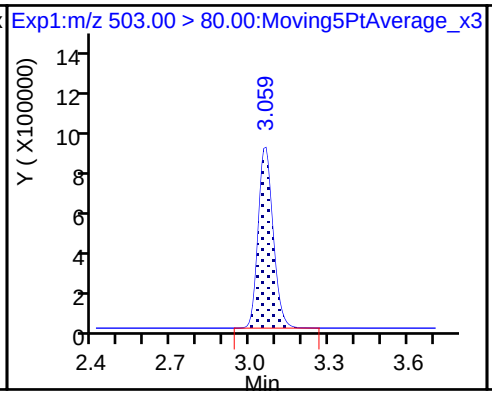
15 Perfluorooctanoic acid (ND)



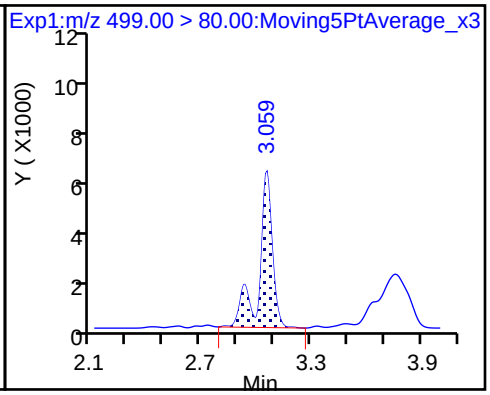
15 Perfluorooctanoic acid (ND)



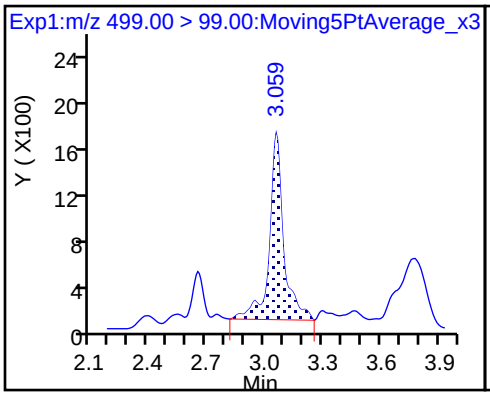
D 18 13C4 PFOS



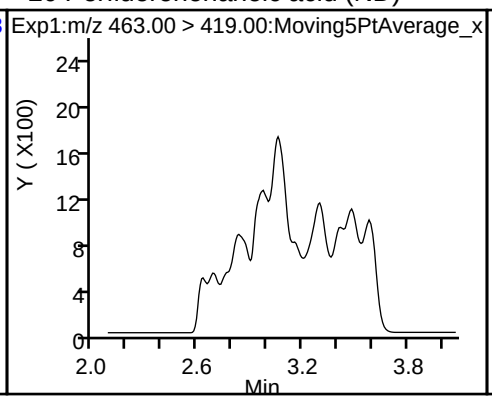
17 Perfluorooctane sulfonic acid



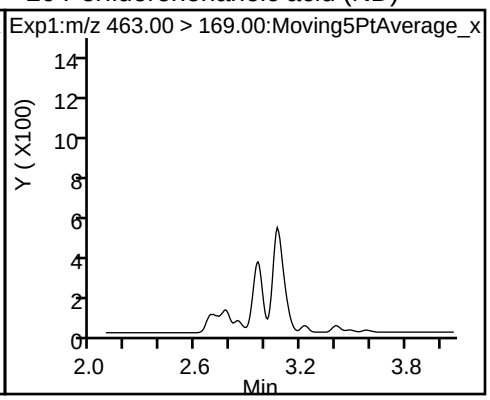
17 Perfluorooctane sulfonic acid



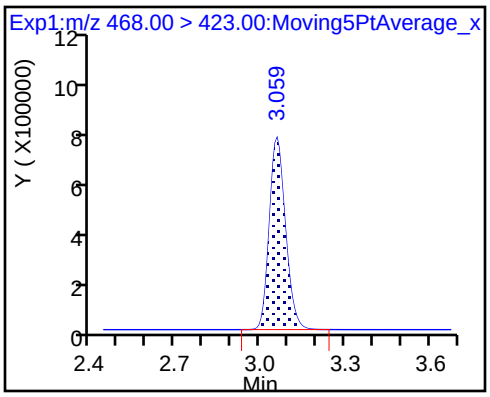
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)



D 19 13C5 PFNA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

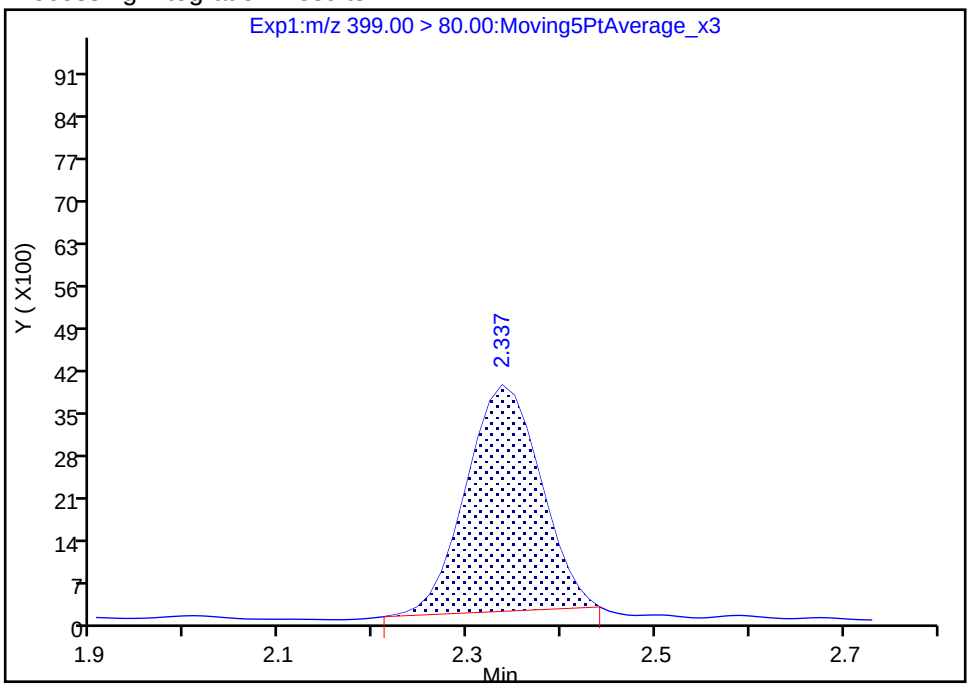
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_041.d				
Injection Date:	19-Mar-2018 19:57:24	Instrument ID:	A8_N		
Lims ID:	320-36960-A-17-A	Lab Sample ID:	320-36960-17		
Client ID:	BNA05-ER-SD-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

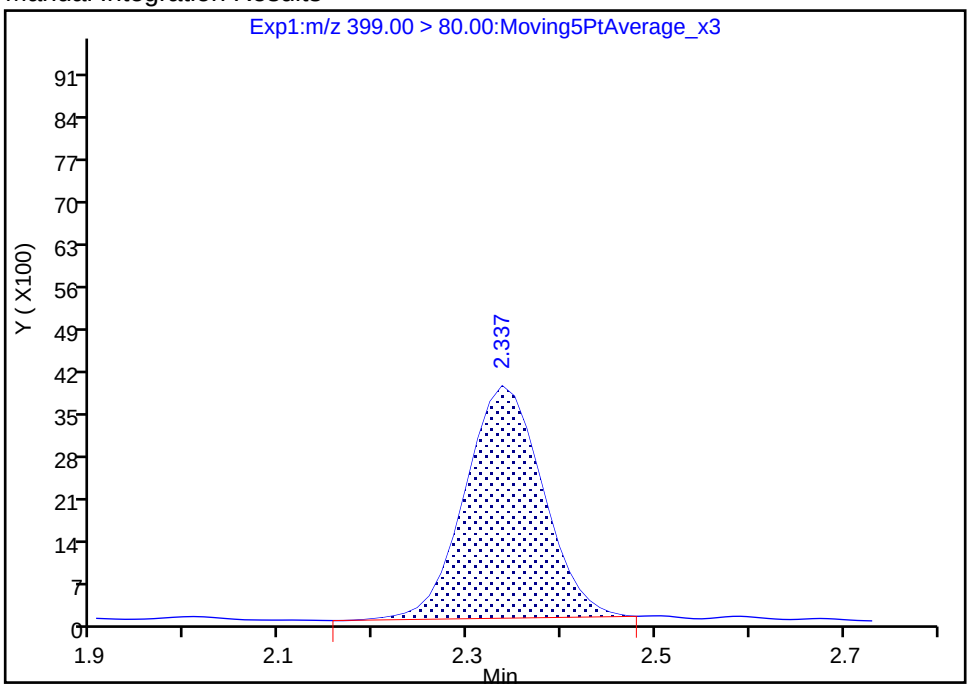
Processing Integration Results

RT: 2.34
Area: 20622
Amount: 0.008771
Amount Units: ng/ml



Manual Integration Results

RT: 2.34
Area: 22064
Amount: 0.009385
Amount Units: ng/ml



Reviewer: westendorfc, 22-Mar-2018 10:45:36

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA05-SD1-01 | Lab Sample ID: 320-36960-18

Matrix: Solid | Lab File ID: 2018.04.07LLA_024.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/08/2018 12:10

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.08(g) | Date Analyzed: 04/07/2018 11:37

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 24.6 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.26	U M	0.39	0.26	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.15	J	0.39	0.26	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.26	U M Q	0.39	0.26	0.11
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.24	U	0.52	0.24	0.077
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.50	M	0.39	0.26	0.081
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.2	M	1.3	0.65	0.31

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	68		50-150
STL01892	13C4-PFHpA	79		50-150
STL00990	13C4 PFOA	85		50-150
STL00995	13C5 PFNA	94		50-150
STL00994	18O2 PFHxS	78		50-150
STL00991	13C4 PFOS	84		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_024.d
Lims ID: 320-36960-A-18-A
Client ID: BNA05-SD1-01
Sample Type: Client
Inject. Date: 07-Apr-2018 11:37:45 ALS Bottle#: 17 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-18-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:58 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:26:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.721	1.730	-0.009	1.000	67452	1.59		68.5	193	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.730	1.740	-0.010	1.005	23320	0.0102			9.3	
298.90 > 99.00	1.730	1.740	-0.010	1.005	8747		2.67(1.25-3.74)		12.0	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.308	0.0	1.000	3881274	1.98		79.2	78983	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.282	2.310	-0.028	0.989	21326	0.0126			5.6	
363.00 > 169.00	2.282	2.310	-0.028	0.989	12088		1.76(1.13-3.40)		33.0	M
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.321	0.0	1.000	4531362	1.85		78.4	72176	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.321	2.323	-0.002	1.000	406561	0.1900			147	M
399.00 > 99.00	2.321	2.323	-0.002	1.000	123996		3.28(1.50-4.49)		172	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.660	-0.007	1.000	4093485	2.12		84.9	91913	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.661	-0.008		5141886	2.50			131555	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.669	-0.009	1.003	114833	0.0591			23.2	
413.00 > 169.00	2.653	2.669	-0.016	1.000	54571		2.10(0.84-2.52)		109	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.023	-0.001	1.000	3390768	2.00		83.5	4447	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.030	-0.008	1.000	3821682	2.34		93.7	102835	
20 Perfluorononanoic acid										RM
463.00 > 419.00	3.022	3.032	-0.010	1.000	20554	0.0131			9.9	RM
463.00 > 169.00	3.022	3.032	-0.010	1.000	3300		6.23(1.90-5.69)		35.8	M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.022	3.032	-0.010	1.000	2604033	1.61			1610	M
499.00 > 99.00	3.022	3.032	-0.010	1.000	608621		4.28(2.31-6.93)		2825	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

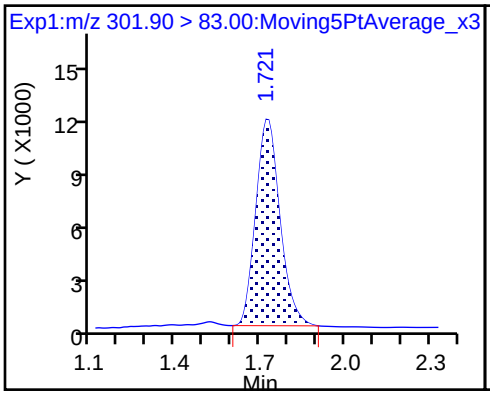
Report Date: 09-Apr-2018 08:27:08 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

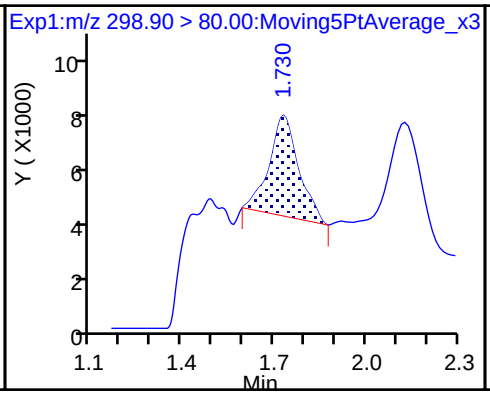
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_024.d

Injection Date:	07-Apr-2018 11:37:45	Instrument ID:	A8_N
Lims ID:	320-36960-A-18-A	Lab Sample ID:	320-36960-18
Client ID:	BNA05-SD1-01		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17 Worklist Smp#: 21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL

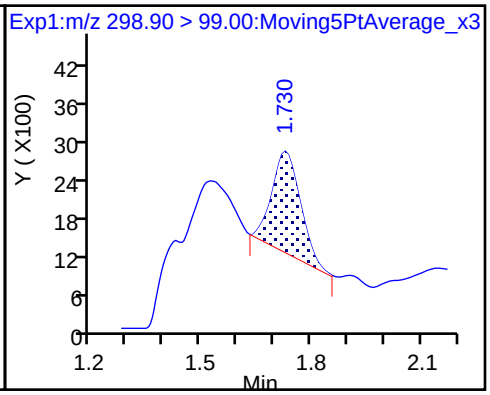
D 47 13C3-PFBS



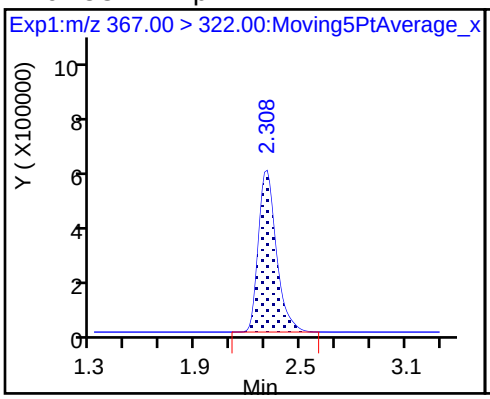
5 Perfluorobutanesulfonic acid



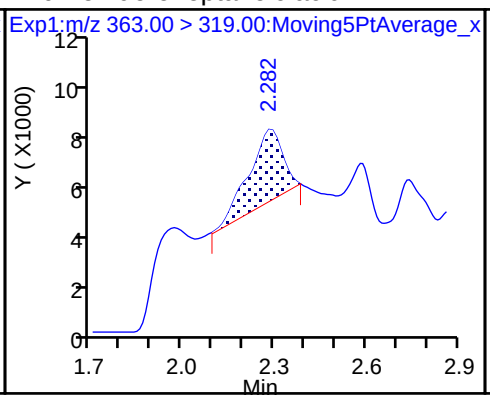
5 Perfluorobutanesulfonic acid



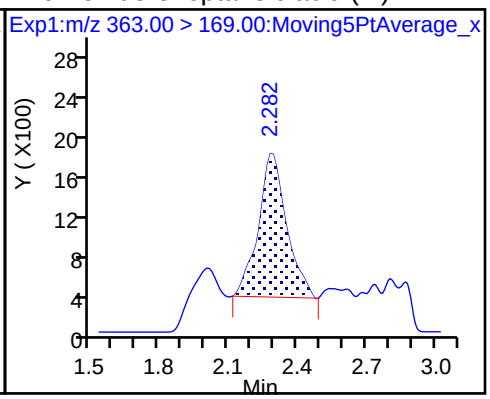
D 9 13C4-PFHpA



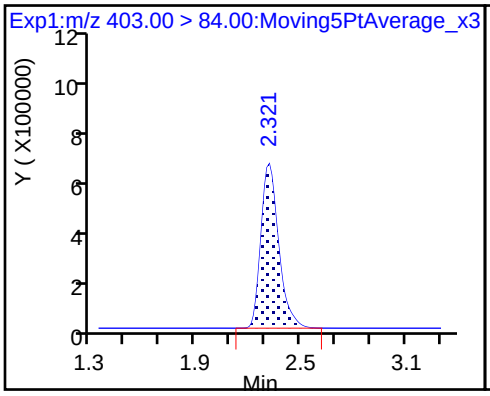
10 Perfluoroheptanoic acid



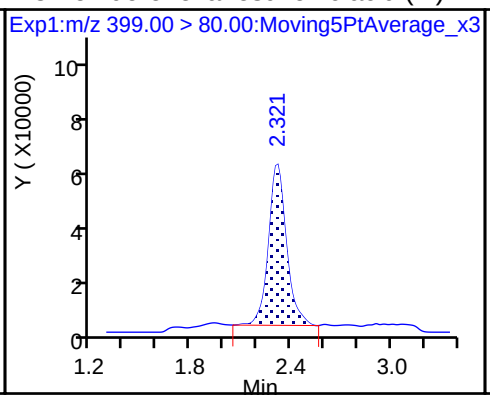
10 Perfluoroheptanoic acid (M)



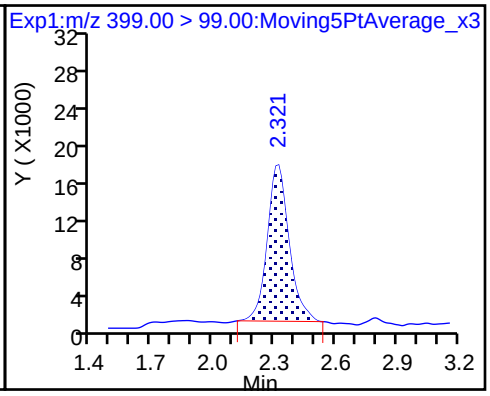
D 11 18O2 PFHxS



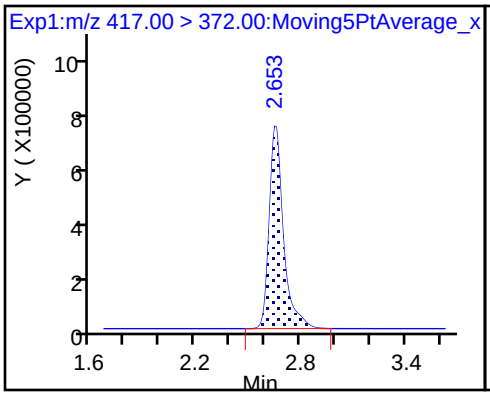
8 Perfluorohexanesulfonic acid (M)



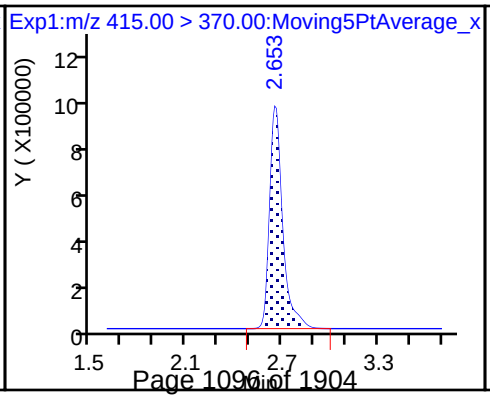
8 Perfluorohexanesulfonic acid



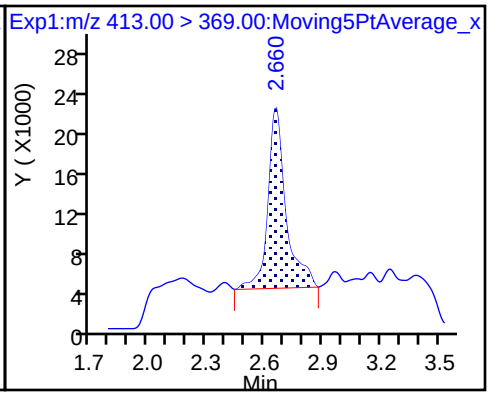
D 14 13C4 PFOA



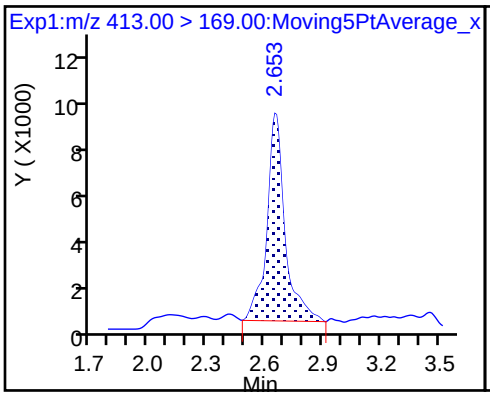
* 62 13C2-PFOA



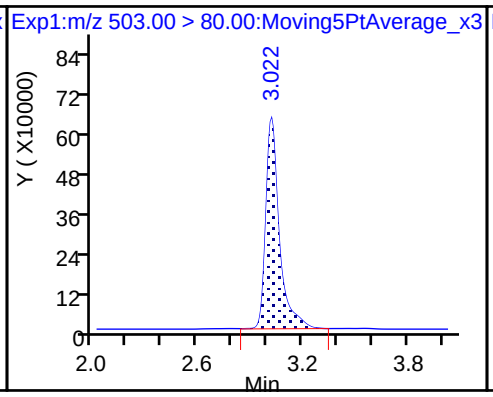
15 Perfluorooctanoic acid



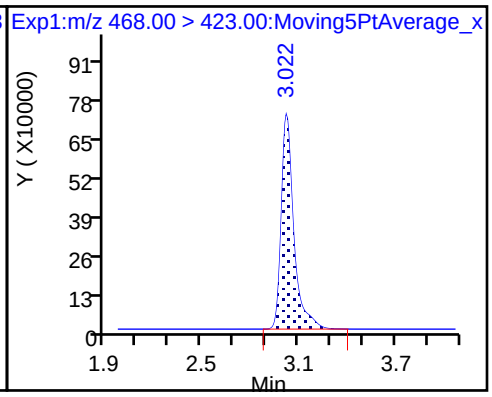
15 Perfluorooctanoic acid



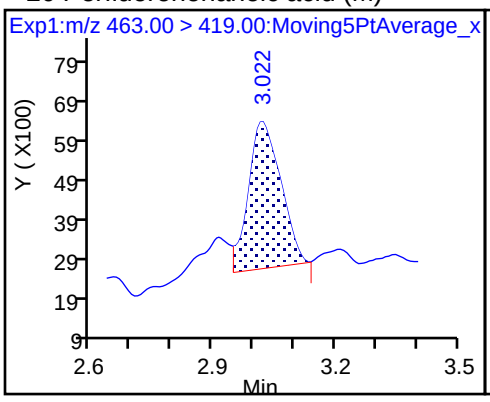
D 18 13C4 PFOS



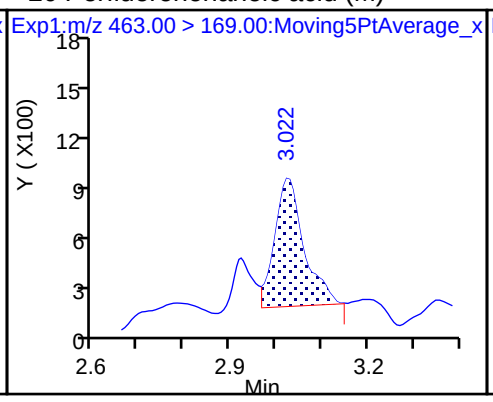
D 19 13C5 PFNA



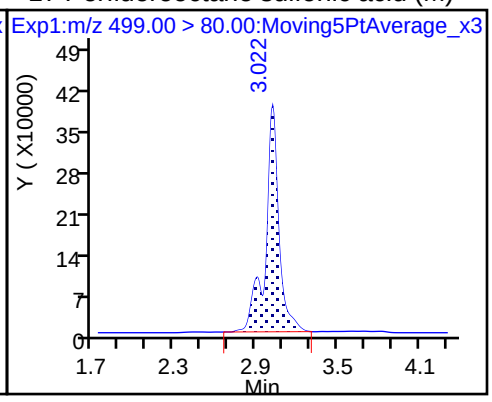
20 Perfluorononanoic acid (M)



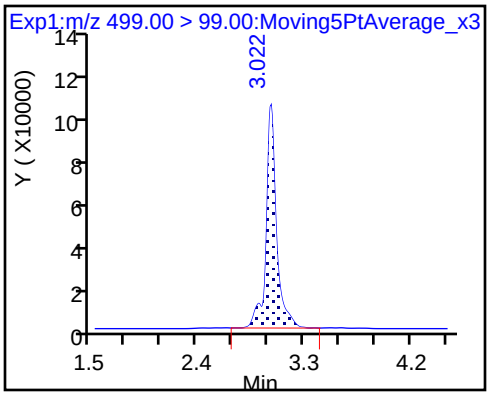
20 Perfluorononanoic acid (M)



17 Perfluorooctane sulfonic acid (M)



17 Perfluorooctane sulfonic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

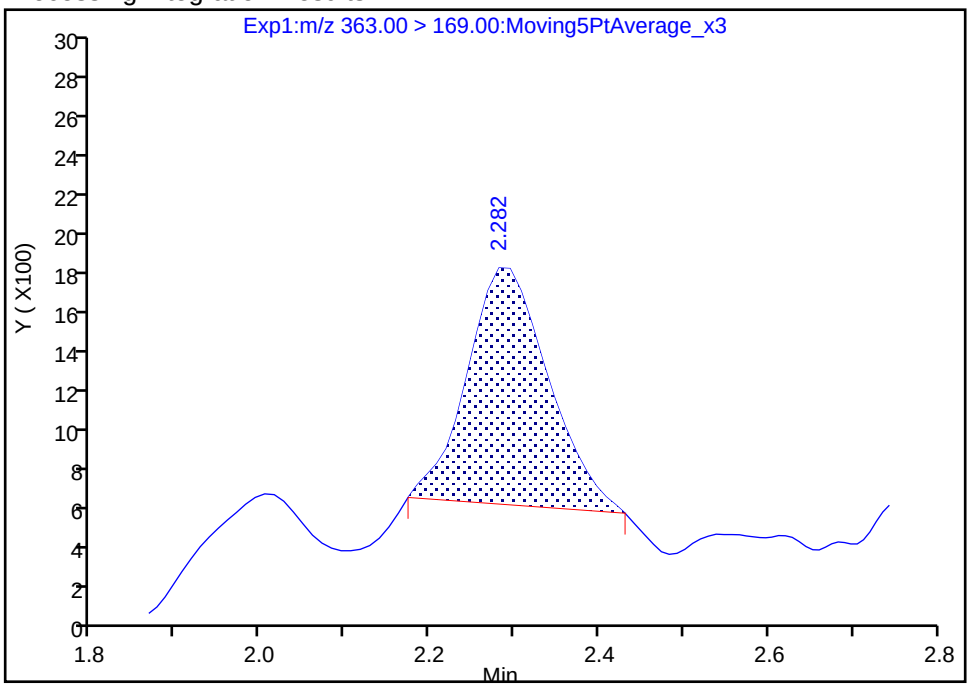
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_024.d				
Injection Date:	07-Apr-2018 11:37:45	Instrument ID:	A8_N		
Lims ID:	320-36960-A-18-A	Lab Sample ID:	320-36960-18		
Client ID:	BNA05-SD1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 2

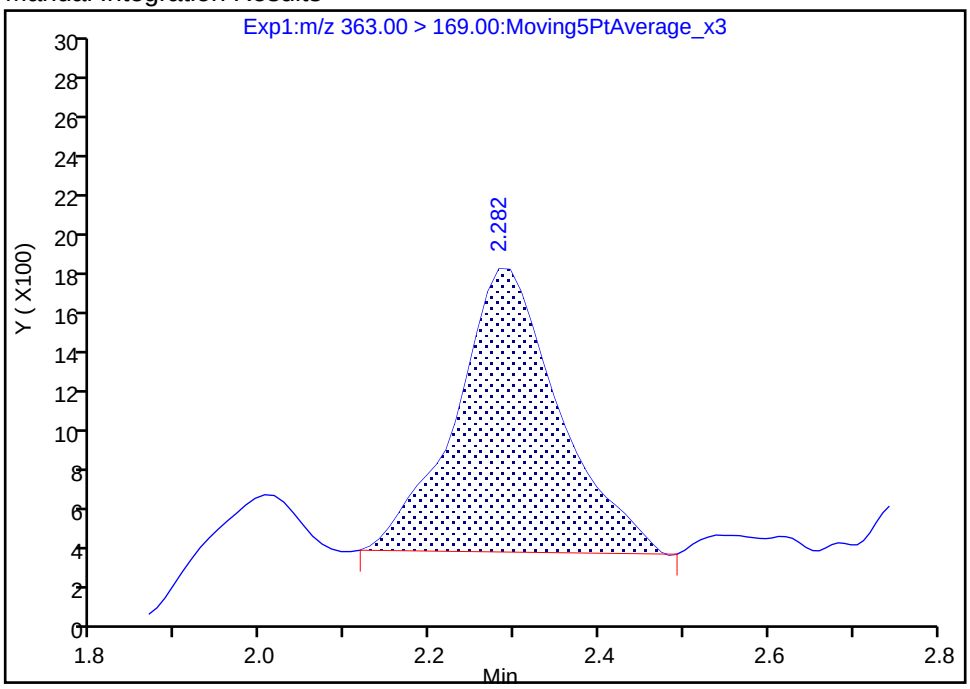
Processing Integration Results

RT: 2.28
Area: 7939
Amount: 0.012643
Amount Units: ng/ml



Manual Integration Results

RT: 2.28
Area: 12088
Amount: 0.012643
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:25:44

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

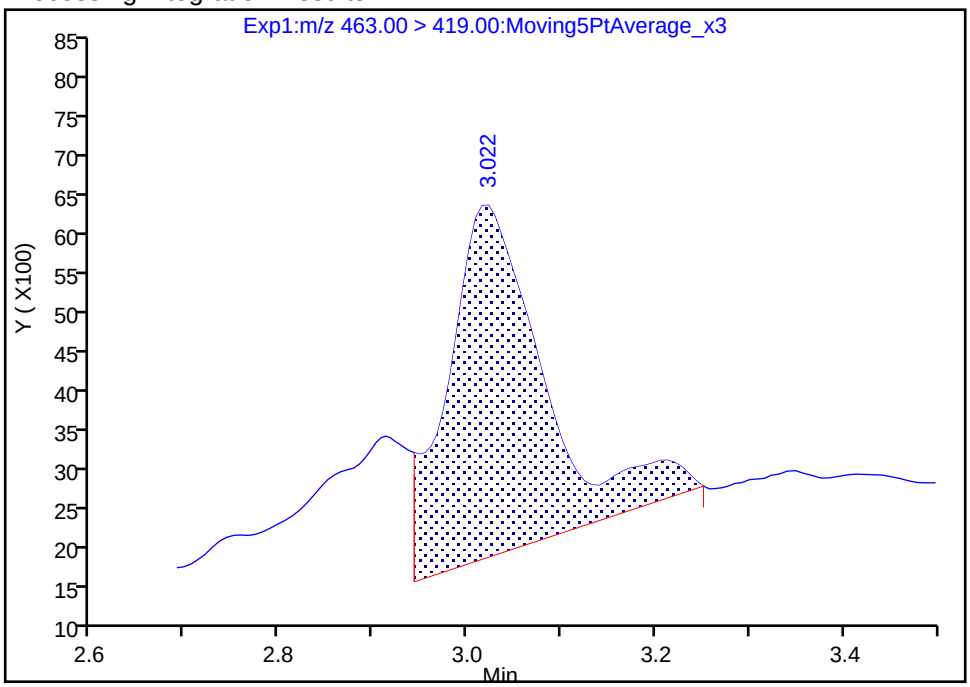
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_024.d				
Injection Date:	07-Apr-2018 11:37:45	Instrument ID:	A8_N		
Lims ID:	320-36960-A-18-A	Lab Sample ID:	320-36960-18		
Client ID:	BNA05-SD1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

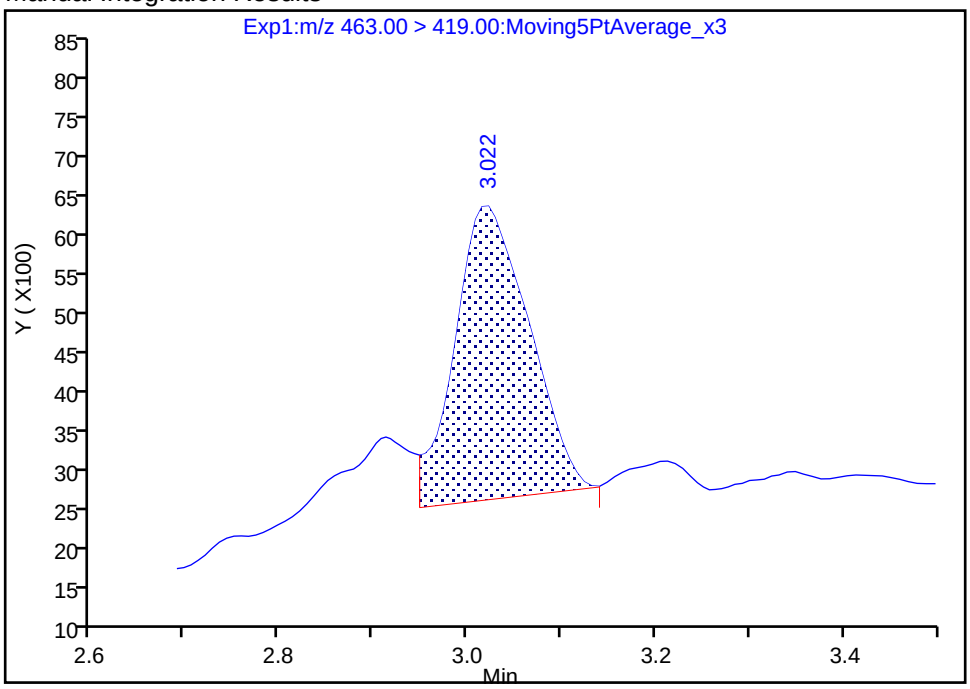
Processing Integration Results

RT: 3.02
Area: 31798
Amount: 0.020215
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 20554
Amount: 0.013067
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:26:09

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

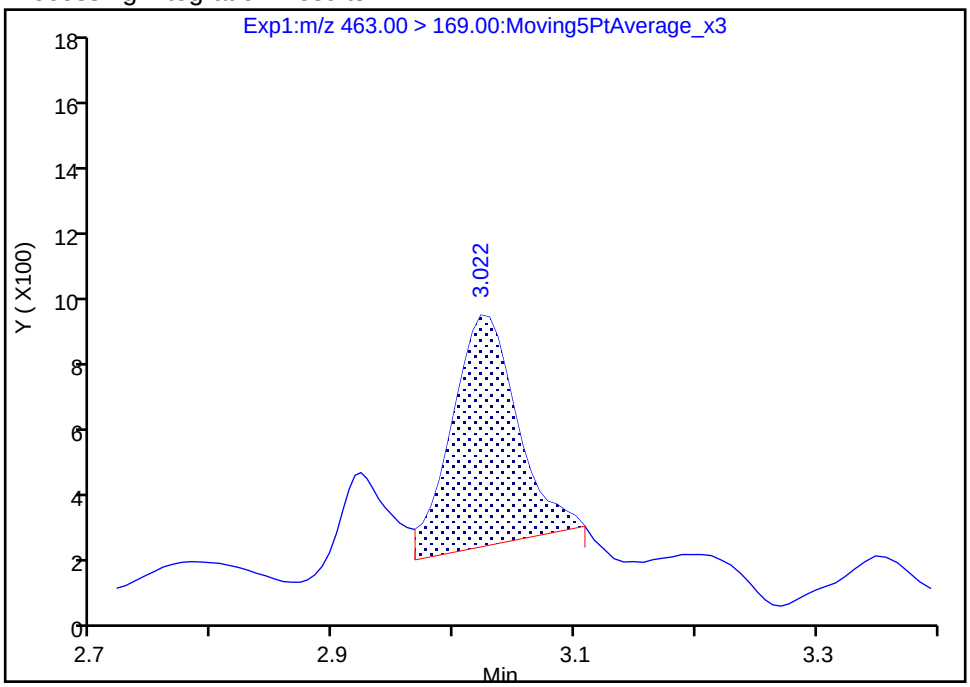
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_024.d				
Injection Date:	07-Apr-2018 11:37:45	Instrument ID:	A8_N		
Lims ID:	320-36960-A-18-A	Lab Sample ID:	320-36960-18		
Client ID:	BNA05-SD1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 2

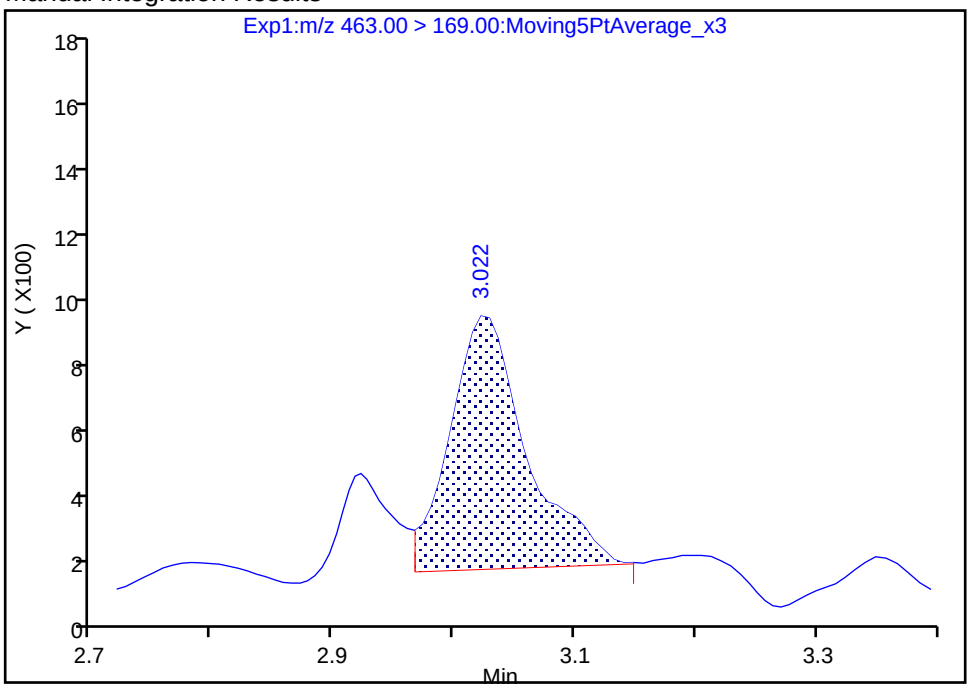
Processing Integration Results

RT: 3.02
Area: 2585
Amount: 0.020215
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 3300
Amount: 0.013067
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:26:16

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

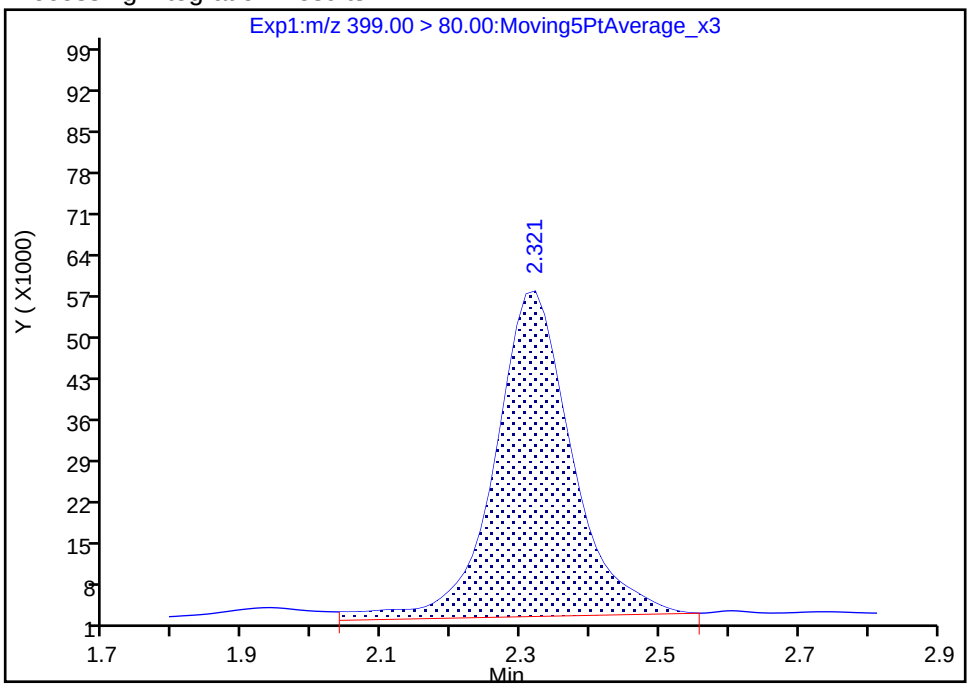
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_024.d				
Injection Date:	07-Apr-2018 11:37:45	Instrument ID:	A8_N		
Lims ID:	320-36960-A-18-A	Lab Sample ID:	320-36960-18		
Client ID:	BNA05-SD1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

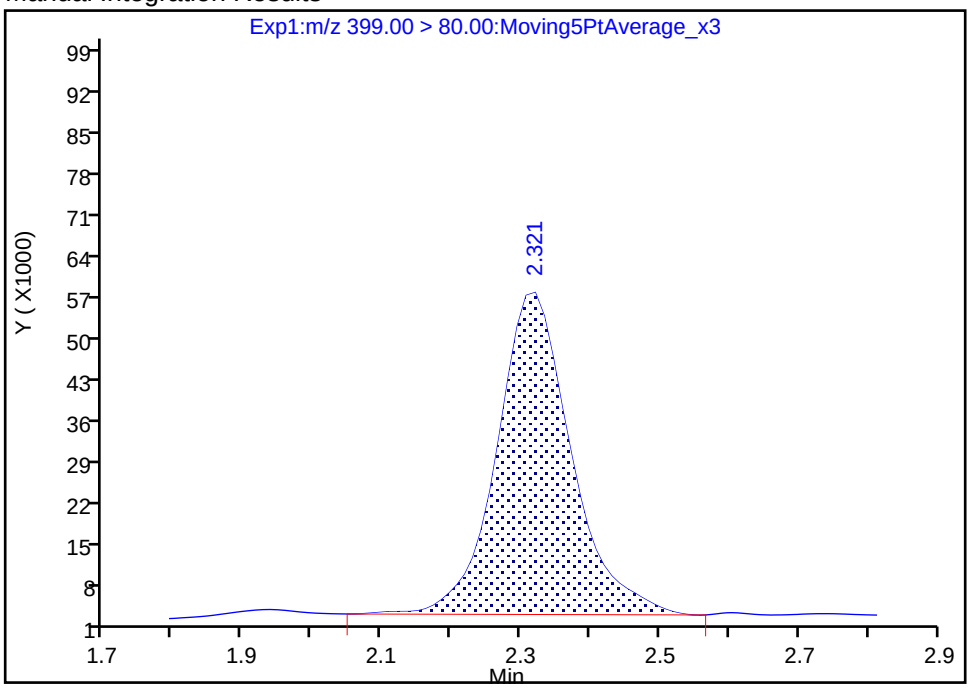
Processing Integration Results

RT: 2.32
Area: 429180
Amount: 0.200547
Amount Units: ng/ml



Manual Integration Results

RT: 2.32
Area: 406561
Amount: 0.189977
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:25:54

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

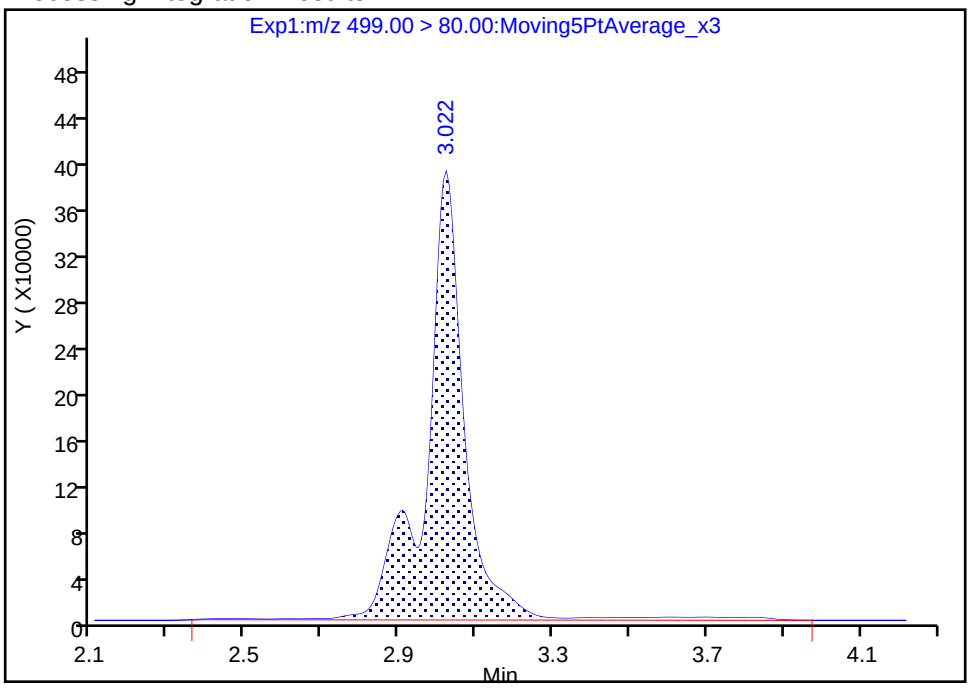
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_024.d				
Injection Date:	07-Apr-2018 11:37:45	Instrument ID:	A8_N		
Lims ID:	320-36960-A-18-A	Lab Sample ID:	320-36960-18		
Client ID:	BNA05-SD1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

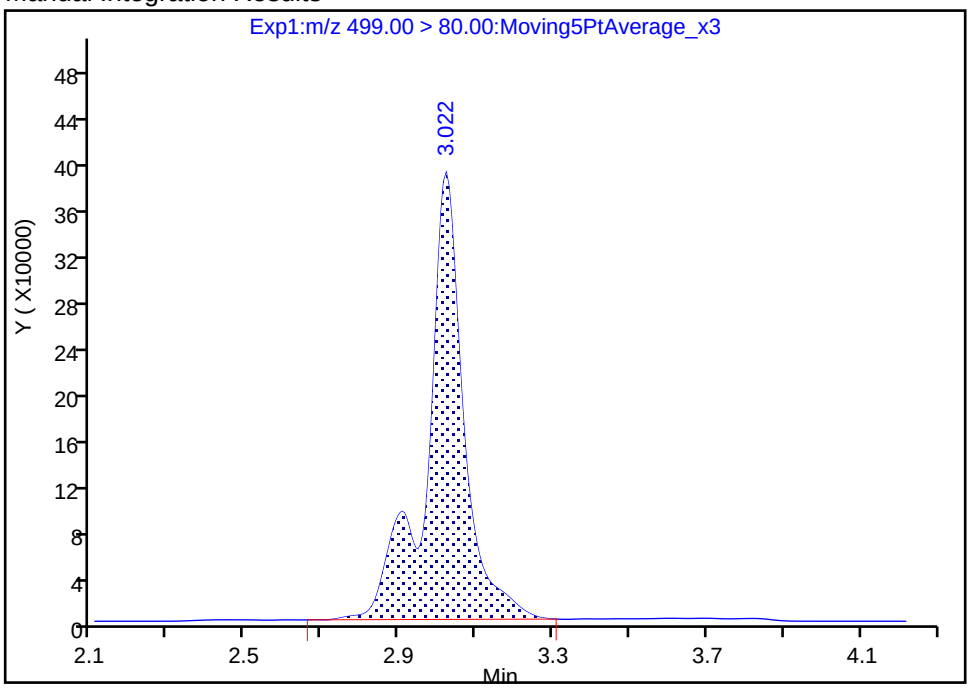
Processing Integration Results

RT: 3.02
Area: 2730786
Amount: 1.684528
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 2604033
Amount: 1.606338
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:26:01

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA-ER-GW-01 | Lab Sample ID: 320-36960-19

Matrix: Water | Lab File ID: 2018.03.19LLAX_042.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/08/2018 16:35

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 250.4(mL) | Date Analyzed: 03/19/2018 20:05

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U M Q	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	1.0	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	90		50-150
STL01892	13C4-PFHpA	90		50-150
STL00990	13C4 PFOA	91		50-150
STL00995	13C5 PFNA	93		50-150
STL00994	18O2 PFHxS	95		50-150
STL00991	13C4 PFOS	88		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_042.d
Lims ID: 320-36960-A-19-A
Client ID: BNA-ER-GW-01
Sample Type: Client
Inject. Date: 19-Mar-2018 20:05:15 ALS Bottle#: 28 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-19-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:46:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.740	-0.005	0.644	82461	2.09		90.0	523	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.335	-0.007	0.864	3919904	2.26		90.5	86362	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.348	-0.007	1.000	18659	0.007619			39.8	
399.00 > 99.00	2.341	2.348	-0.007	1.000	4354		4.29(1.50-4.49)		10.5	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.869	5192551	2.25		95.0	102963	
D 14 13C4 PFOA										
417.00 > 372.00	2.695	2.706	-0.011	1.000	3815008	2.28		91.2	103915	
* 62 13C2-PFOA										
415.00 > 370.00	2.695	2.706	-0.011		4435162	2.50			99364	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.083	-0.018	1.137	3398213	2.10		87.9	54530	
D 19 13C5 PFNA										
468.00 > 423.00	3.072	3.083	-0.011	1.140	3118241	2.33		93.2	60551	

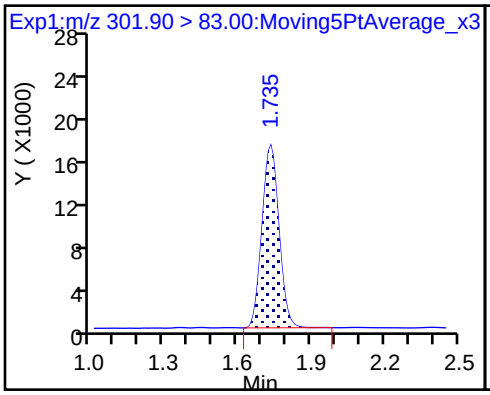
Report Date: 22-Mar-2018 10:49:32 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

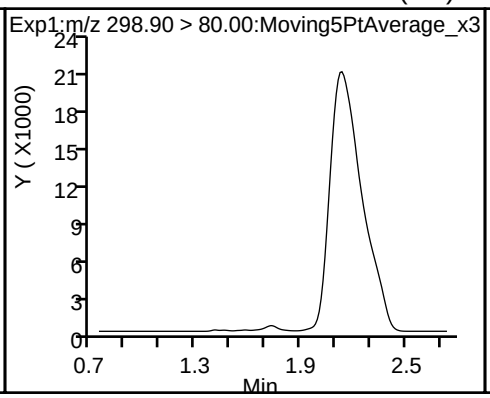
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_042.d

Injection Date:	19-Mar-2018 20:05:15	Instrument ID:	A8_N
Lims ID:	320-36960-A-19-A	Lab Sample ID:	320-36960-19
Client ID:	BNA-ER-GW-01		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28 Worklist Smp#: 7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL

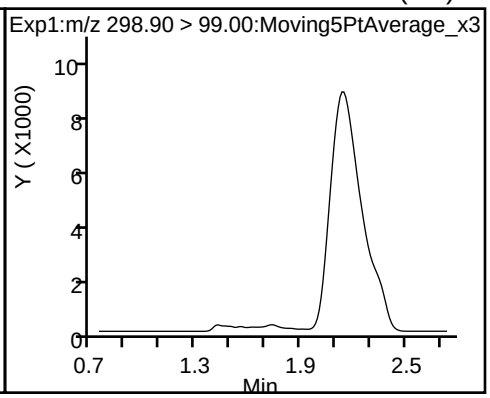
D 47 13C3-PFBS



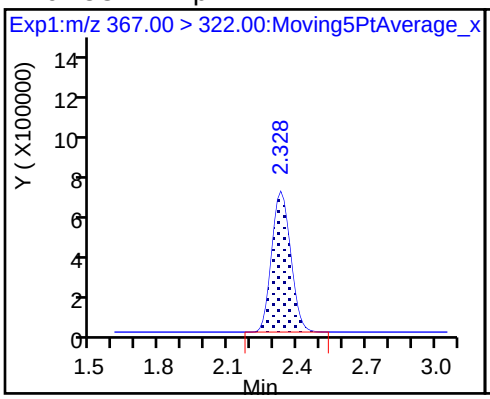
5 Perfluorobutanesulfonic acid (ND)



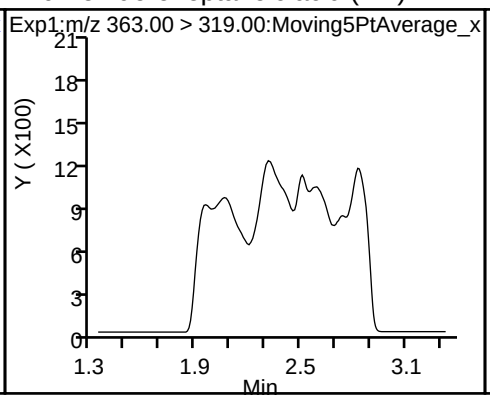
5 Perfluorobutanesulfonic acid (ND)



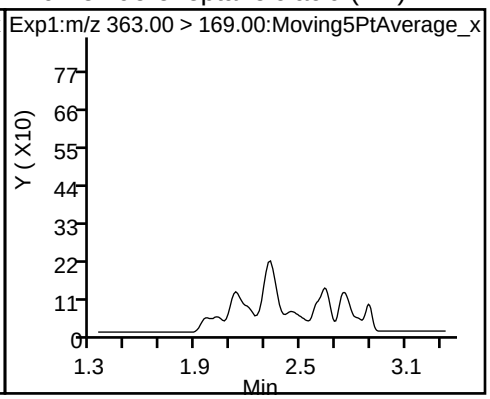
D 9 13C4-PFHpA



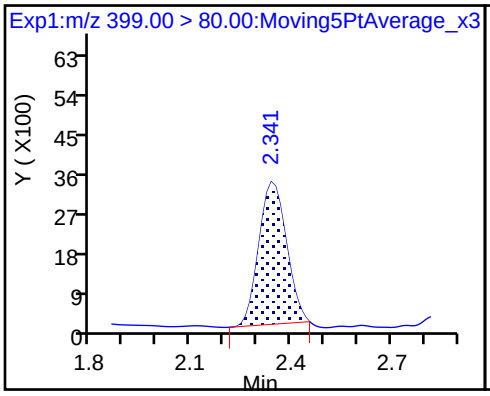
10 Perfluoroheptanoic acid (ND)



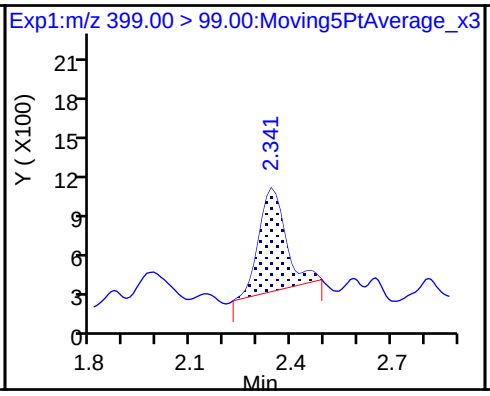
10 Perfluoroheptanoic acid (ND)



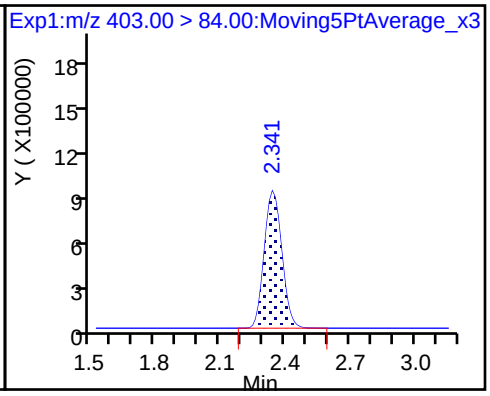
8 Perfluorohexanesulfonic acid



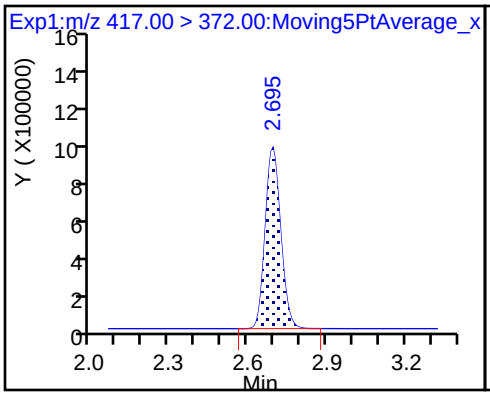
8 Perfluorohexanesulfonic acid



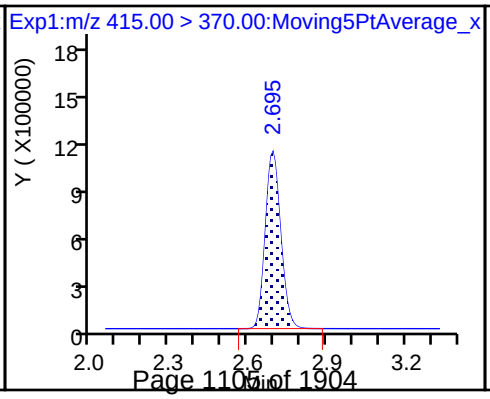
D 11 18O2 PFHxS



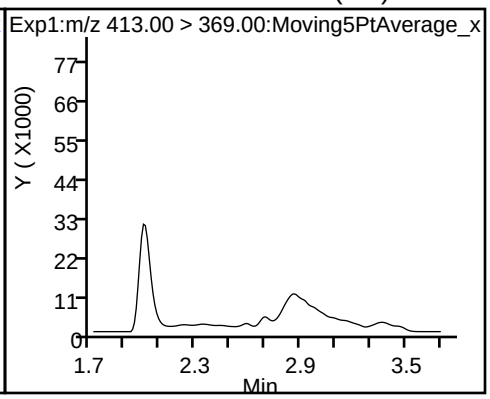
D 14 13C4 PFOA



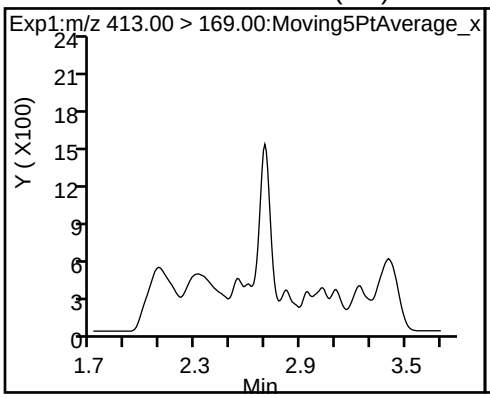
* 62 13C2-PFOA



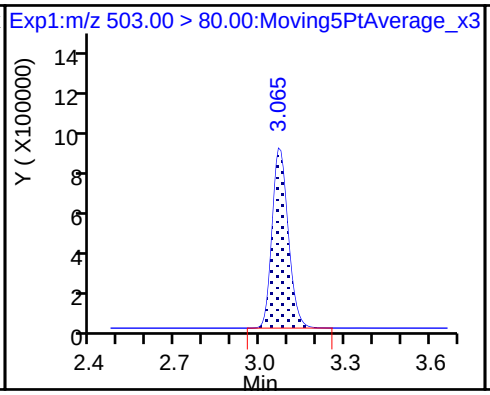
15 Perfluorooctanoic acid (ND)



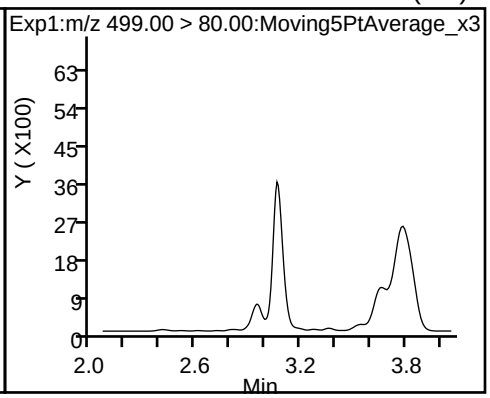
15 Perfluorooctanoic acid (ND)



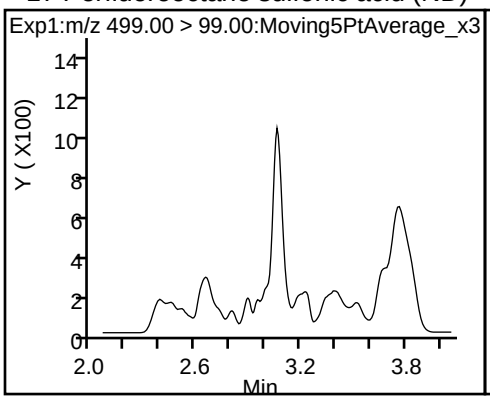
D 18 13C4 PFOS



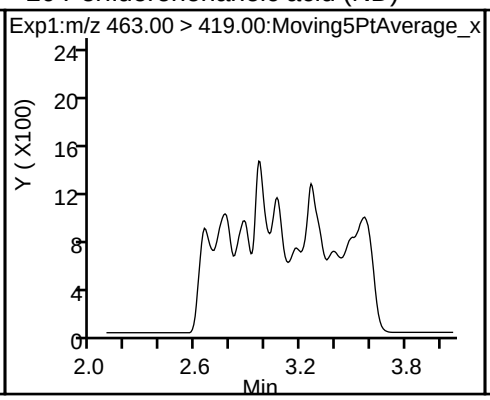
17 Perfluorooctane sulfonic acid (ND)



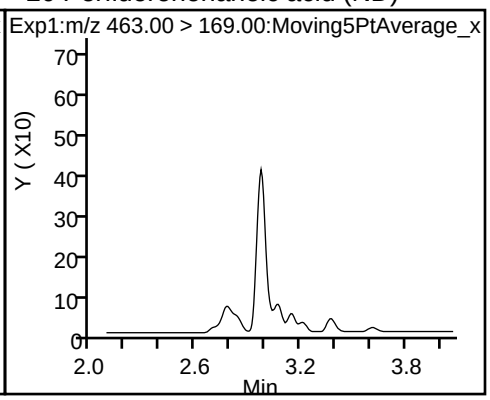
17 Perfluorooctane sulfonic acid (ND)



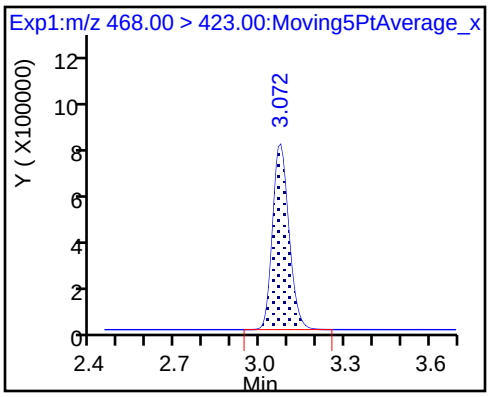
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)



D 19 13C5 PFNA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA-FB-02 | Lab Sample ID: 320-36960-20

Matrix: Water | Lab File ID: 2018.03.19LLAX_043.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/08/2018 16:45

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 241.7(mL) | Date Analyzed: 03/19/2018 20:13

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.6	U	2.1	1.6	0.63
335-67-1	Perfluorooctanoic acid (PFOA)	1.6	U Q	2.1	1.6	0.56
375-95-1	Perfluorononanoic acid (PFNA)	1.6	U	2.1	1.6	0.54
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.65	J	2.1	1.0	0.48
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.53	J	2.1	1.0	0.39
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.2	J M	4.1	3.1	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	89		50-150
STL01892	13C4-PFHpA	92		50-150
STL00990	13C4 PFOA	95		50-150
STL00995	13C5 PFNA	97		50-150
STL00994	18O2 PFHxS	95		50-150
STL00991	13C4 PFOS	93		50-150

Report Date: 22-Mar-2018 10:49:34 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_043.d
Lims ID: 320-36960-A-20-A
Client ID: BNA-FB-02
Sample Type: Client
Inject. Date: 19-Mar-2018 20:13:06 ALS Bottle#: 29 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-20-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:46:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.740	-0.013	0.642	78436	2.08		89.5	888	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.740	-0.004	1.005	40723	0.0156			16.2	
298.90 > 99.00	1.736	1.740	-0.004	1.005	16917		2.41(1.25-3.74)		13.3	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.335	-0.007	0.866	3824177	2.31		92.3	96470	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.335	-0.007	1.000	13240	0.008351			13.7	
363.00 > 169.00	2.328	2.335	-0.007	1.000	5793		2.29(1.13-3.40)		69.9	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.348	-0.007	1.000	29783	0.0128			33.0	
399.00 > 99.00	2.341	2.348	-0.007	1.000	9402		3.17(1.50-4.49)		13.8	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.871	4951052	2.24		94.7	80898	
D 14 13C4 PFOA										
417.00 > 372.00	2.689	2.706	-0.017	1.000	3795829	2.37		94.9	78070	
* 62 13C2-PFOA										
415.00 > 370.00	2.689	2.706	-0.017		4241396	2.50			86665	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.697	2.706	-0.009	1.003	21145	0.0125			7.7	
413.00 > 169.00	2.689	2.706	-0.017	1.000	19295		1.10(0.84-2.52)		59.9	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.083	-0.018	1.140	3427419	2.22		92.8	42101	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.065	3.083	-0.018	1.000	46790	0.0301			91.6	M
499.00 > 99.00	3.072	3.083	-0.011	1.002	9114		5.13(2.31-6.93)		38.0	M
D 19 13C5 PFNA										
468.00 > 423.00	3.065	3.083	-0.018	1.140	3114502	2.43		97.3	87639	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 22-Mar-2018 10:49:34 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_043.d

Injection Date: 19-Mar-2018 20:13:06 Instrument ID: A8_N

Lims ID: 320-36960-A-20-A Lab Sample ID: 320-36960-20

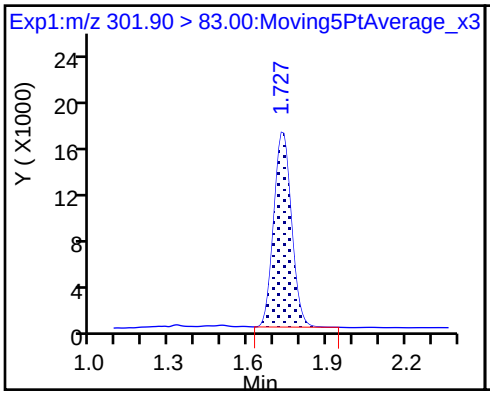
Client ID: BNA-FB-02

Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 8

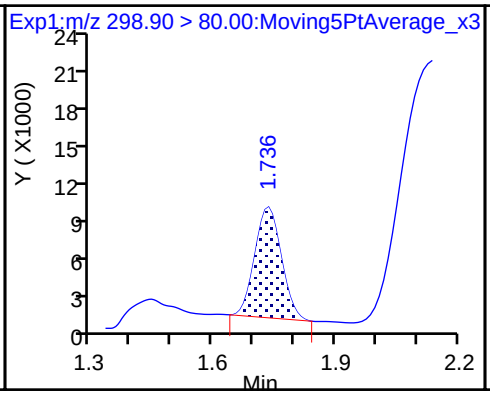
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

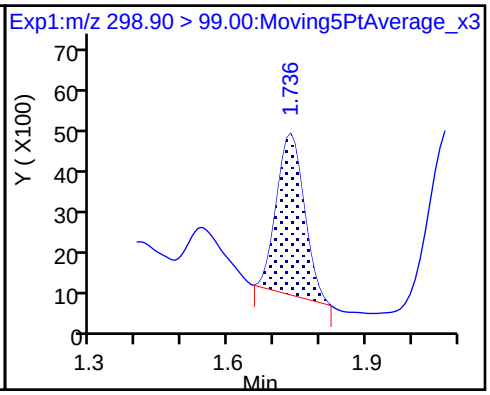
D 47 13C3-PFBS



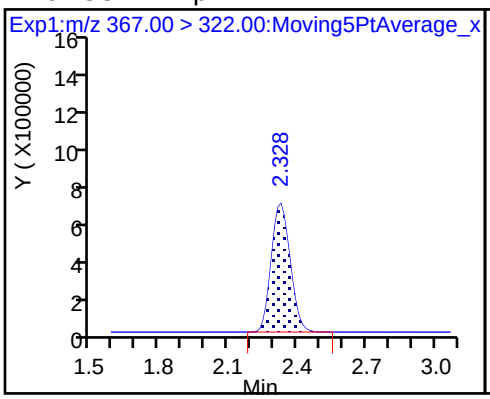
5 Perfluorobutanesulfonic acid



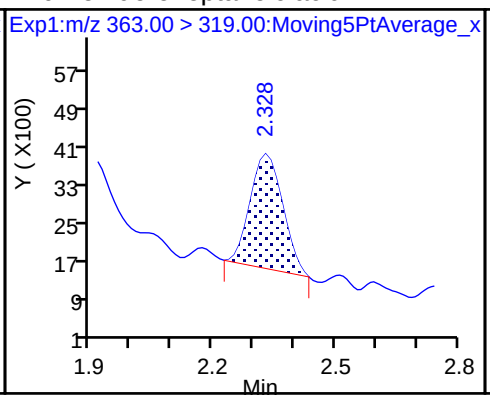
5 Perfluorobutanesulfonic acid



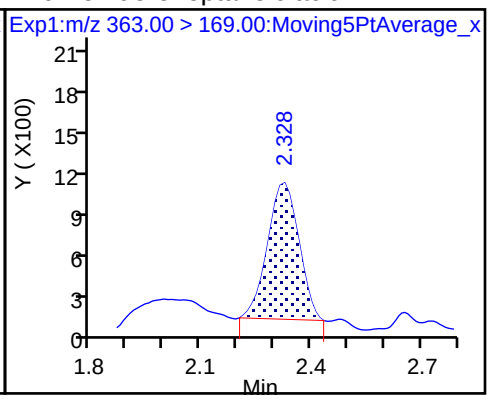
D 9 13C4-PFHpA



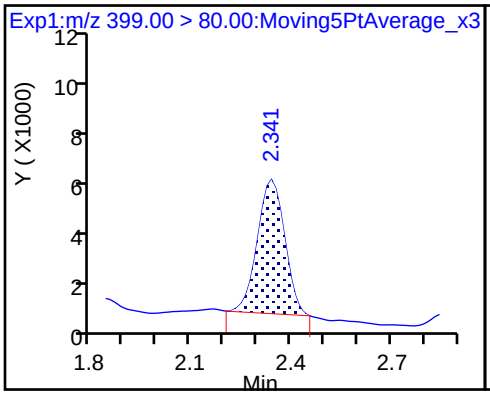
10 Perfluoroheptanoic acid



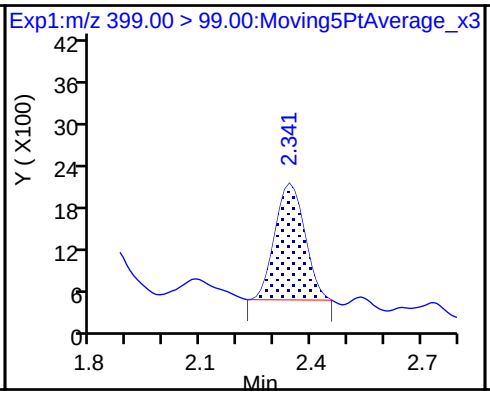
10 Perfluoroheptanoic acid



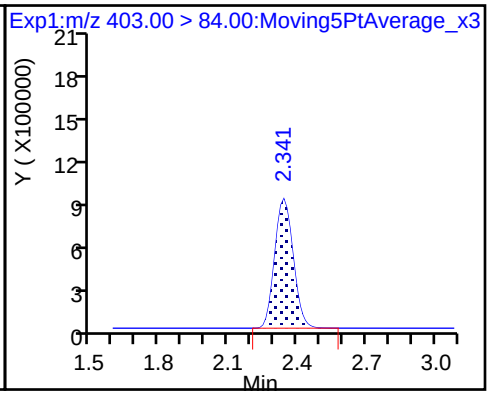
8 Perfluorohexanesulfonic acid



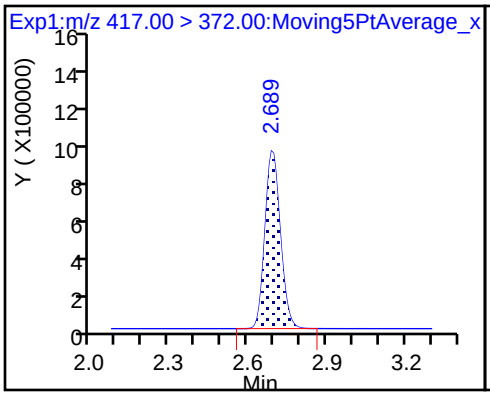
8 Perfluorohexanesulfonic acid



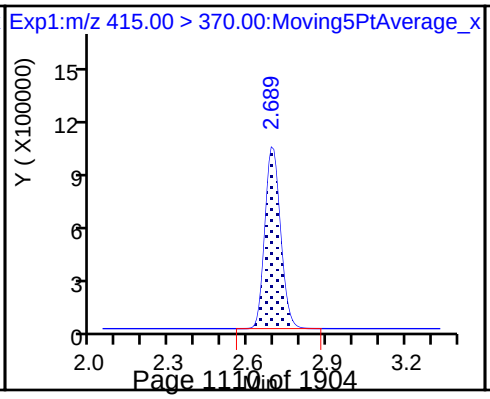
D 11 18O2 PFHxS



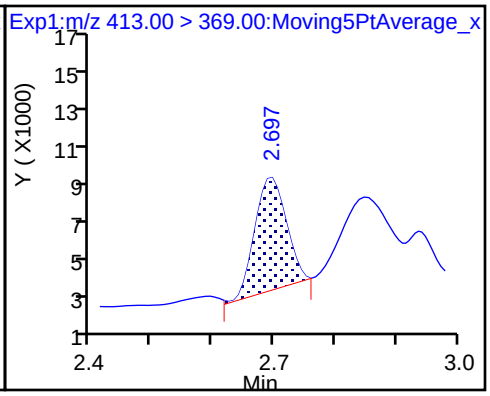
D 14 13C4 PFOA



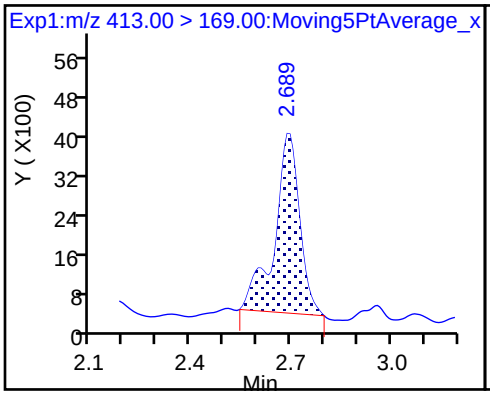
* 62 13C2-PFOA



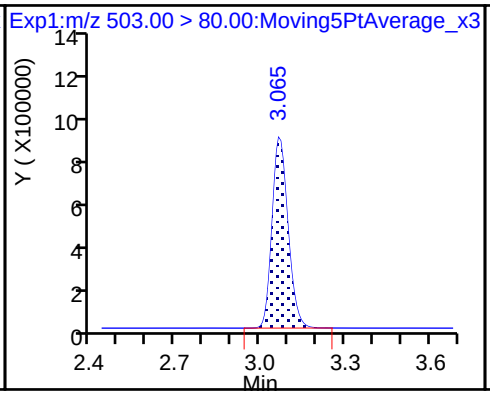
15 Perfluorooctanoic acid



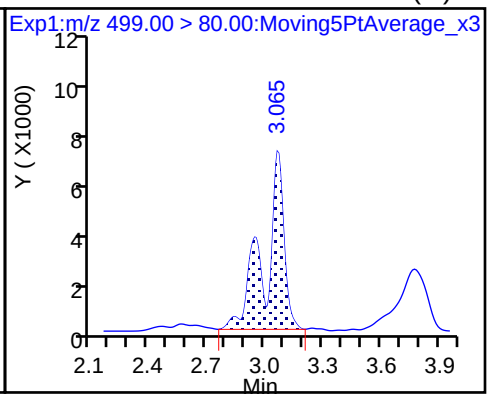
15 Perfluorooctanoic acid



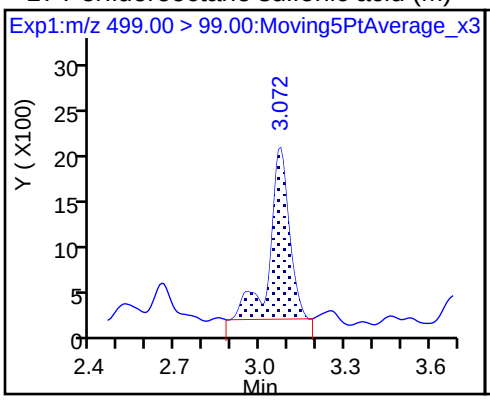
D 18 13C4 PFOS



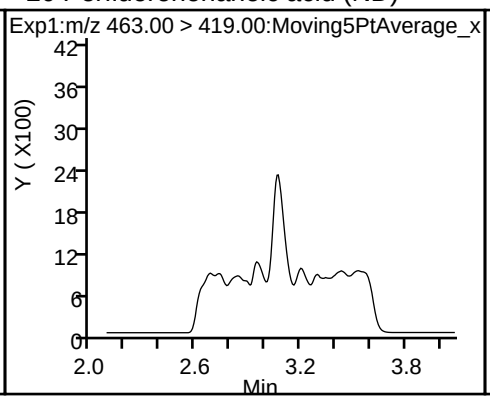
17 Perfluorooctane sulfonic acid (M)



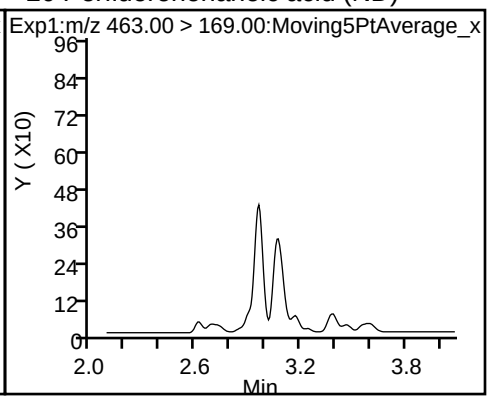
17 Perfluorooctane sulfonic acid (M)



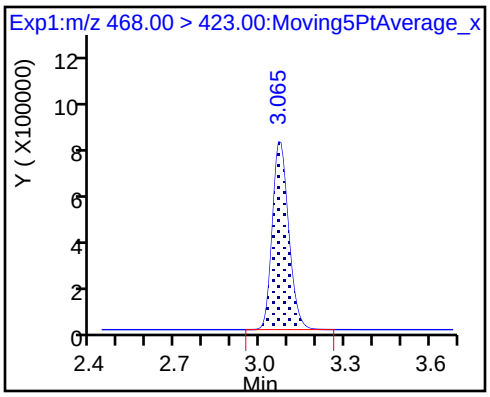
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)



D 19 13C5 PFNA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

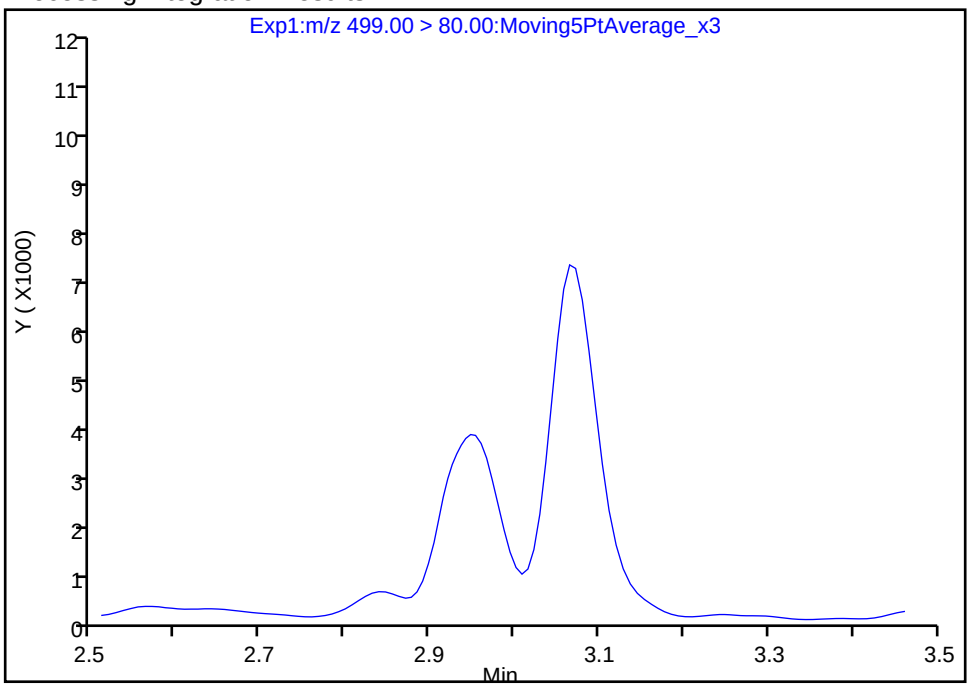
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_043.d				
Injection Date:	19-Mar-2018 20:13:06	Instrument ID:	A8_N		
Lims ID:	320-36960-A-20-A	Lab Sample ID:	320-36960-20		
Client ID:	BNA-FB-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

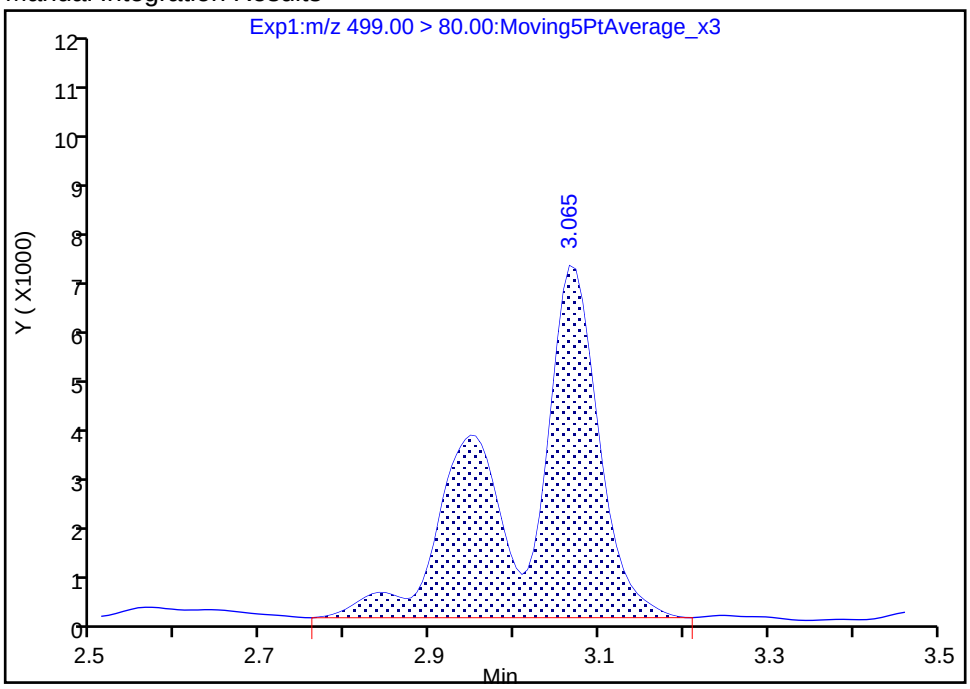
Not Detected
Expected RT: 3.08

Processing Integration Results



Manual Integration Results

RT: 3.07
Area: 46790
Amount: 0.030138
Amount Units: ng/ml



Reviewer: westendorfc, 22-Mar-2018 10:46:26
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

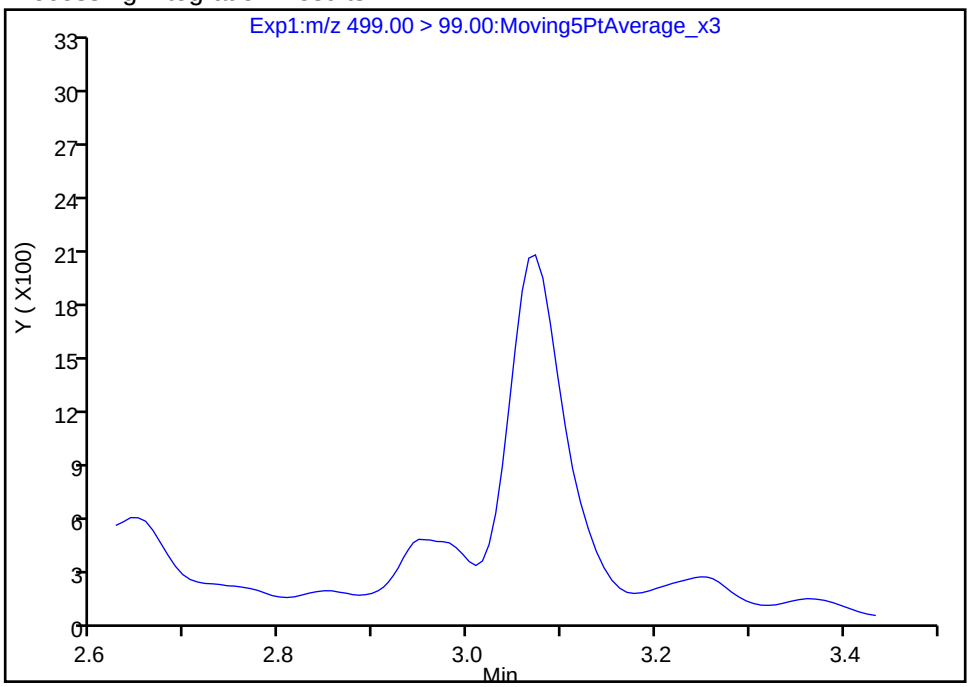
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_043.d				
Injection Date:	19-Mar-2018 20:13:06	Instrument ID:	A8_N		
Lims ID:	320-36960-A-20-A	Lab Sample ID:	320-36960-20		
Client ID:	BNA-FB-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

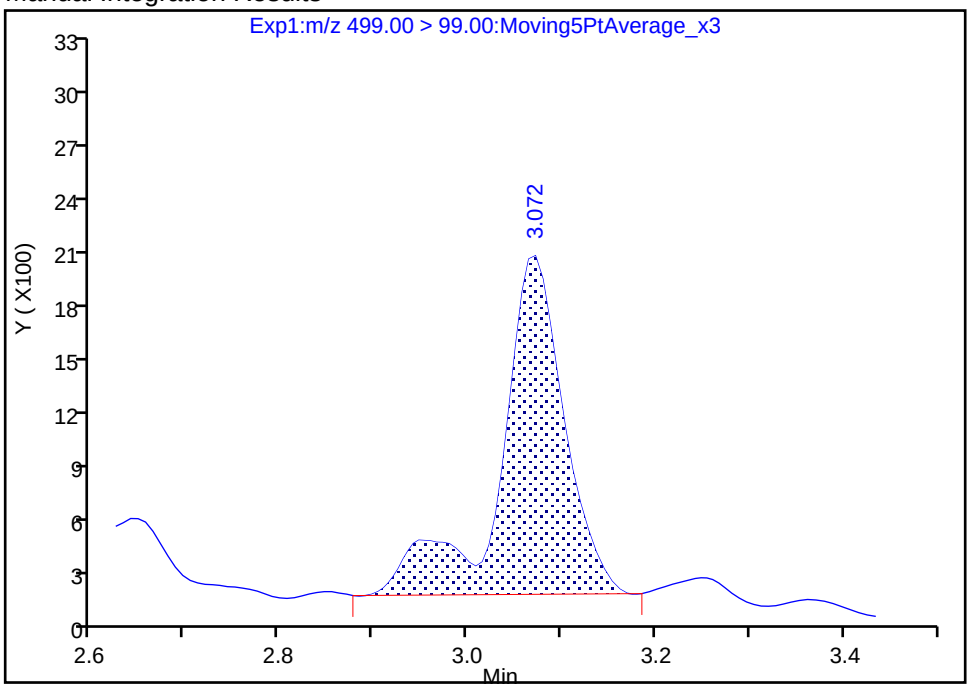
Not Detected
Expected RT: 3.08

Processing Integration Results



Manual Integration Results

RT: 3.07
Area: 9114
Amount: 0.030138
Amount Units: ng/ml



Reviewer: westendorfc, 22-Mar-2018 10:46:26
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: MW-BNA05-01-01 | Lab Sample ID: 320-36960-22

Matrix: Water | Lab File ID: 2018.03.19LLAX_044.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 09:02

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 252.3(mL) | Date Analyzed: 03/19/2018 20:20

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.2		2.0	1.5	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	12	M Q J1	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.3	J	2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	5.1		2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	75	J1	2.0	0.99	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	66	J1	4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	84		50-150
STL01892	13C4-PFHpA	91		50-150
STL00990	13C4 PFOA	93		50-150
STL00995	13C5 PFNA	93		50-150
STL00994	18O2 PFHxS	91		50-150
STL00991	13C4 PFOS	90		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_044.d
Lims ID: 320-36960-A-22-A
Client ID: MW-BNA05-01-01
Sample Type: Client
Inject. Date: 19-Mar-2018 20:20:55 ALS Bottle#: 30 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-22-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:46:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.444	-0.004	0.536	3502598	1.60		63.9	50311	
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.444	-0.004	1.000	695085	0.5349			136	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.705	-0.005	0.633	3085221	1.99		79.7	25864	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.705	-0.005	1.000	148622	0.1031			15.5	
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.740	-0.005	0.646	74773	1.96		84.2	151	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.735	1.740	-0.005	1.000	319586	0.1284			76.2	
298.90 > 99.00	1.735	1.740	-0.005	1.000	122426		2.61(1.25-3.74)		68.8	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.983	1.992	-0.009	1.000	411693	0.2927			199	
313.00 > 119.00	1.994	1.992	0.002	1.006	38308		10.75(5.03-15.10)		337	
D 7 13C2 PFHxA										
315.00 > 270.00	1.983	1.992	-0.009	0.739	3484806	2.02		80.8	93606	
D 9 13C4-PFHpA										
367.00 > 322.00	2.325	2.335	-0.010	0.866	3811621	2.27		90.8	84328	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.325	2.335	-0.010	1.000	128101	0.0811			52.3	
363.00 > 169.00	2.325	2.335	-0.010	1.000	57595		2.22(1.13-3.40)		623	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.338	2.348	-0.010	1.000	4341787	1.90			2208	
399.00 > 99.00	2.338	2.348	-0.010	1.000	1356207		3.20(1.50-4.49)		1753	
D 11 18O2 PFHxS										
403.00 > 84.00	2.338	2.348	-0.010	0.871	4835800	2.16		91.3	66400	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.661	2.675	-0.014	1.000	4859	0.005865			174	
D 12 M2-6:2FTS										
429.00 > 81.00	2.661	2.675	-0.014	0.991	1182017	2.75		116	5473	
D 14 13C4 PFOA										
417.00 > 372.00	2.685	2.706	-0.021	1.000	3755873	2.32		92.7	102071	
* 62 13C2-PFOA										
415.00 > 370.00	2.685	2.706	-0.021		4296902	2.50			105831	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.685	2.706	-0.021	1.000	516502	0.3080			132	
413.00 > 169.00	2.685	2.706	-0.021	1.000	313182		1.65(0.84-2.52)		1119	M
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.693	2.706	-0.013	1.000	77423	0.0416			96.7	
449.00 > 99.00	2.693	2.706	-0.013	1.000	21817		3.55(1.94-5.82)		86.2	
D 18 13C4 PFOS										
503.00 > 80.00	3.063	3.083	-0.020	1.141	3387741	2.16		90.5	19003	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.063	3.083	-0.020	1.000	2558413	1.67			4265	
499.00 > 99.00	3.063	3.083	-0.020	1.000	482726		5.30(2.31-6.93)		1828	
20 Perfluorononanoic acid										
463.00 > 419.00	3.063	3.083	-0.020	1.000	41734	0.0338			58.8	
463.00 > 169.00	3.063	3.083	-0.020	1.000	11126		3.75(1.90-5.69)		148	
D 19 13C5 PFNA										
468.00 > 423.00	3.063	3.083	-0.020	1.141	3030796	2.34		93.5	77016	
D 21 13C8 FOSA										
506.00 > 78.00	3.395	3.403	-0.008	1.264	4869651	2.15		85.9	59114	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.395	3.412	-0.017	1.000	3493	0.001845			51.2	
D 26 M2-8:2FTS										
529.00 > 81.00	3.413	3.439	-0.026	1.271	1000520	2.48		103	11230	
D 23 13C2 PFDA										
515.00 > 470.00	3.431	3.448	-0.017	1.278	2471786	2.28		91.3	46874	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.576	3.606	-0.030	1.332	608304	1.70		68.0	25861	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.746	3.775	-0.029	1.395	621502	1.82		72.7	1220	
D 30 13C2 PFUnA										
565.00 > 520.00	3.756	3.786	-0.030	1.399	1763533	2.08		83.2	61603	
D 36 13C2 PFDoA										
615.00 > 570.00	4.054	4.084	-0.030	1.510	1588811	1.98		79.0	8880	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.551	4.581	-0.030	1.695	1618620	2.20		88.2	12641	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.970	5.004	-0.034	1.002	17273	NC			1.4	
813.00 > 169.00	4.961	5.004	-0.043	1.000	2843		6.08(2.86-8.58)		42.6	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.961	5.004	-0.043	1.848	1838058	1.71		68.5	7584	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Report Date: 22-Mar-2018 10:49:35 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_044.d

Injection Date: 19-Mar-2018 20:20:55 Instrument ID: A8_N

Lims ID: 320-36960-A-22-A Lab Sample ID: 320-36960-22

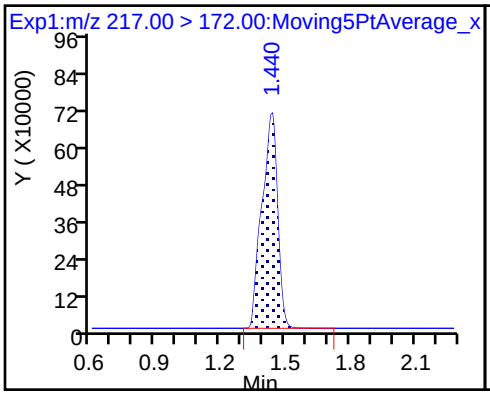
Client ID: MW-BNA05-01-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 9

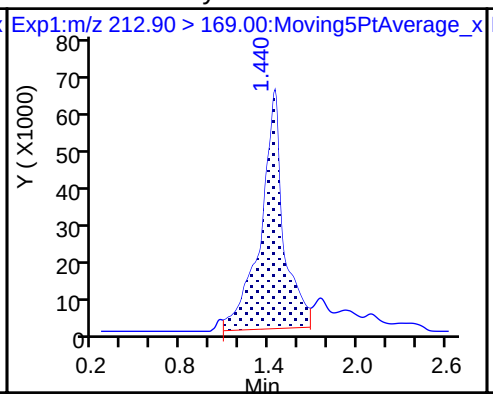
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

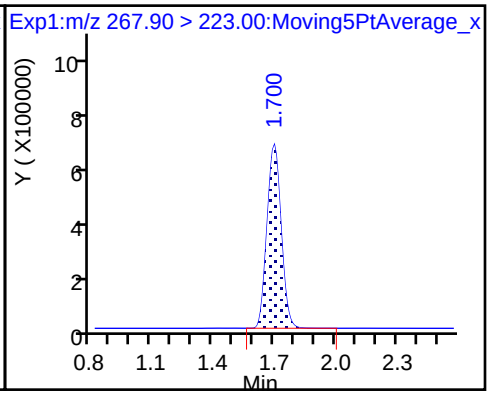
D 1 13C4 PFBA



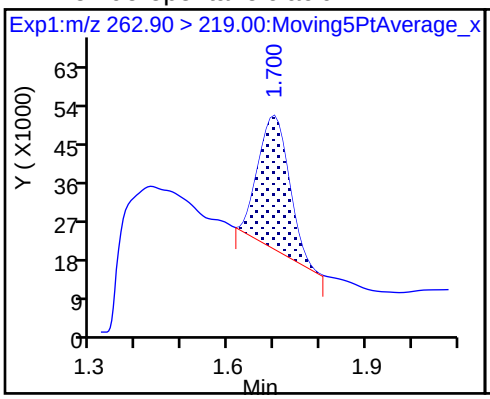
2 Perfluorobutyric acid



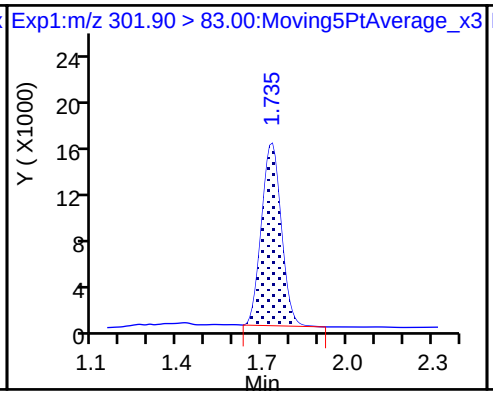
D 3 13C5-PFPeA



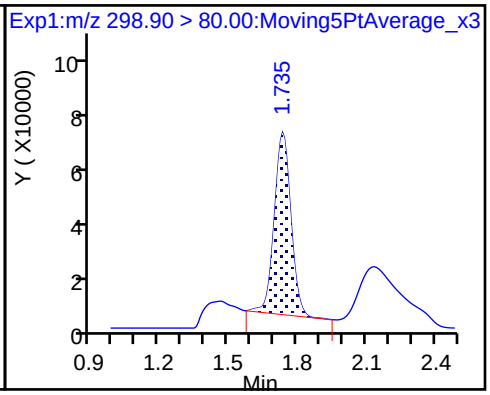
4 Perfluoropentanoic acid



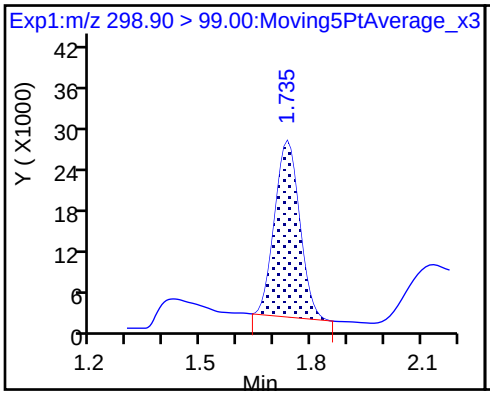
D 47 13C3-PFBS



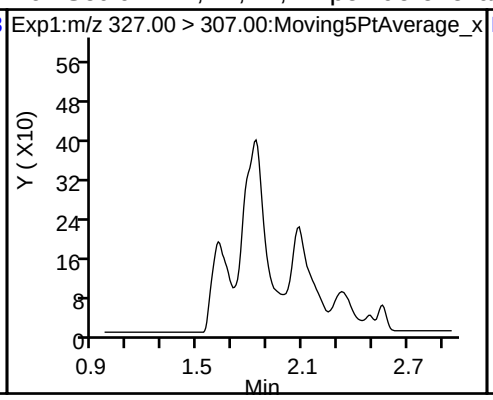
5 Perfluorobutanesulfonic acid



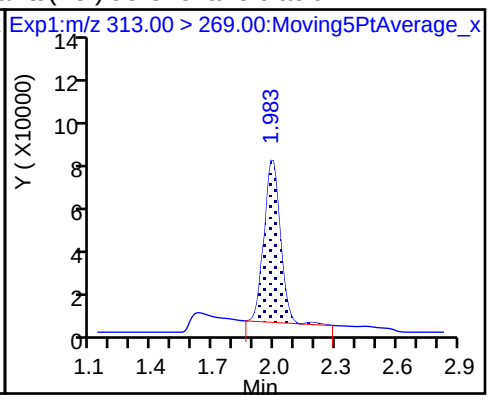
5 Perfluorobutanesulfonic acid



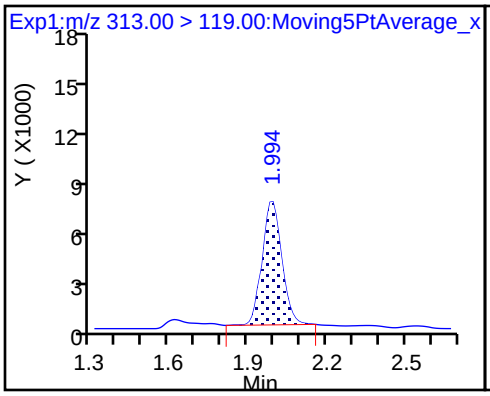
61 Sodium 1H,1H,2H,2H-perfluorohexane6(NDF)



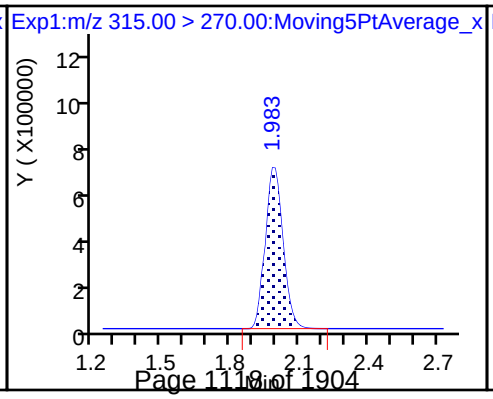
6 Perfluorohexanoic acid



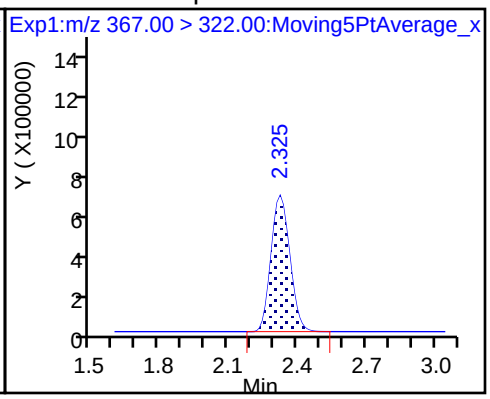
6 Perfluorohexanoic acid



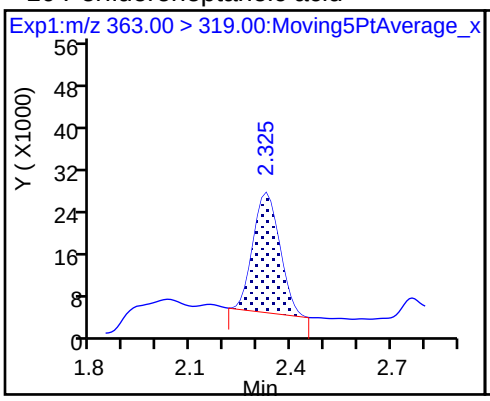
D 7 13C2 PFHxA



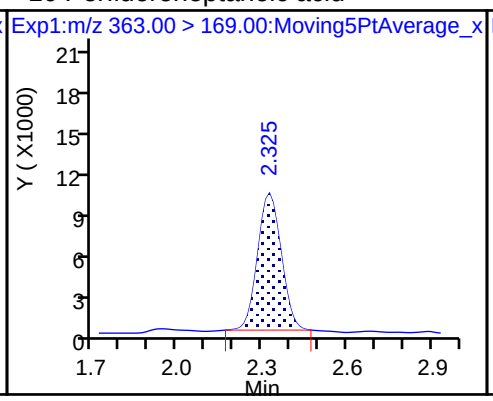
D 9 13C4-PFHpA



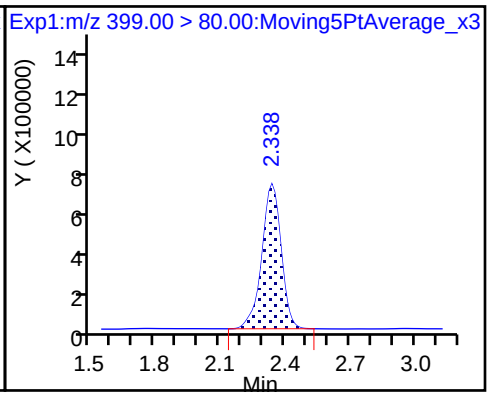
10 Perfluoroheptanoic acid



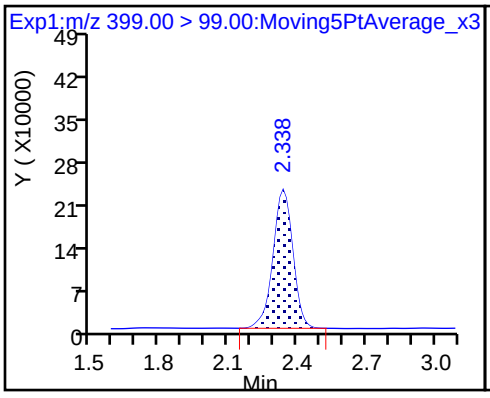
10 Perfluoroheptanoic acid



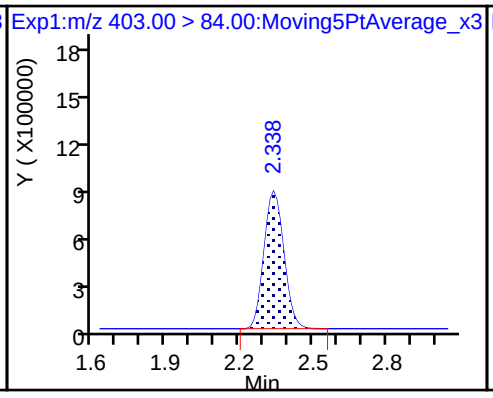
8 Perfluorohexanesulfonic acid



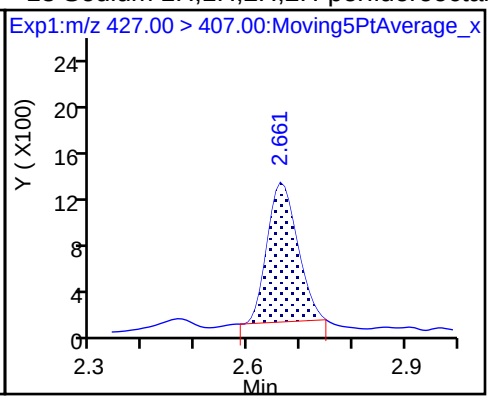
8 Perfluorohexanesulfonic acid



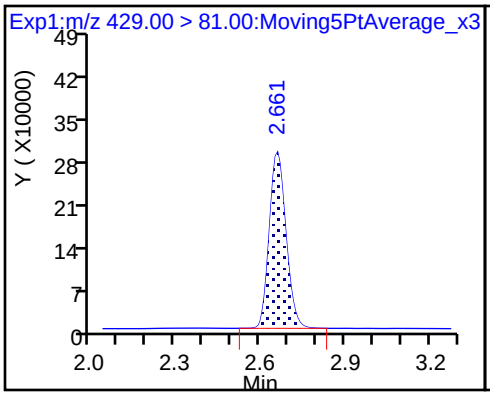
D 11 18O2 PFHxS



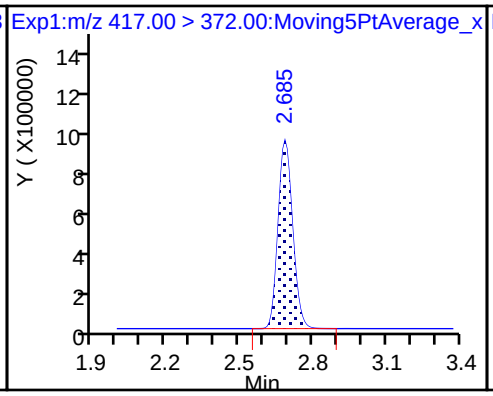
13 Sodium 1H,1H,2H,2H-perfluorooctane



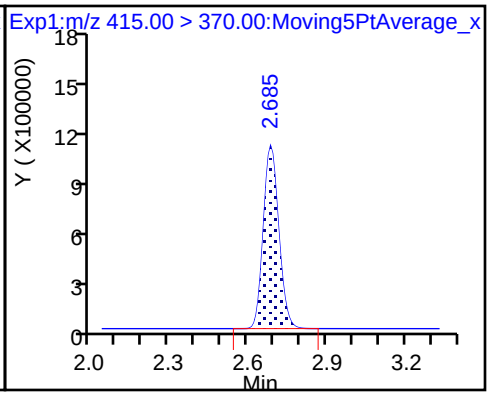
D 12 M2-6:2FTS



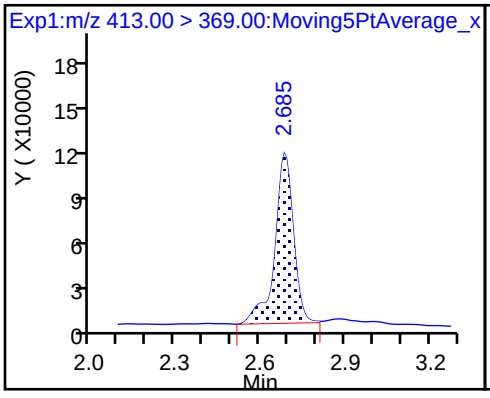
D 14 13C4 PFOA



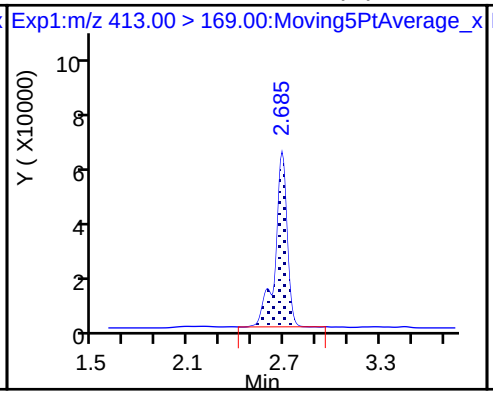
* 62 13C2-PFOA



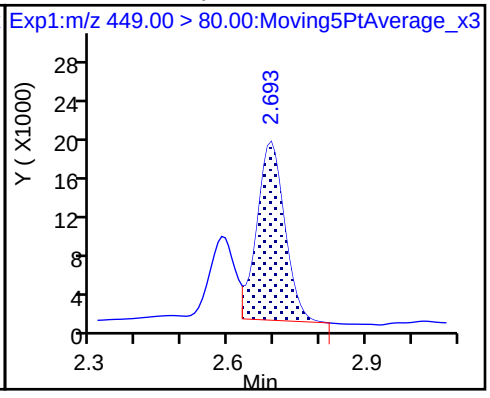
15 Perfluorooctanoic acid



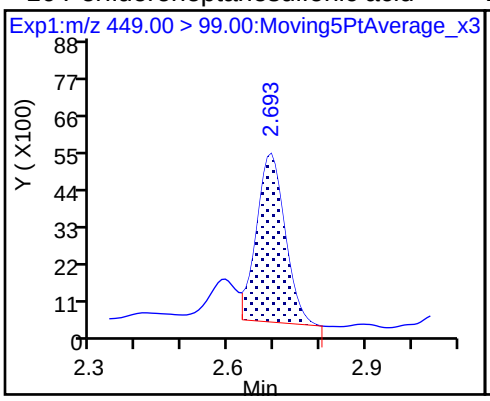
15 Perfluorooctanoic acid (M)



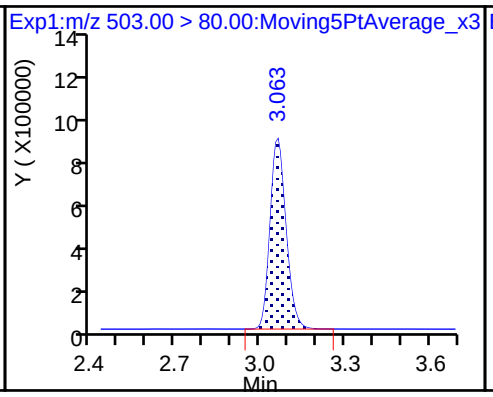
16 Perfluoroheptanesulfonic acid



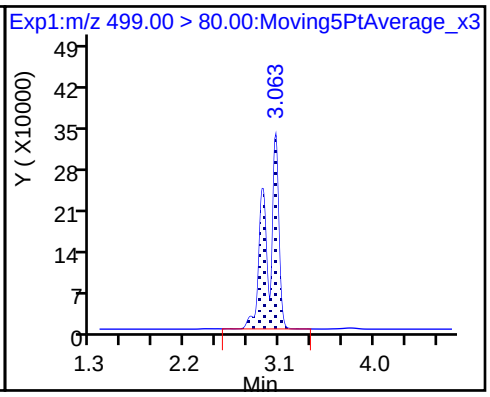
16 Perfluoroheptanesulfonic acid



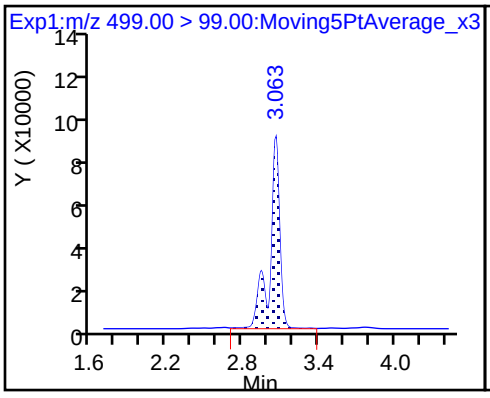
D 18 13C4 PFOS



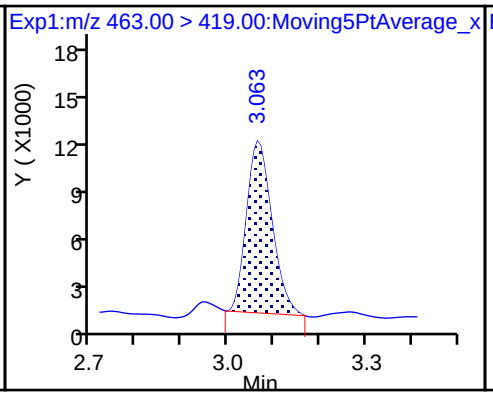
17 Perfluorooctane sulfonic acid



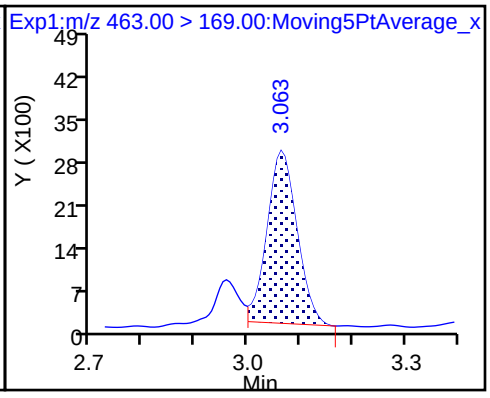
17 Perfluorooctane sulfonic acid



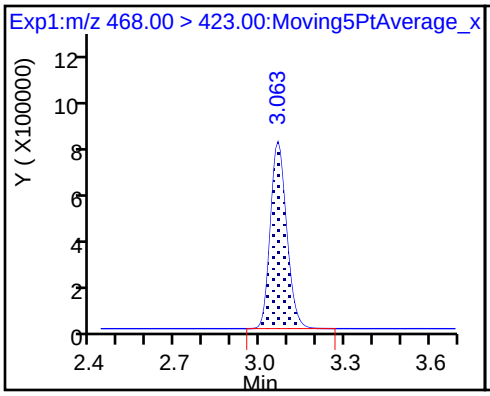
20 Perfluorononanoic acid



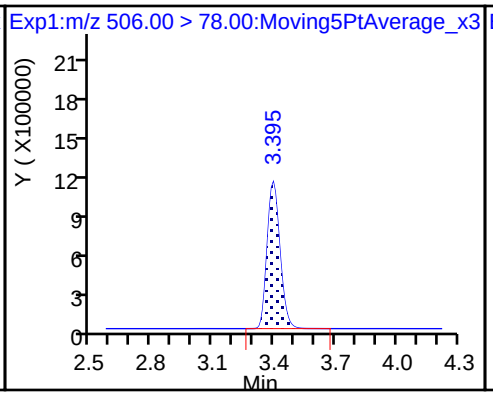
20 Perfluorononanoic acid



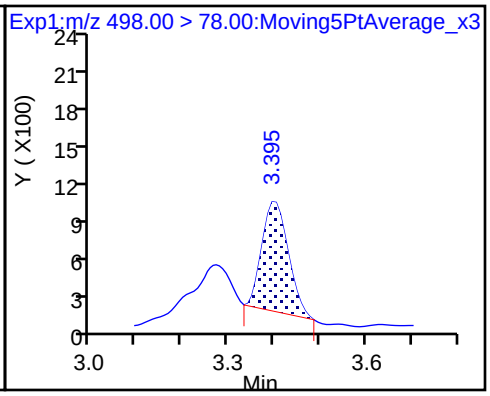
D 19 13C5 PFNA



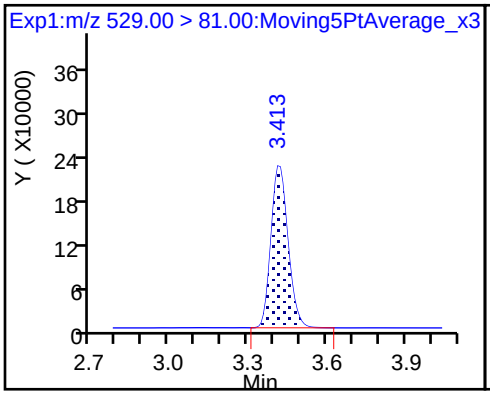
D 21 13C8 FOSA



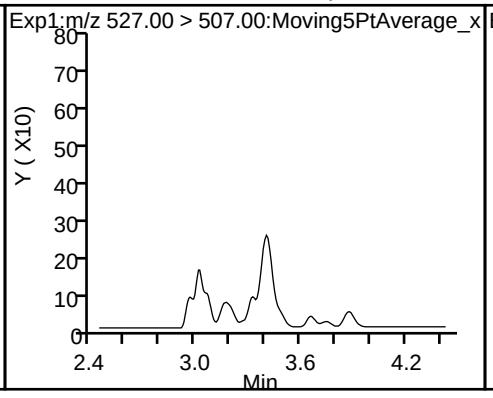
22 Perfluorooctane Sulfonamide



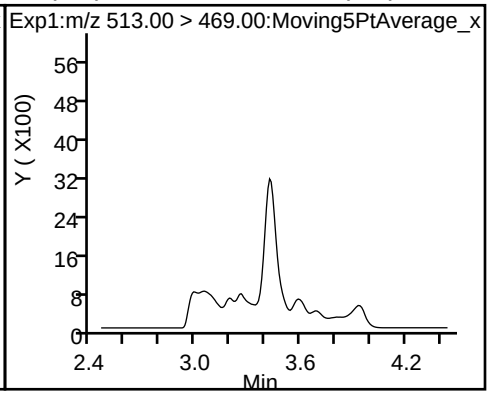
D 26 M2-8:2FTS



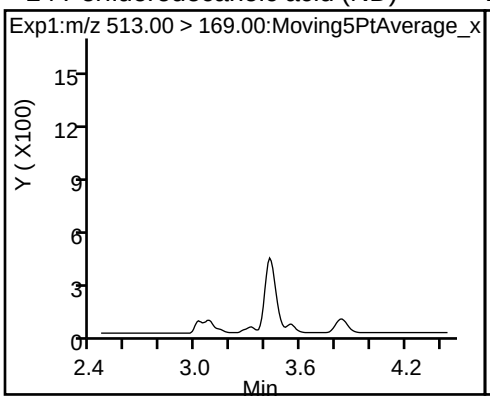
25 Sodium 1H,1H,2H,2H-perfluorodecane2(ND)



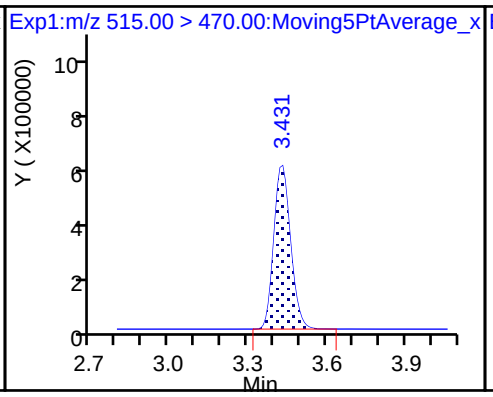
24 Perfluorodecanoic acid (ND)



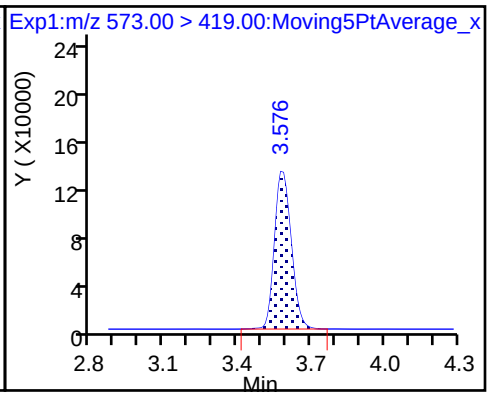
24 Perfluorodecanoic acid (ND)



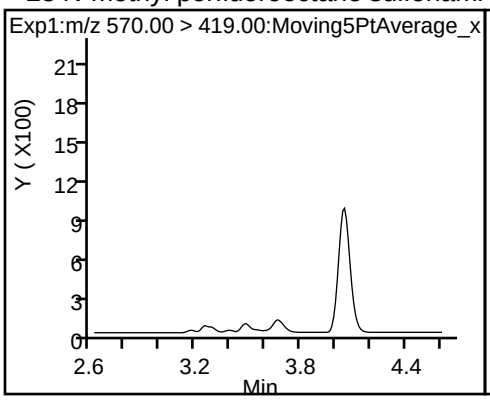
D 23 13C2 PFDA



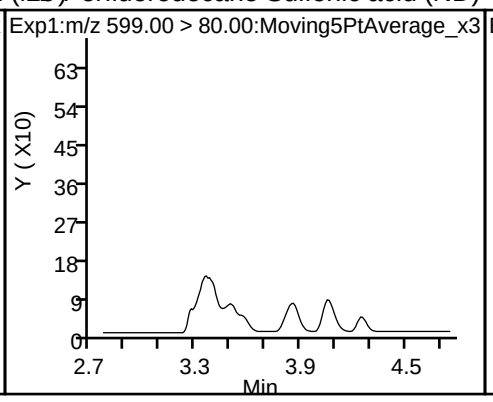
D 27 d3-NMeFOSAA



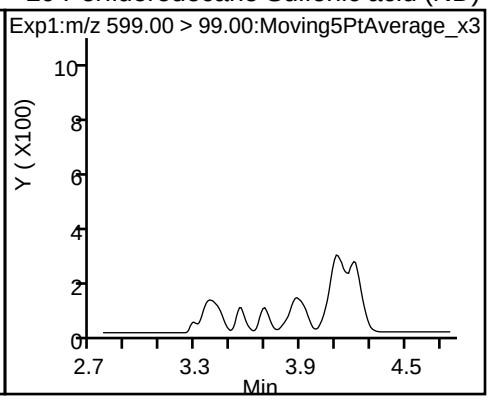
28 N-methyl perfluorooctane sulfonami (ND)



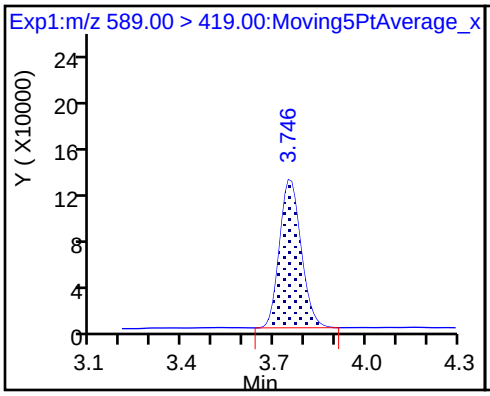
29 Perfluorodecane Sulfonic acid (ND)



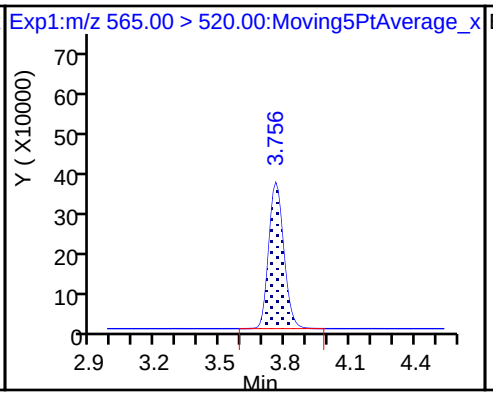
29 Perfluorodecane Sulfonic acid (ND)



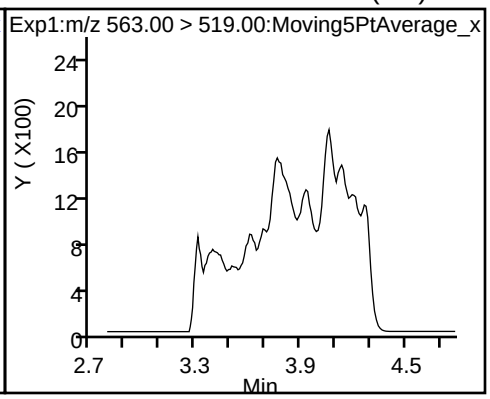
D 32 d5-NEtFOSAA



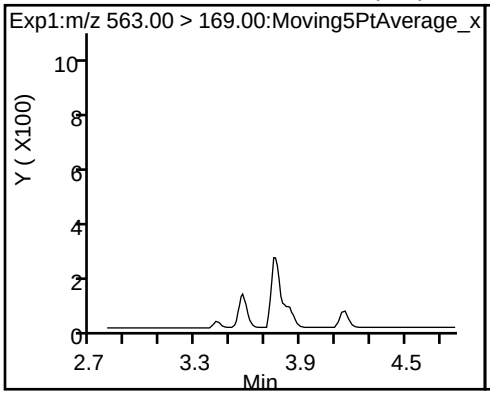
D 30 13C2 PFUnA



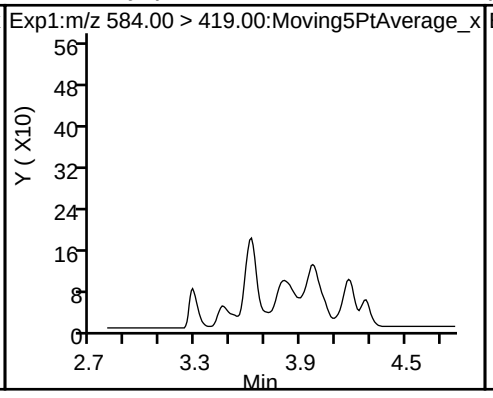
31 Perfluoroundecanoic acid (ND)



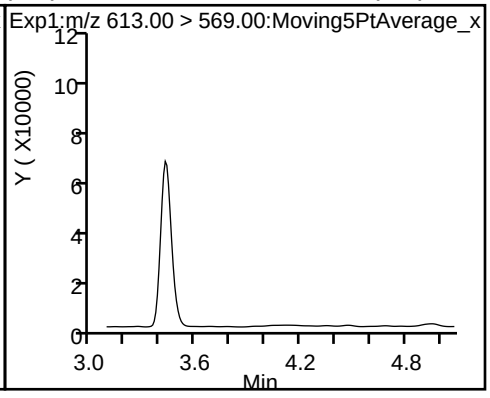
31 Perfluoroundecanoic acid (ND)



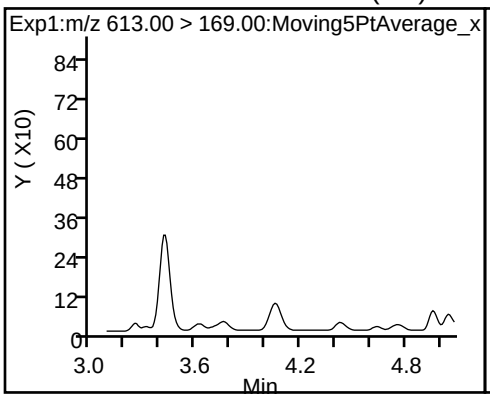
33 N-ethyl perfluorooctane sulfonamid (ND)



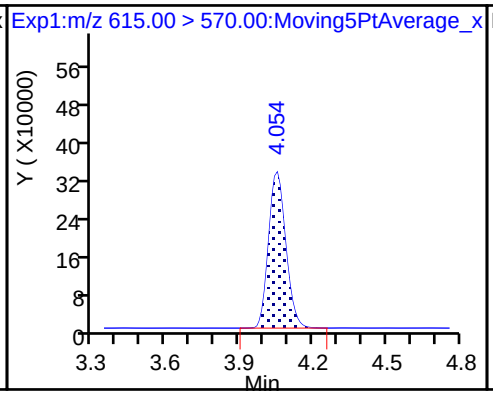
37 Perfluorododecanoic acid (ND)



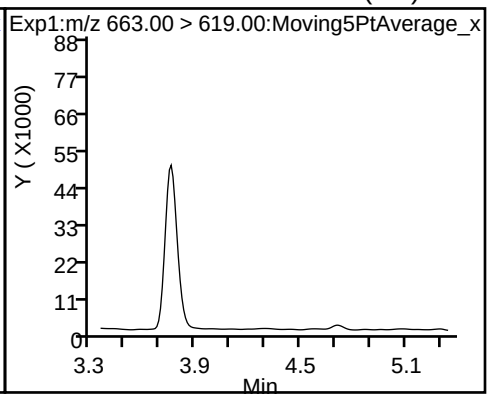
37 Perfluorododecanoic acid (ND)



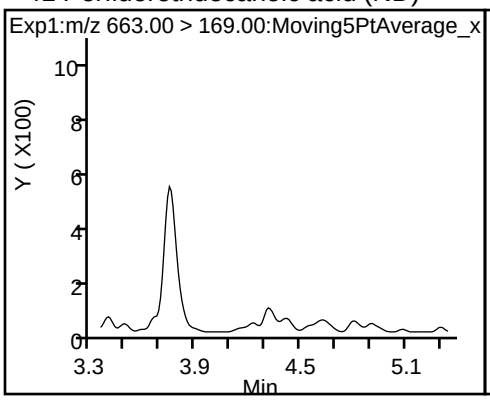
D 36 13C2 PFDoA



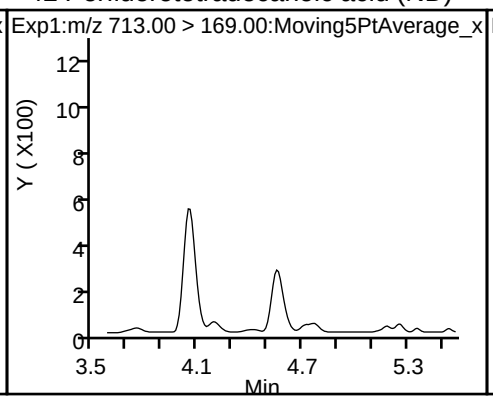
41 Perfluorotridecanoic acid (ND)



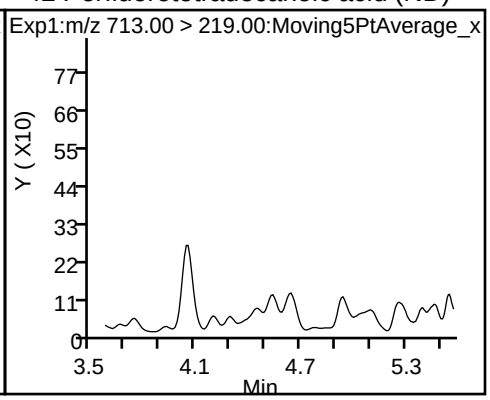
41 Perfluorotridecanoic acid (ND)



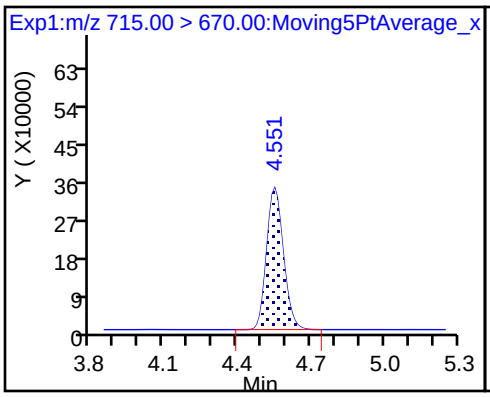
42 Perfluorotetradecanoic acid (ND)



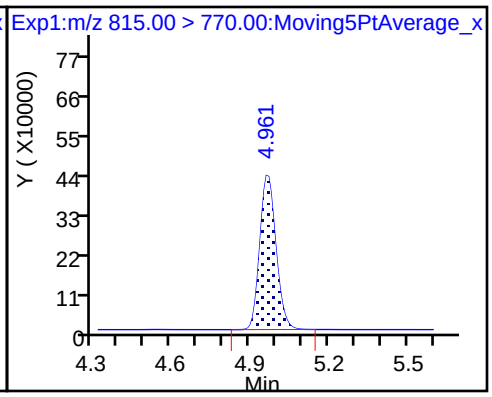
42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

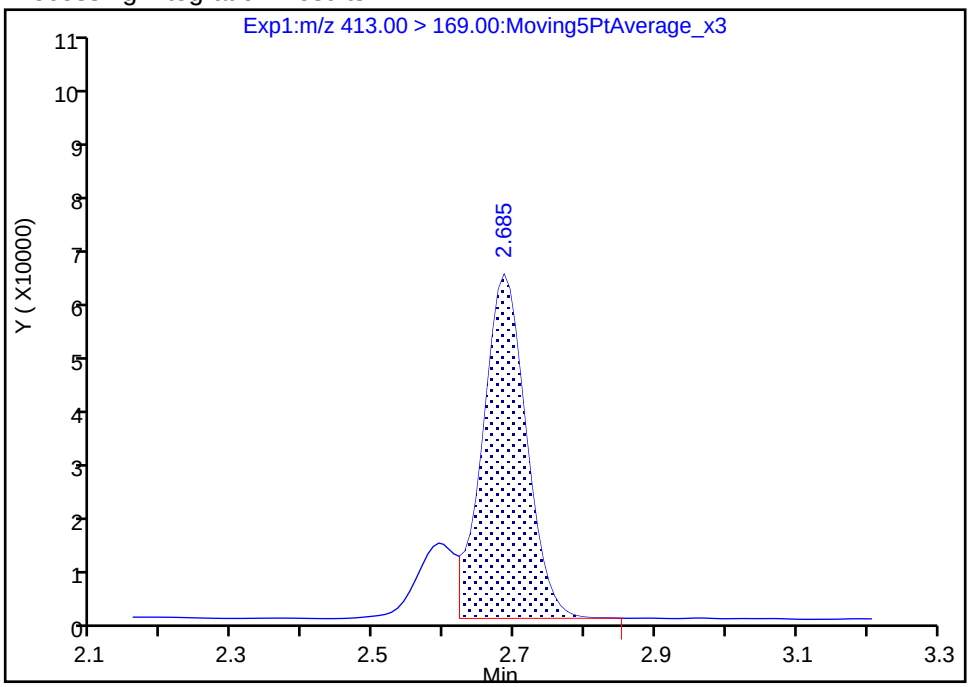
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_044.d				
Injection Date:	19-Mar-2018 20:20:55	Instrument ID:	A8_N		
Lims ID:	320-36960-A-22-A	Lab Sample ID:	320-36960-22		
Client ID:	MW-BNA05-01-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

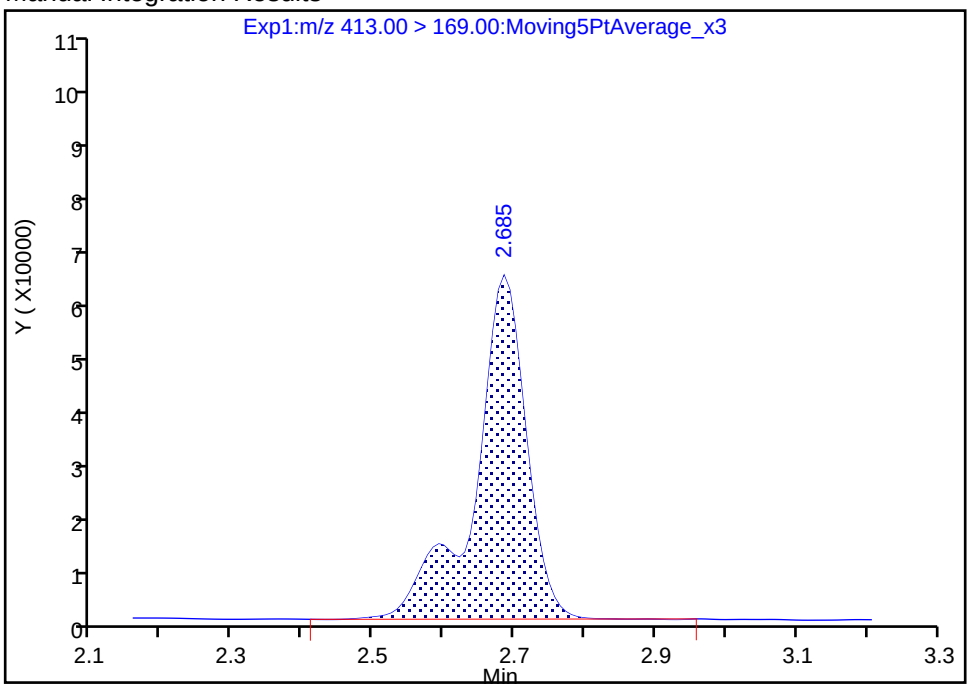
Processing Integration Results

RT: 2.69
Area: 262213
Amount: 0.307958
Amount Units: ng/ml



Manual Integration Results

RT: 2.69
Area: 313182
Amount: 0.307958
Amount Units: ng/ml



Reviewer: westendorfc, 22-Mar-2018 10:46:48

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: MW-BNA05-01-01 RE | Lab Sample ID: 320-36960-22 RE

Matrix: Water | Lab File ID: 2018.03.24LLAA_010.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 09:02

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 266.8(mL) | Date Analyzed: 03/24/2018 19:50

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	*Perfluoroheptanoic acid (PFHpA)*	*3.6*		*1.9*	1.4	*0.57*
335-67-1	*Perfluorooctanoic acid (PFOA)*	*12*		*1.9*	1.4	*0.51*
375-95-1	*Perfluorononanoic acid (PFNA)*	*1.4*	*U*	*1.9*	1.4	*0.49*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*5.0*		*1.9*	0.94	*0.43*
355-46-4	*Perfluorohexanesulfonic acid (PFHxS)*	*78*	*J1*	*1.9*	0.94	*0.36*
1763-23-1	*Perfluorooctanesulfonic acid (PFOS)*	*68*	*J1*	*3.7*	2.8	*1.0*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	14	Q	50-150
STL01892	13C4-PFHpA	9	Q	50-150
STL00990	13C4 PFOA	9	Q	50-150
STL00995	13C5 PFNA	9	Q	50-150
STL00994	18O2 PFHxS	13	Q	50-150
STL00991	13C4 PFOS	11	Q	50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_010.d
Lims ID: 320-36960-B-22-A
Client ID: MW-BNA05-01-01
Sample Type: Client
Inject. Date: 24-Mar-2018 19:50:13 ALS Bottle#: 4 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-b-22-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:47:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.458	1.459	-0.001	0.538	853070	0.2165		8.7	22930	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.458	1.462	-0.004	1.000	174449	0.5426			25.3	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.726	1.727	-0.001	0.637	651975	0.2494		10.0	6911	
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.762	-0.001	0.650	20083	0.3366		14.5	48.5	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.767	-0.006	1.000	90142	0.1343			59.9	
298.90 > 99.00	1.761	1.767	-0.006	1.000	37550		2.40(1.25-3.74)		48.8	
6 Perfluorohexanoic acid										R
313.00 > 269.00	2.008	2.014	-0.006	0.995	77446	0.2873			27.5	R
313.00 > 119.00	2.019	2.014	0.005	1.000	4903		15.80(5.03-15.10)		29.1	
D 7 13C2 PFHxA										
315.00 > 270.00	2.019	2.019	0.0	0.745	659090	0.2280		9.1	16216	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.348	-0.007	0.995	25506	0.0960			13.7	
363.00 > 169.00	2.341	2.348	-0.007	0.995	8802		2.90(1.13-3.40)		20.8	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.354	2.361	-0.007	0.994	1079861	2.09			1152	
399.00 > 99.00	2.367	2.361	0.006	1.000	349368		3.09(1.50-4.49)		584	
D 9 13C4-PFHpA										
367.00 > 322.00	2.354	2.368	-0.014	0.868	641958	0.2251		9.0	24034	
D 11 18O2 PFHxS										
403.00 > 84.00	2.367	2.380	-0.013	0.873	1100415	0.3128		13.2	27599	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.695	2.691	0.004	1.003	316872	2.81			297	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.687	2.704	-0.017	0.991	153342	0.2593		10.9	1478	
* 62 13C2-PFOA										s
415.00 > 370.00	2.711	2.714	-0.003		7780766	2.50			112665	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.711	2.714	-0.003	1.000	95388	0.3268			24.2	
413.00 > 169.00	2.711	2.714	-0.003	1.000	57724		1.65(0.84-2.52)		135	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.719	2.722	-0.003	1.000	20765	0.0559			94.9	
449.00 > 99.00	2.719	2.722	-0.003	1.000	3588		5.79(1.94-5.82)		24.9	
D 14 13C4 PFOA										
417.00 > 372.00	2.711	2.728	-0.017	1.000	646006	0.2214		8.9	25895	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.088	3.090	-0.002	1.000	583090	1.80			1534	
499.00 > 99.00	3.088	3.090	-0.002	1.000	112640		5.18(2.31-6.93)		896	
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.112	-0.024	1.139	558209	0.2170		8.7	17502	
D 18 13C4 PFOS										
503.00 > 80.00	3.088	3.112	-0.024	1.139	693215	0.2708		11.3	7598	
D 21 13C8 FOSA										
506.00 > 78.00	3.415	3.418	-0.003	1.260	826878	0.2395		9.6	14441	
D 26 M2-8:2FTS										
529.00 > 81.00	3.452	3.464	-0.012	1.273	172955	0.2166		9.0	3418	
D 23 13C2 PFDA										
515.00 > 470.00	3.461	3.473	-0.012	1.277	477361	0.2117		8.5	8746	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.610	3.633	-0.023	1.332	310472	0.2616		10.5	10961	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.779	3.804	-0.025	1.394	379475	0.2806		11.2	1611	
D 30 13C2 PFUnA										
565.00 > 520.00	3.789	3.815	-0.026	1.398	454950	0.2255		9.0	15540	
D 36 13C2 PFDoA										
615.00 > 570.00	4.077	4.105	-0.028	1.504	515985	0.2254		9.0	4292	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.585	4.613	-0.028	1.692	742927	0.2657		10.6	5567	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.008	5.013	-0.005	1.000	10043	NC			5.2	
813.00 > 169.00	5.008	5.013	-0.005	1.000	2189		4.59(2.86-8.58)		27.3	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.008	5.049	-0.041	1.848	1054784	0.2301		9.2	3941	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

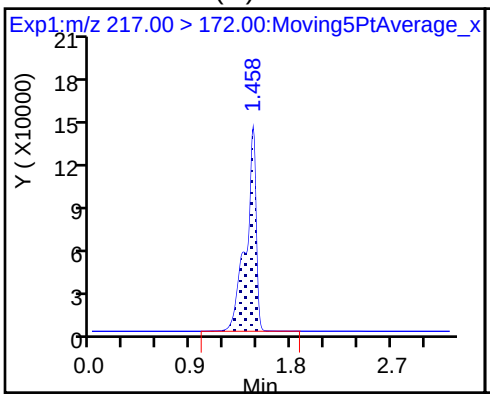
Report Date: 25-Mar-2018 10:51:12 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

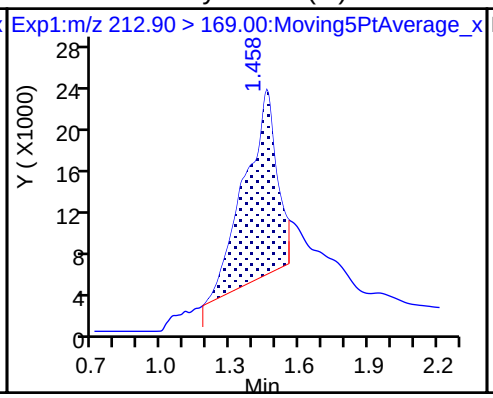
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_010.d

Injection Date:	24-Mar-2018 19:50:13	Instrument ID:	A8_N		
Lims ID:	320-36960-B-22-A	Lab Sample ID:	320-36960-22		
Client ID:	MW-BNA05-01-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

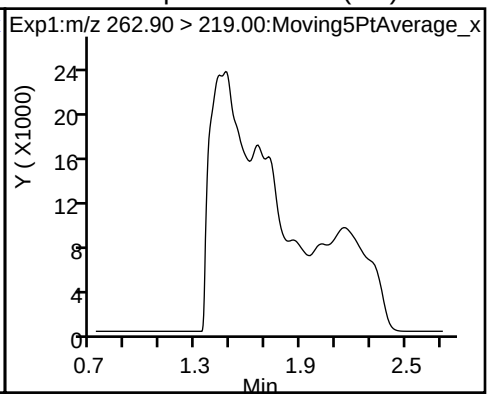
D 1 13C4 PFBA (M)



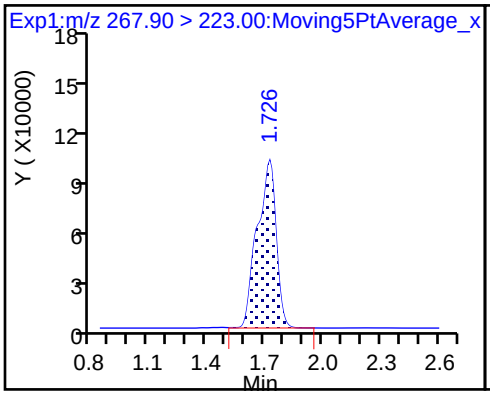
2 Perfluorobutyric acid (M)



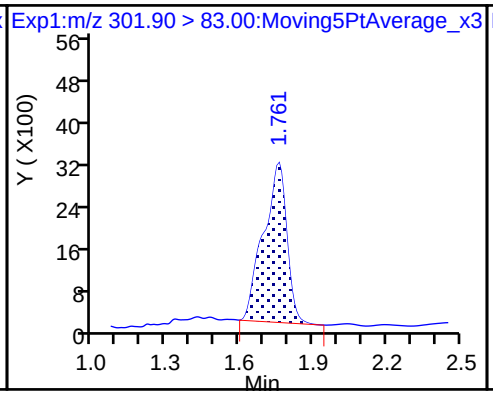
4 Perfluoropentanoic acid (ND)



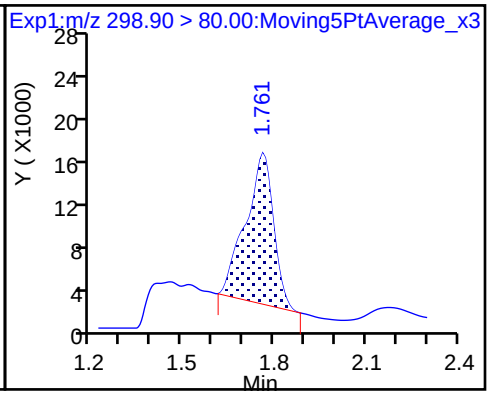
D 3 13C5-PFPeA



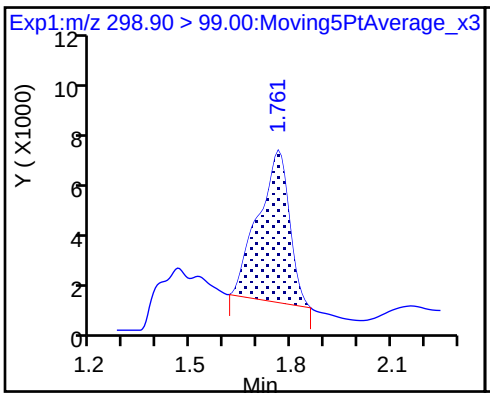
D 47 13C3-PFBS



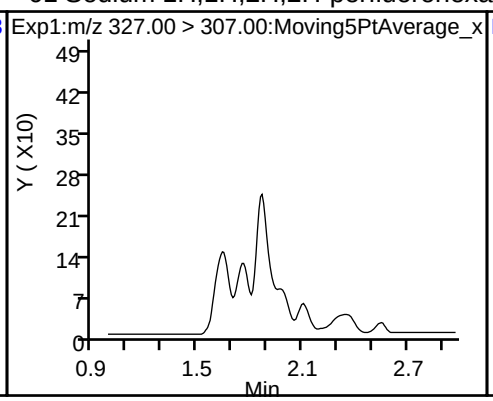
5 Perfluorobutanesulfonic acid



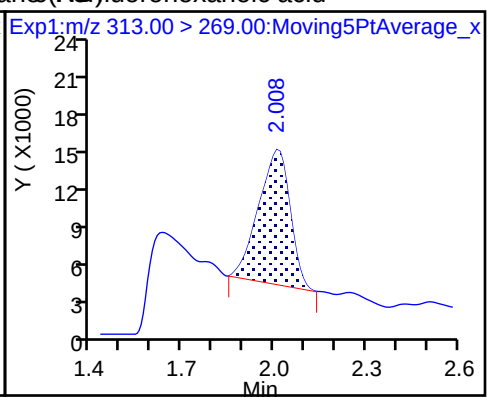
5 Perfluorobutanesulfonic acid



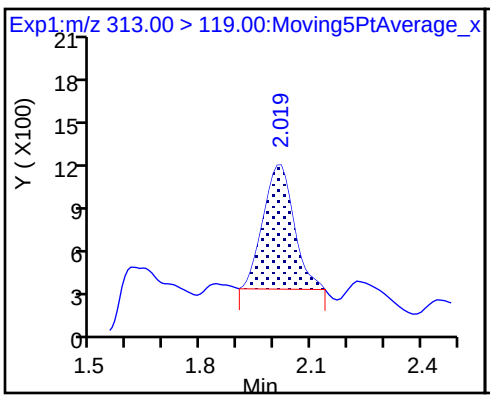
61 Sodium 1H,1H,2H,2H-perfluorohexane6(ND)



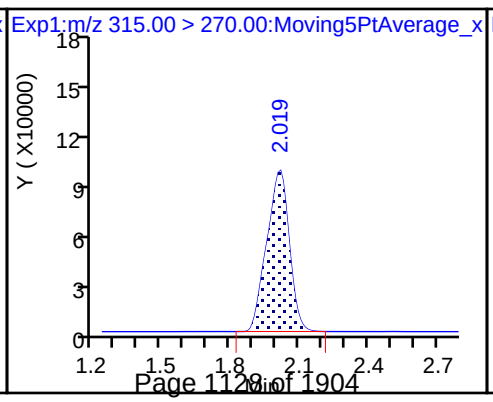
6 Perfluorohexanoic acid



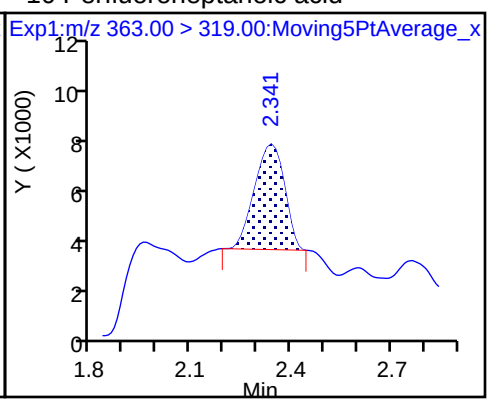
6 Perfluorohexanoic acid



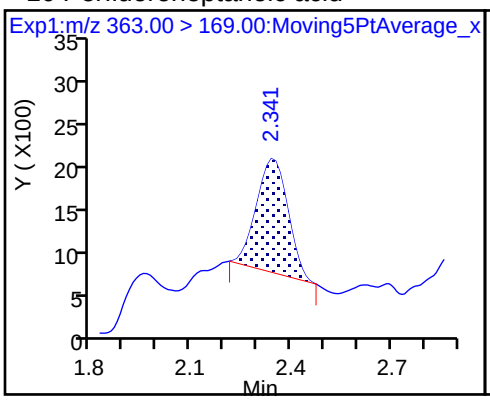
D 7 13C2 PFHxA



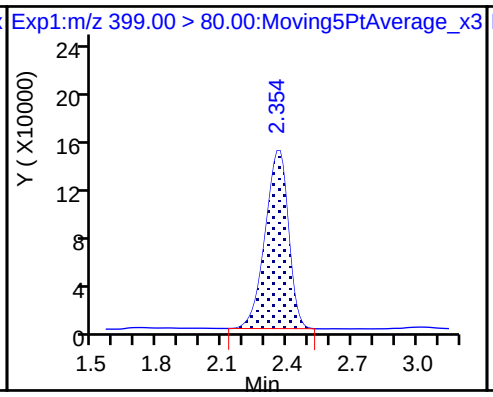
10 Perfluoroheptanoic acid



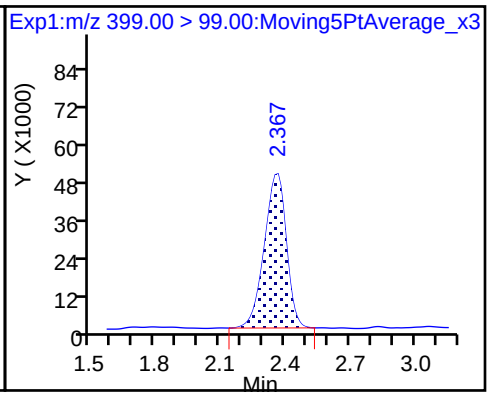
10 Perfluoroheptanoic acid



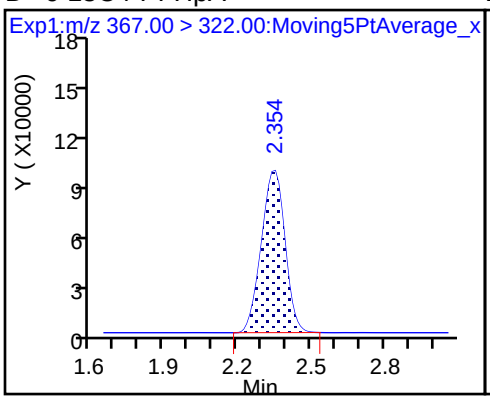
8 Perfluorohexanesulfonic acid



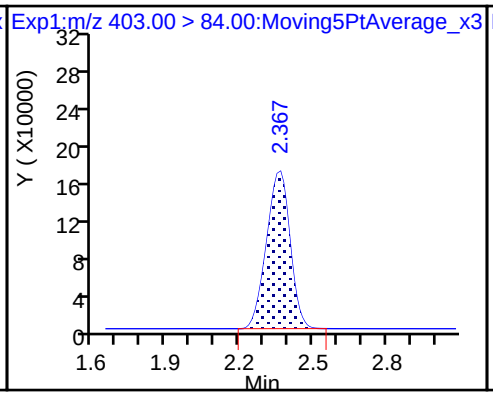
8 Perfluorohexanesulfonic acid



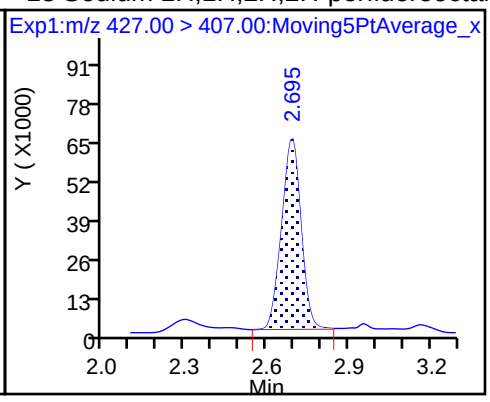
D 9 13C4-PFHpA



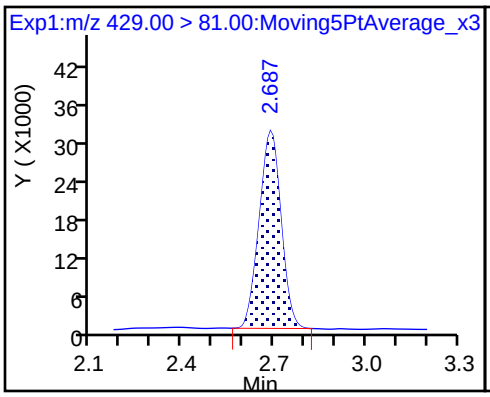
D 11 18O2 PFHxS



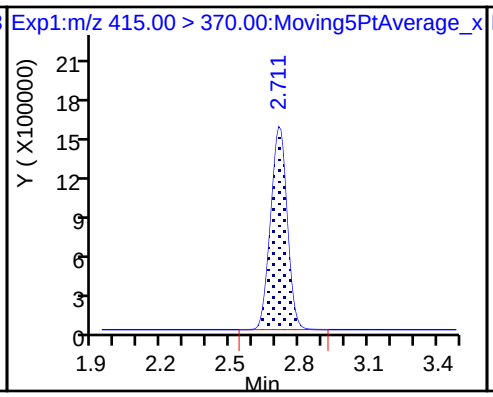
13 Sodium 1H,1H,2H,2H-perfluorooctane



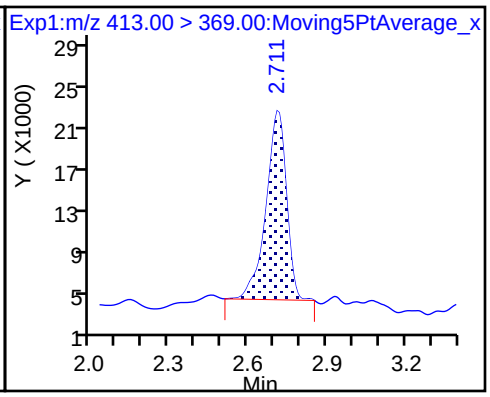
D 12 M2-6:2FTS



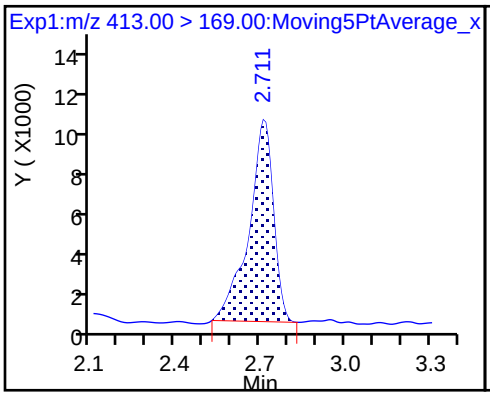
* 62 13C2-PFOA



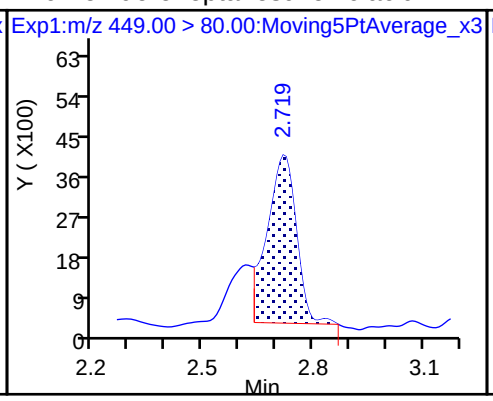
15 Perfluorooctanoic acid



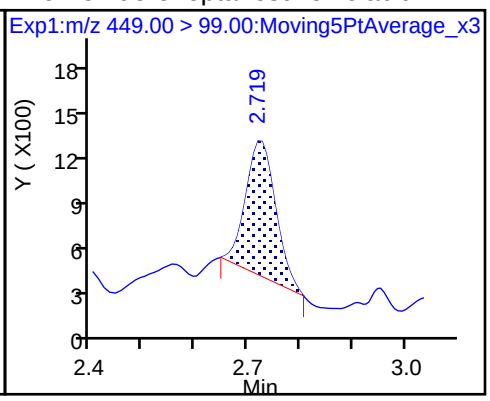
15 Perfluorooctanoic acid



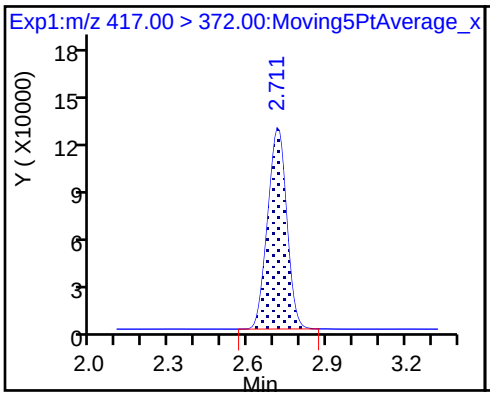
16 Perfluoroheptanesulfonic acid



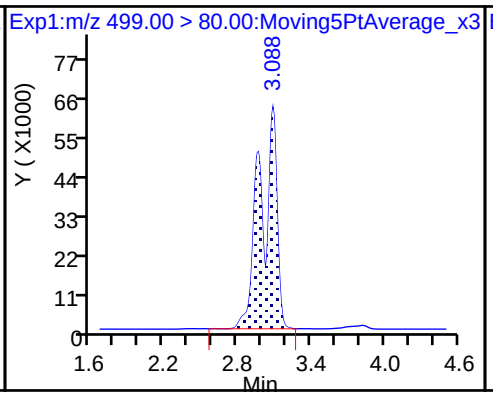
16 Perfluoroheptanesulfonic acid



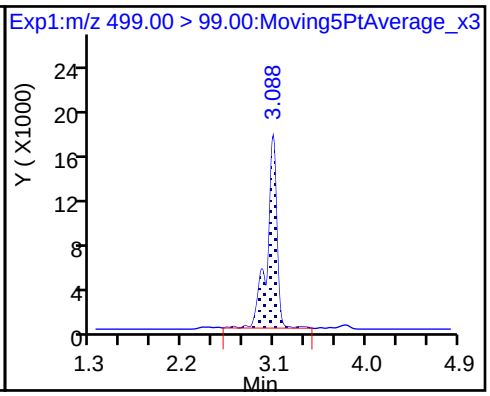
D 14 13C4 PFOA



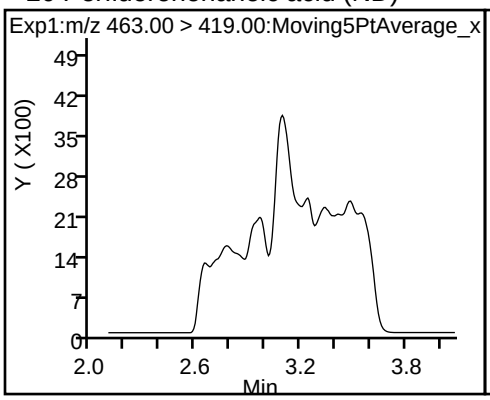
17 Perfluorooctane sulfonic acid



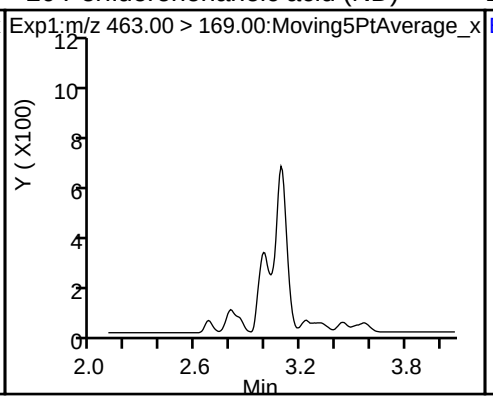
17 Perfluorooctane sulfonic acid



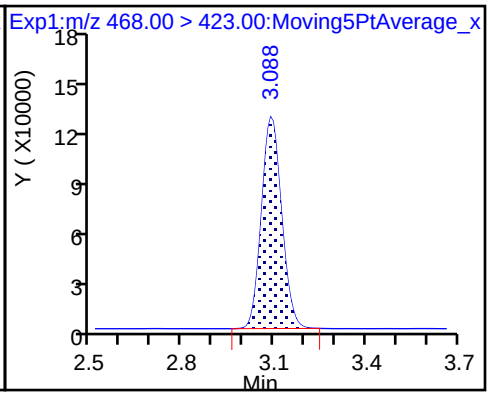
20 Perfluorononanoic acid (ND)



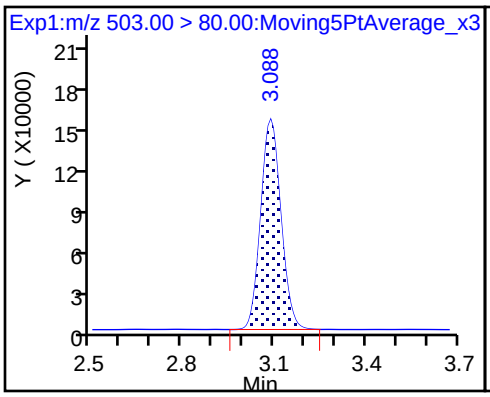
20 Perfluorononanoic acid (ND)



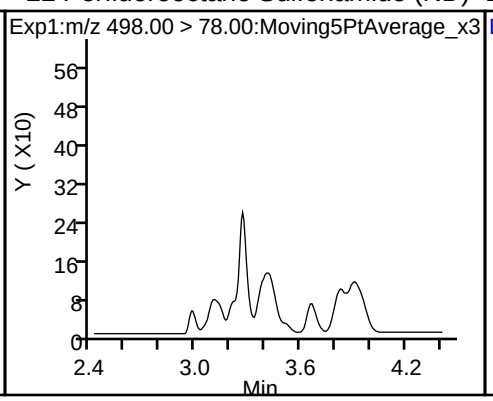
D 19 13C5 PFNA



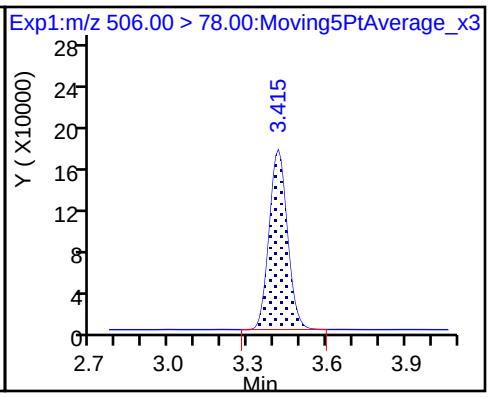
D 18 13C4 PFOS



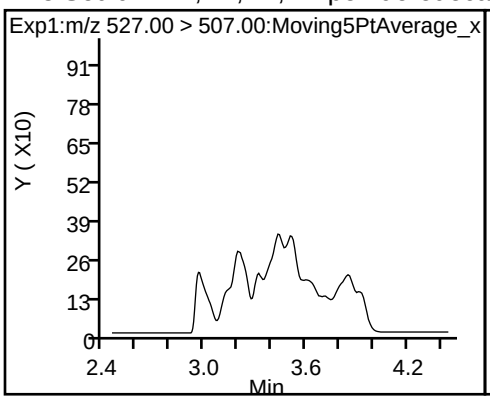
22 Perfluorooctane Sulfonamide (ND)



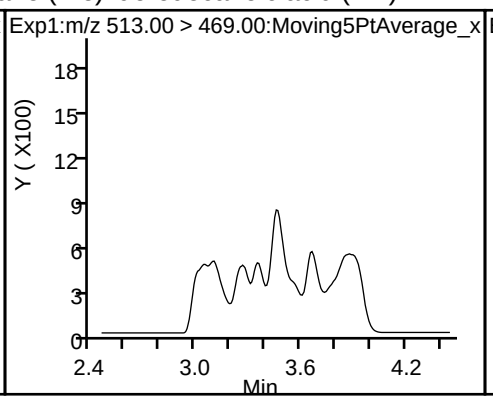
D 21 13C8 FOSA



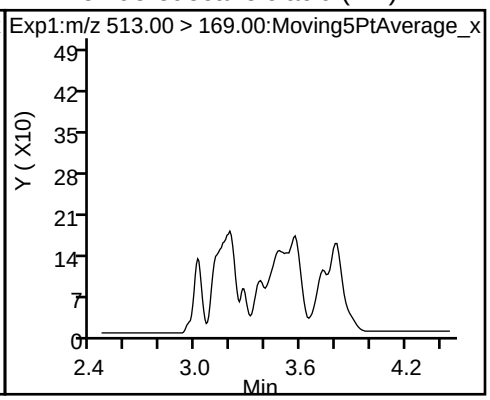
25 Sodium 1H,1H,2H,2H-perfluorodecane (ND)



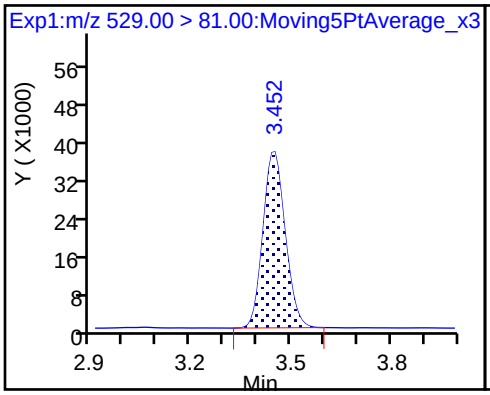
24 Perfluorodecanoic acid (ND)



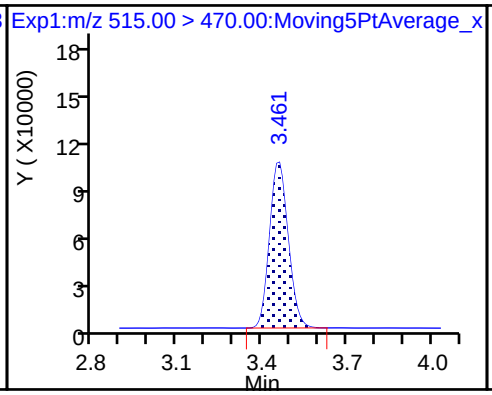
24 Perfluorodecanoic acid (ND)



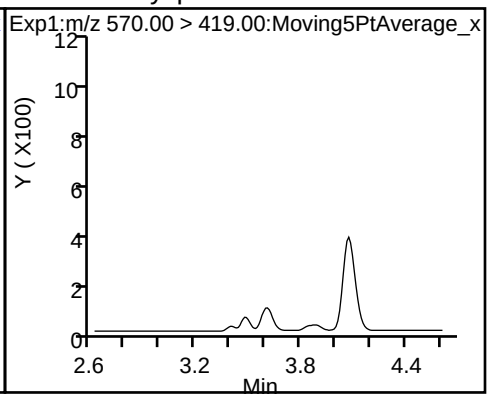
D 26 M2-8:2FTS



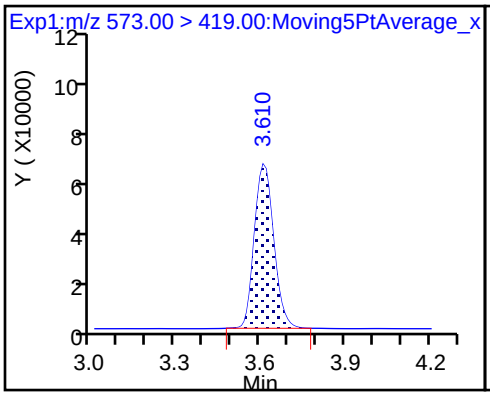
D 23 13C2 PFDA



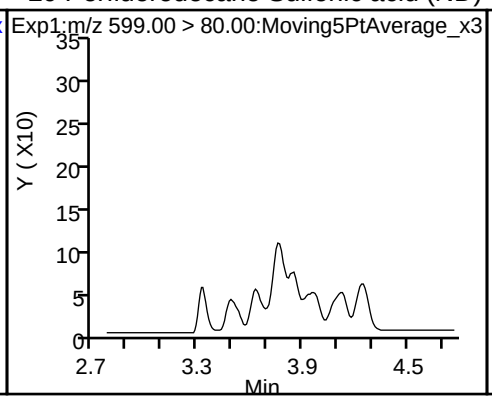
28 N-methyl perfluorooctane sulfonami (ND)



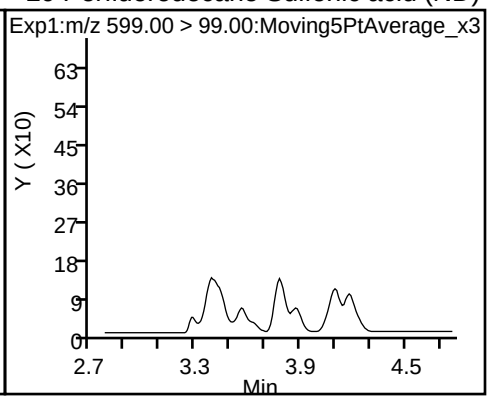
D 27 d3-NMeFOSAA



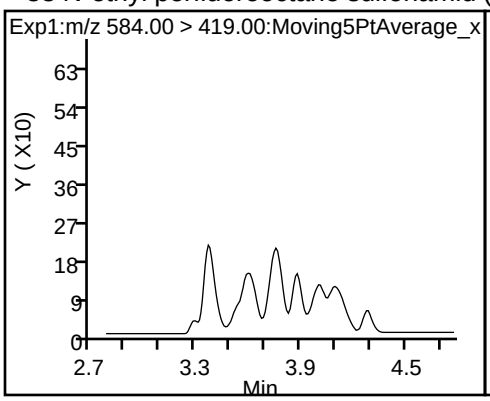
29 Perfluorodecane Sulfonic acid (ND)



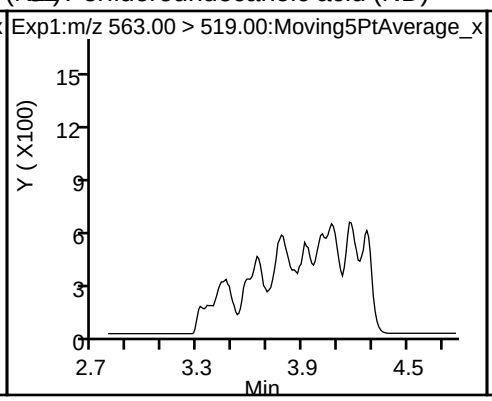
29 Perfluorodecane Sulfonic acid (ND)



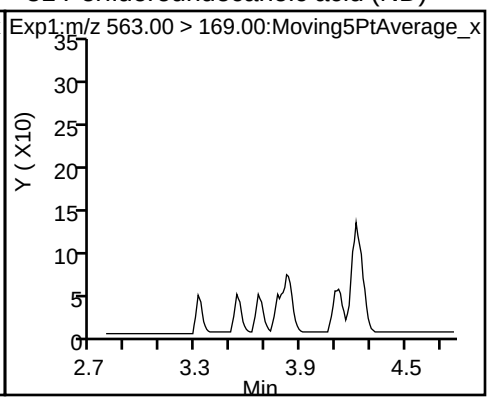
33 N-ethyl perfluorooctane sulfonamid (ND)



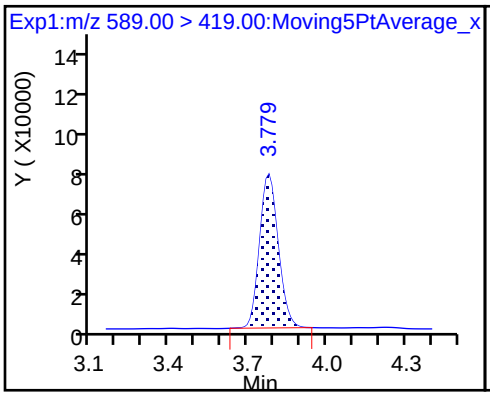
31 Perfluoroundecanoic acid (ND)



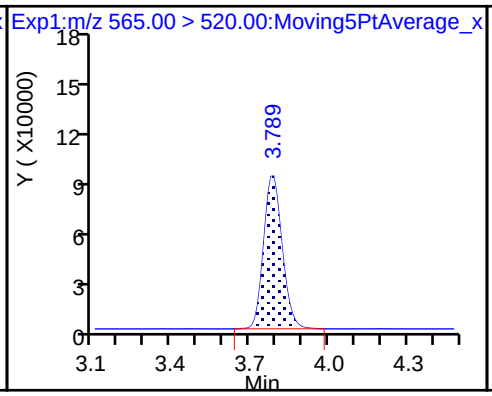
31 Perfluoroundecanoic acid (ND)



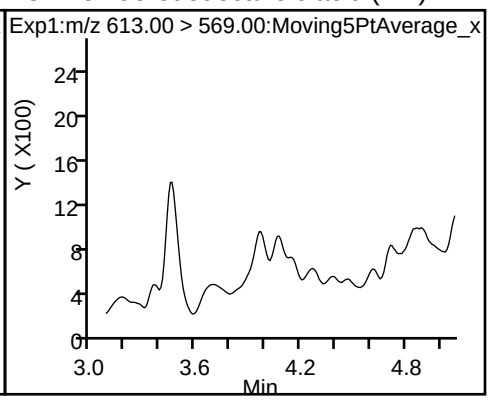
D 32 d5-NEtFOSAA



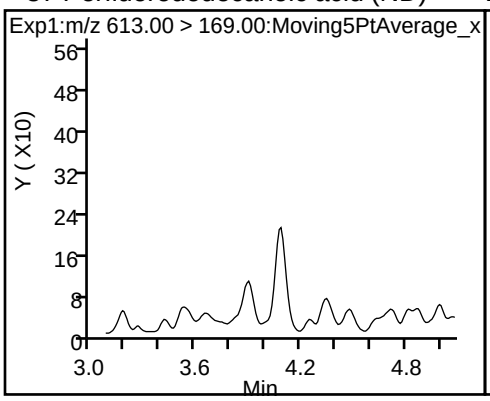
D 30 13C2 PFUnA



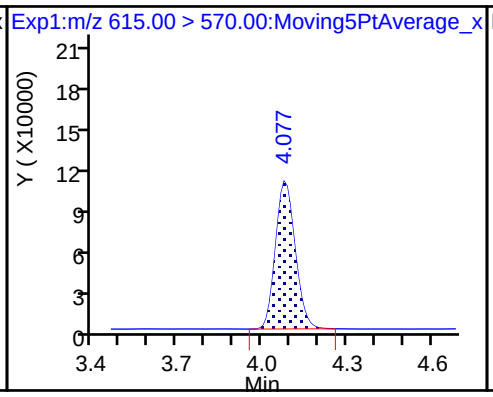
37 Perfluorododecanoic acid (ND)



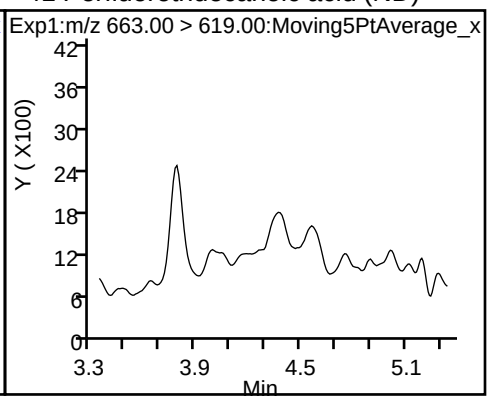
37 Perfluorododecanoic acid (ND)



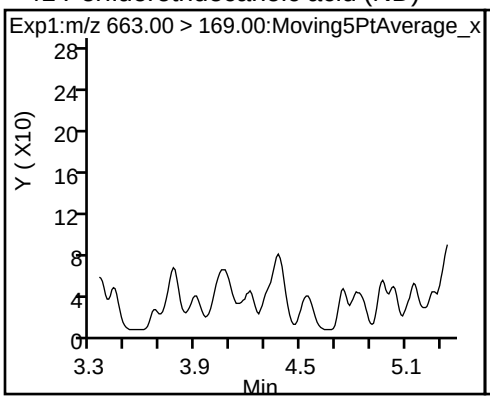
D 36 13C2 PFDoA



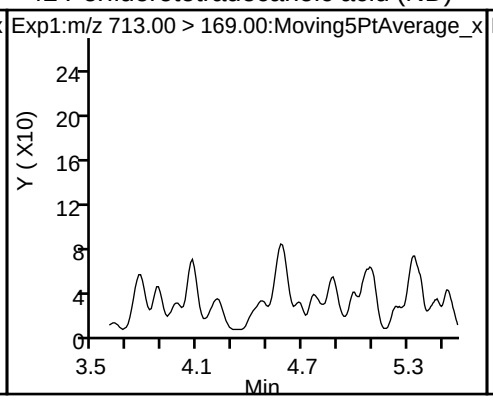
41 Perfluorotridecanoic acid (ND)



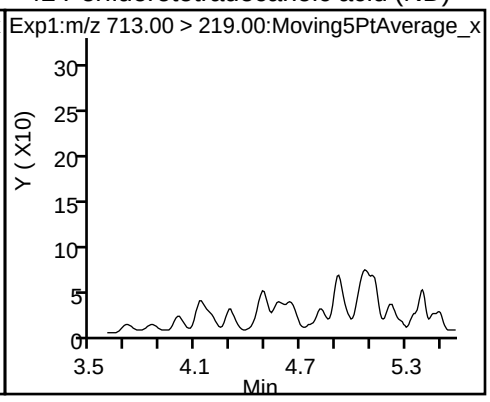
41 Perfluorotridecanoic acid (ND)



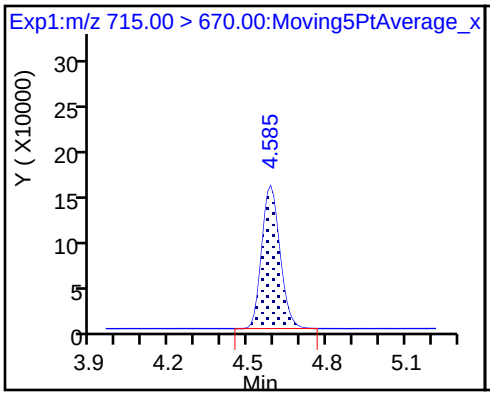
42 Perfluorotetradecanoic acid (ND)



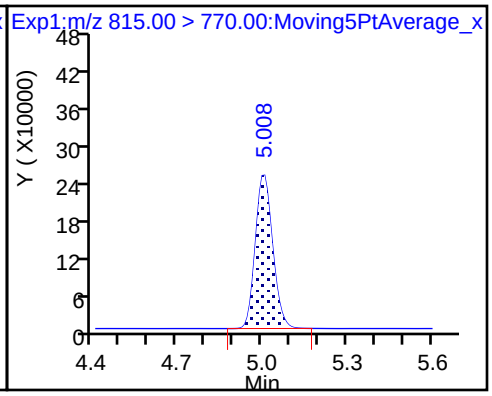
42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: MW-BNA05-01-01D | Lab Sample ID: 320-36960-23

Matrix: Water | Lab File ID: 2018.03.24LLAA_013.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 09:02

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 258.7(mL) | Date Analyzed: 03/24/2018 20:13

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	M	1.9	1.4	0.59
335-67-1	Perfluorooctanoic acid (PFOA)	11	M	1.9	1.4	0.52
375-95-1	Perfluorononanoic acid (PFNA)	1.4	J	1.9	1.4	0.50
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.4		1.9	0.97	0.44
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	68		1.9	0.97	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	61		3.9	2.9	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	65		50-150
STL01892	13C4-PFHpA	68		50-150
STL00990	13C4 PFOA	55		50-150
STL00995	13C5 PFNA	72		50-150
STL00994	18O2 PFHxS	72		50-150
STL00991	13C4 PFOS	69		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_013.d
Lims ID: 320-36960-B-23-A
Client ID: MW-BNA05-01-01D
Sample Type: Client
Inject. Date: 24-Mar-2018 20:13:48 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-b-23-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:49:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.762	-0.001	0.646	79955	1.51		64.9	125	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.767	-0.006	1.000	301164	0.1127			99.1	
298.90 > 99.00	1.761	1.767	-0.006	1.000	122187		2.46(1.25-3.74)		82.0	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.353	2.348	0.005	1.000	168992	0.0943			66.0	M
363.00 > 169.00	2.353	2.348	0.005	1.000	74332		2.27(1.13-3.40)		172	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.367	2.361	0.006	1.000	4414981	1.77			2512	
399.00 > 99.00	2.367	2.361	0.006	1.000	1410832		3.13(1.50-4.49)		1620	
D 9 13C4-PFHpA										
367.00 > 322.00	2.353	2.368	-0.015	0.863	4328900	1.71		68.3	76677	
D 11 18O2 PFHxS										
403.00 > 84.00	2.367	2.380	-0.013	0.868	5314353	1.70		71.9	95034	
* 62 13C2-PFOA										
415.00 > 370.00	2.726	2.714	0.012		6912011	2.50			104159	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.726	2.714	0.012	1.000	461113	0.2839			129	M
413.00 > 169.00	2.726	2.714	0.012	1.000	286119		1.61(0.84-2.52)		804	M
D 14 13C4 PFOA										
417.00 > 372.00	2.726	2.728	-0.002	1.000	3594597	1.39		55.5	72980	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.096	3.090	0.006	1.000	2719236	1.57			5215	
499.00 > 99.00	3.096	3.090	0.006	1.000	513465		5.30(2.31-6.93)		2377	
20 Perfluorononanoic acid										
463.00 > 419.00	3.104	3.090	0.014	1.003	61595	0.0373			59.6	
463.00 > 169.00	3.096	3.090	0.006	1.000	14761		4.17(1.90-5.69)		192	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.096	3.112	-0.016	1.135	4138067	1.81		72.4	77496	
D 18 13C4 PFOS										
503.00 > 80.00	3.096	3.112	-0.016	1.135	3726997	1.64		68.6	22711	

QC Flag Legend

Review Flags

M - Manually Integrated

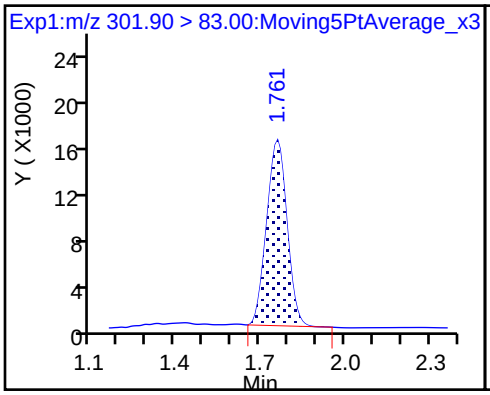
Report Date: 25-Mar-2018 10:51:16 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

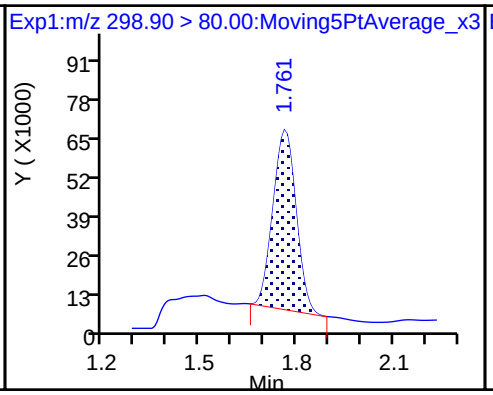
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_013.d

Injection Date:	24-Mar-2018 20:13:48	Instrument ID:	A8_N
Lims ID:	320-36960-B-23-A	Lab Sample ID:	320-36960-23
Client ID:	MW-BNA05-01-01D		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7 Worklist Smp#: 11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL

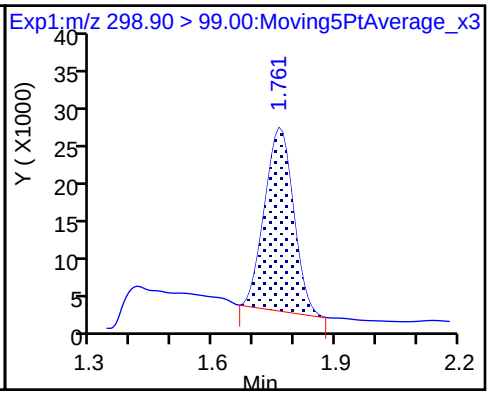
D 47 13C3-PFBS



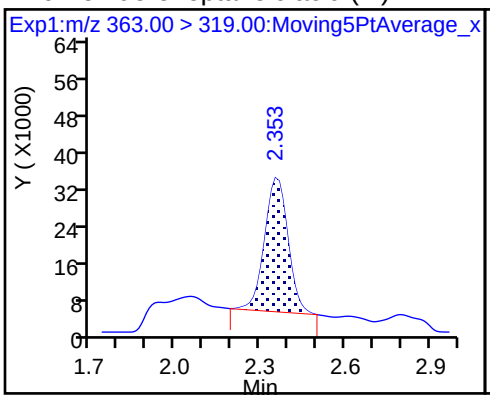
5 Perfluorobutanesulfonic acid



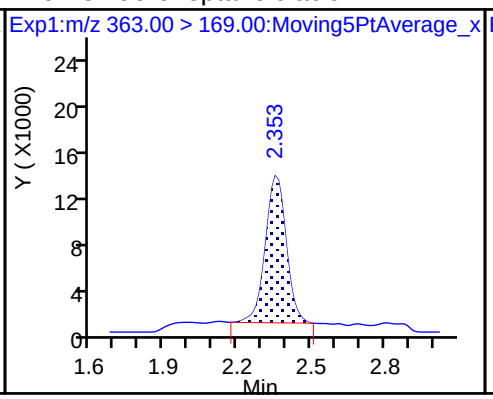
5 Perfluorobutanesulfonic acid



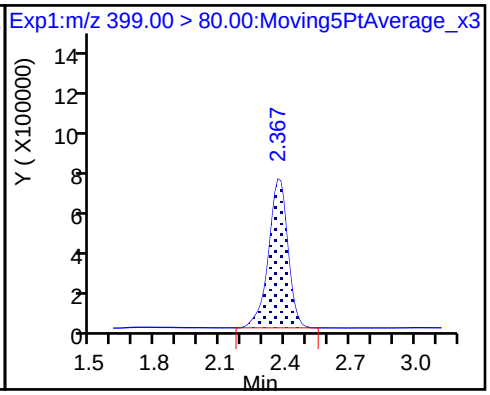
10 Perfluoroheptanoic acid (M)



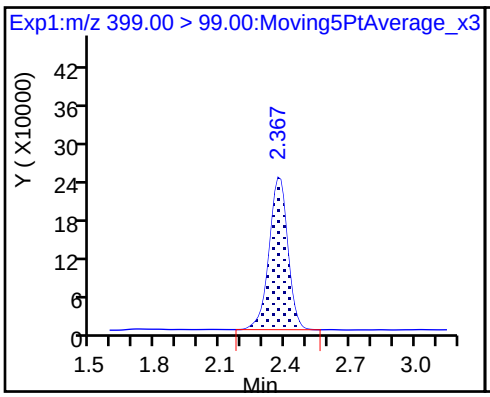
10 Perfluoroheptanoic acid



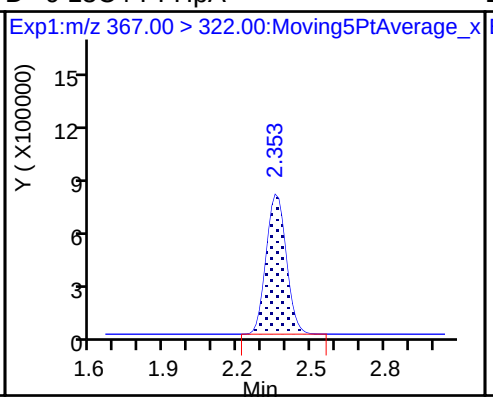
8 Perfluorohexanesulfonic acid



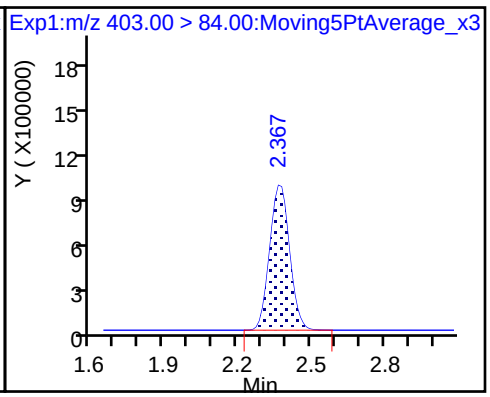
8 Perfluorohexanesulfonic acid



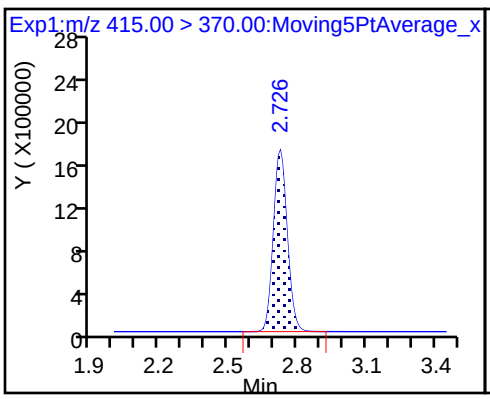
D 9 13C4-PFHpA



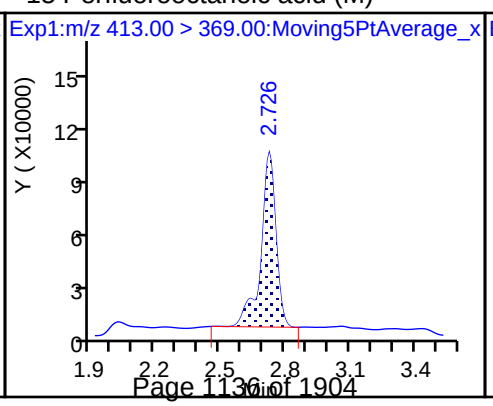
D 11 18O2 PFHxS



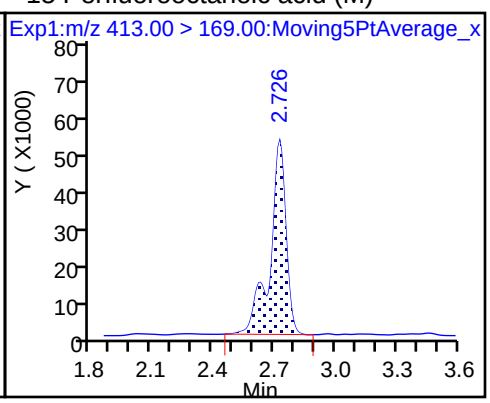
* 62 13C2-PFOA



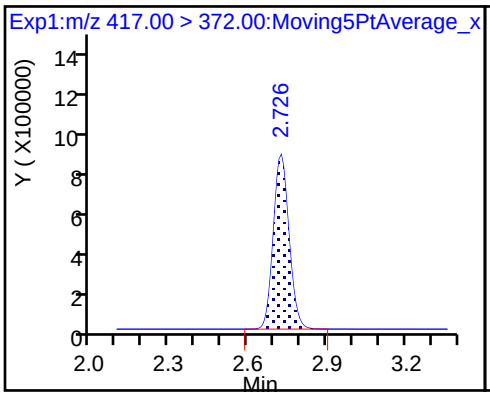
15 Perfluorooctanoic acid (M)



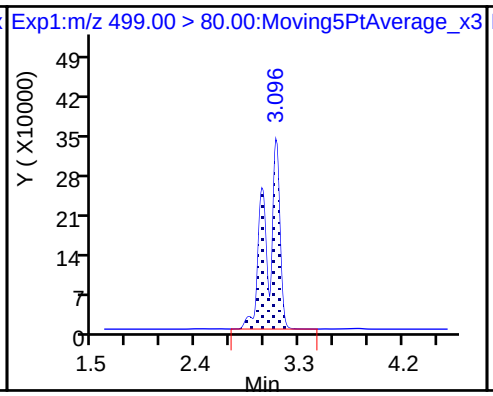
15 Perfluorooctanoic acid (M)



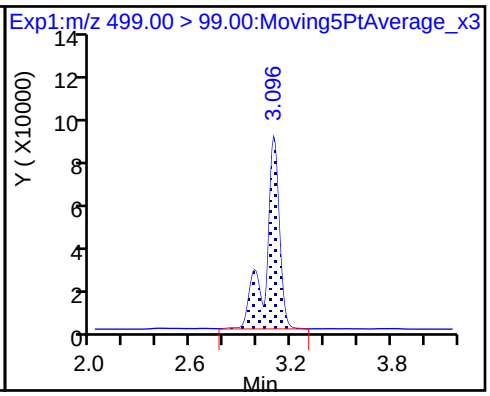
D 14 13C4 PFOA



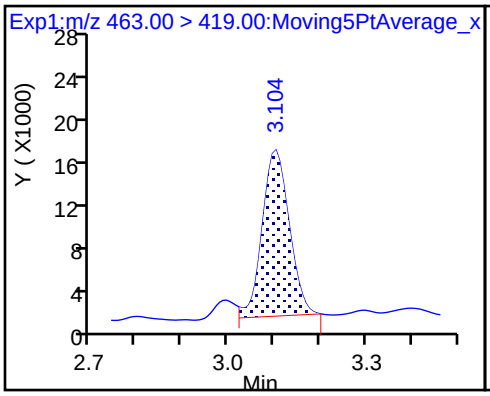
17 Perfluorooctane sulfonic acid



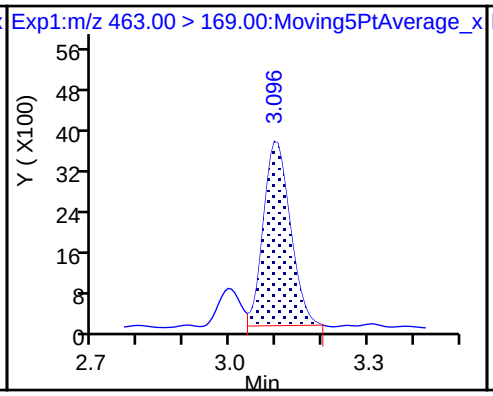
17 Perfluorooctane sulfonic acid



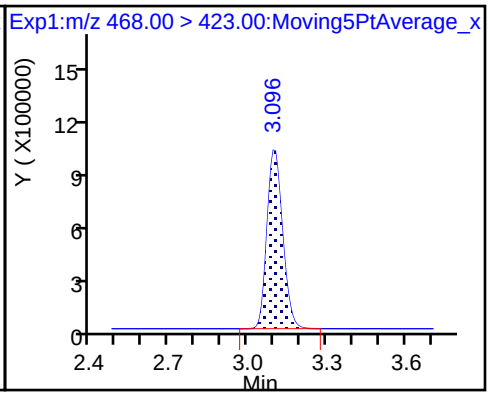
20 Perfluorononanoic acid



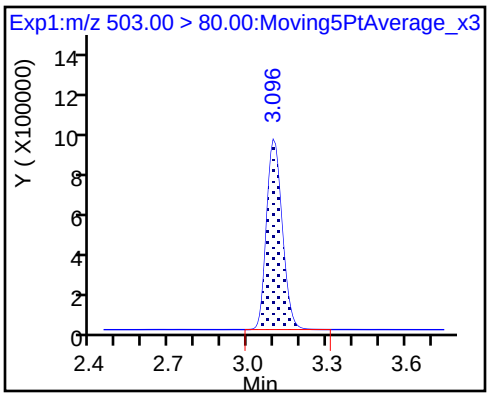
20 Perfluorononanoic acid



D 19 13C5 PFNA



D 18 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

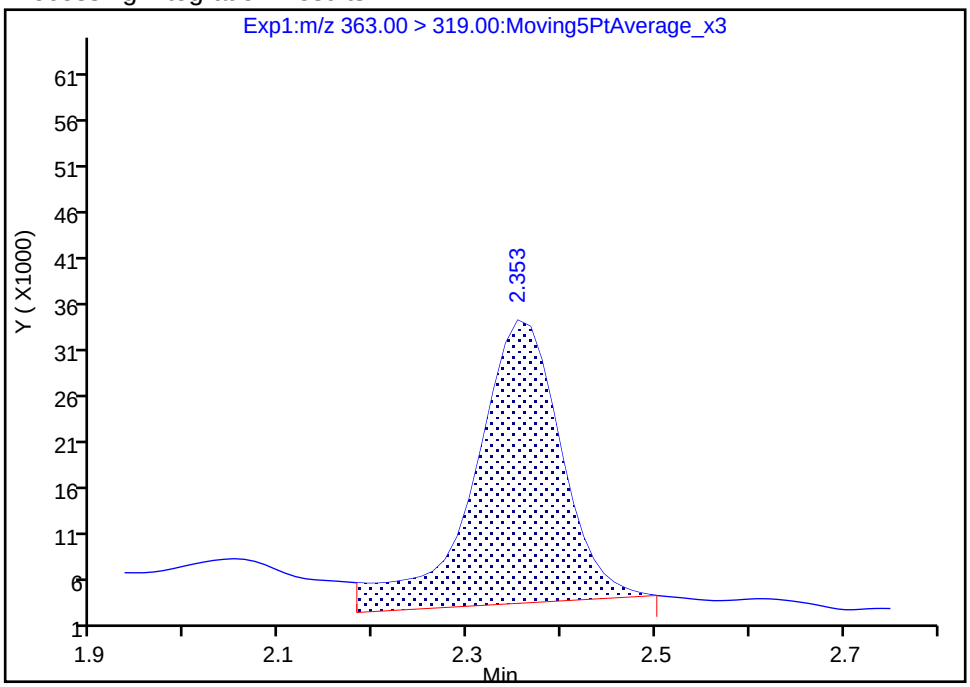
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_013.d				
Injection Date:	24-Mar-2018 20:13:48	Instrument ID:	A8_N		
Lims ID:	320-36960-B-23-A	Lab Sample ID:	320-36960-23		
Client ID:	MW-BNA05-01-01D				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

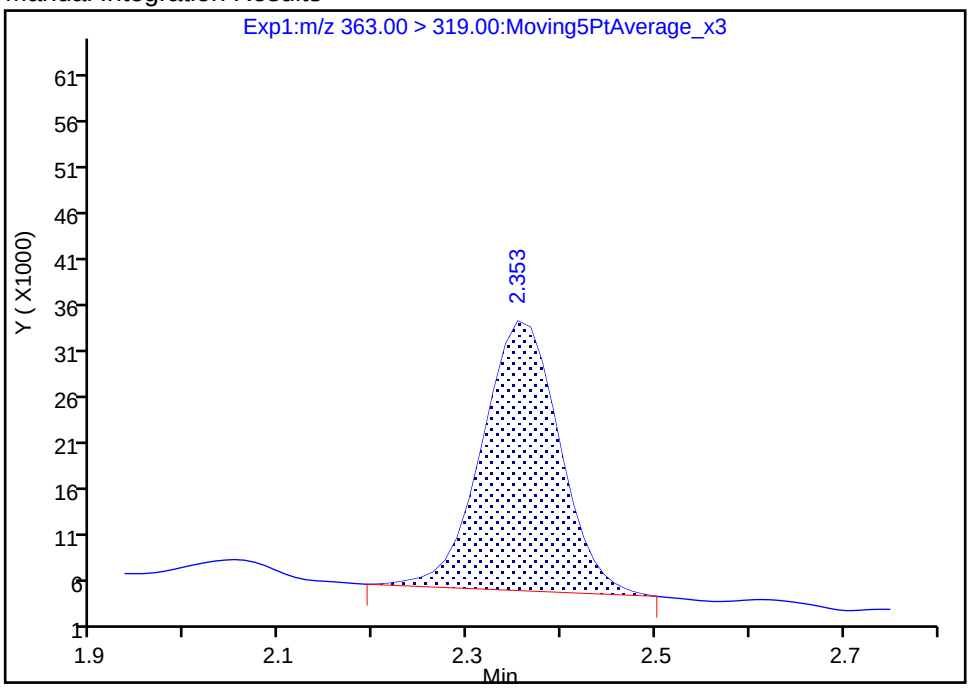
Processing Integration Results

RT: 2.35
Area: 199919
Amount: 0.111608
Amount Units: ng/ml



Manual Integration Results

RT: 2.35
Area: 168992
Amount: 0.094343
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:49:04

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

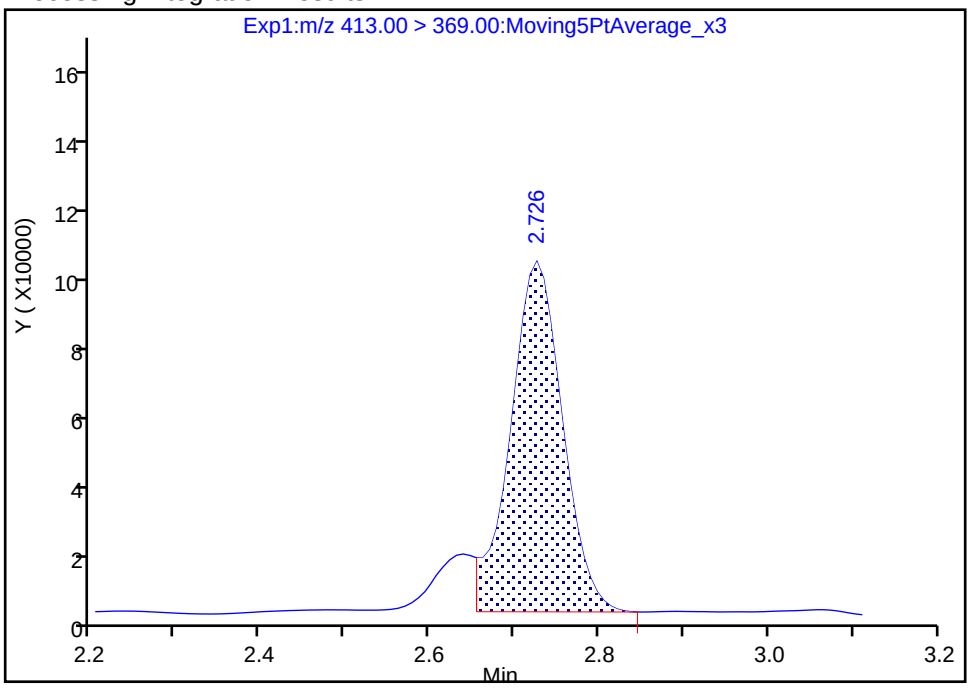
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_013.d				
Injection Date:	24-Mar-2018 20:13:48	Instrument ID:	A8_N		
Lims ID:	320-36960-B-23-A	Lab Sample ID:	320-36960-23		
Client ID:	MW-BNA05-01-01D				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

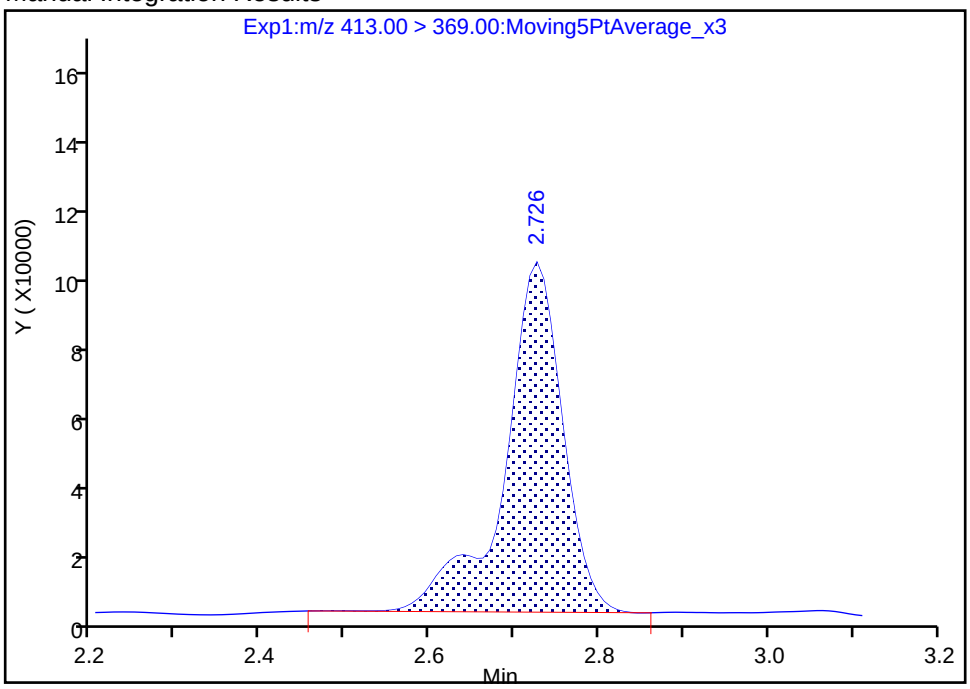
Processing Integration Results

RT: 2.73
Area: 410887
Amount: 0.252964
Amount Units: ng/ml



Manual Integration Results

RT: 2.73
Area: 461113
Amount: 0.283886
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:49:11

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

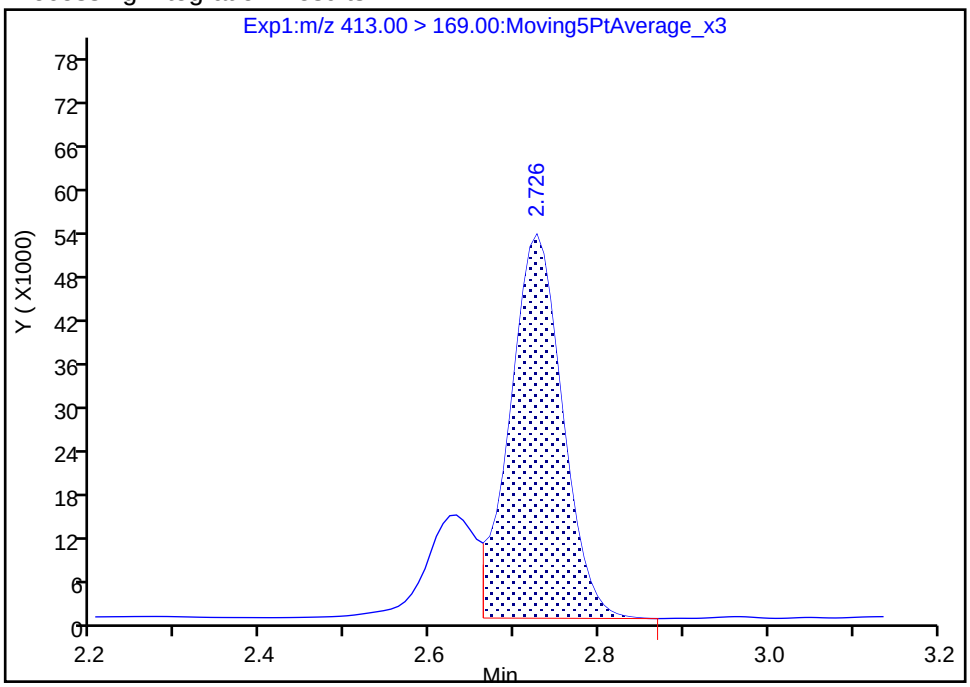
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_013.d				
Injection Date:	24-Mar-2018 20:13:48	Instrument ID:	A8_N		
Lims ID:	320-36960-B-23-A	Lab Sample ID:	320-36960-23		
Client ID:	MW-BNA05-01-01D				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

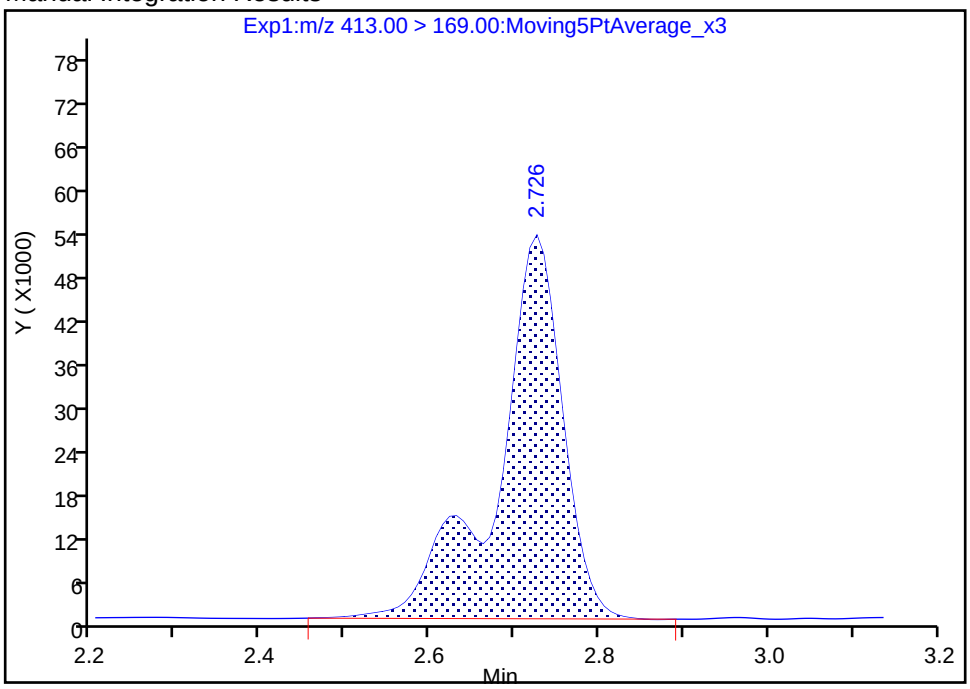
Processing Integration Results

RT: 2.73
Area: 227467
Amount: 0.252964
Amount Units: ng/ml



Manual Integration Results

RT: 2.73
Area: 286119
Amount: 0.283886
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:49:13

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: MW-BNA01-01-01 | Lab Sample ID: 320-36960-24

Matrix: Water | Lab File ID: 2018.03.24LLAA_014.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 11:34

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 261.3(mL) | Date Analyzed: 03/24/2018 20:21

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.1		1.9	1.4	0.58
335-67-1	Perfluorooctanoic acid (PFOA)	13	M	1.9	1.4	0.52
375-95-1	Perfluorononanoic acid (PFNA)	1.4	U	1.9	1.4	0.50
375-73-5	Perfluorobutanesulfonic acid (PFBS)	27	M	1.9	0.96	0.44
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	130		1.9	0.96	0.36
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	96		3.8	2.9	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	69		50-150
STL01892	13C4-PFHpA	70		50-150
STL00990	13C4 PFOA	74		50-150
STL00995	13C5 PFNA	70		50-150
STL00994	18O2 PFHxS	75		50-150
STL00991	13C4 PFOS	73		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_014.d
Lims ID: 320-36960-B-24-A
Client ID: MW-BNA01-01-01
Sample Type: Client
Inject. Date: 24-Mar-2018 20:21:40 ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-b-24-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:49:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.762	-0.009	0.646	86541	1.60		68.8	143	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.753	1.767	-0.014	1.000	2049636	0.7087			626	M
298.90 > 99.00	1.753	1.767	-0.014	1.000	852566		2.40(1.25-3.74)		835	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.354	2.348	0.006	1.000	252338	0.1341			119	
363.00 > 169.00	2.354	2.348	0.006	1.000	104291		2.42(1.13-3.40)		226	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.367	2.361	0.006	1.000	9232052	3.45			6013	
399.00 > 99.00	2.367	2.361	0.006	1.000	2858581		3.23(1.50-4.49)		3301	
D 9 13C4-PFHpA										
367.00 > 322.00	2.354	2.368	-0.014	0.868	4548876	1.76		70.3	90597	
D 11 18O2 PFHxS										
403.00 > 84.00	2.367	2.380	-0.013	0.873	5681378	1.78		75.3	94754	
* 62 13C2-PFOA										
415.00 > 370.00	2.712	2.714	-0.002		7056457	2.50			124693	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.712	2.714	-0.002	1.000	766515	0.3462			222	M
413.00 > 169.00	2.712	2.714	-0.002	1.000	486675		1.58(0.84-2.52)		1494	M
D 14 13C4 PFOA										
417.00 > 372.00	2.712	2.728	-0.016	1.000	4899855	1.85		74.1	101957	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.088	3.090	-0.002	1.000	4727785	2.50			7794	
499.00 > 99.00	3.088	3.090	-0.002	1.000	868400		5.44(2.31-6.93)		5009	
20 Perfluorononanoic acid										
463.00 > 419.00	3.088	3.090	-0.002	1.000	7561	0.004617			7.4	
463.00 > 169.00	3.096	3.090	0.006	1.003	1789		4.23(1.90-5.69)		21.5	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.112	-0.024	1.139	4104592	1.76		70.4	63451	
D 18 13C4 PFOS										
503.00 > 80.00	3.088	3.112	-0.024	1.139	4060050	1.75		73.2	30064	

QC Flag Legend

Review Flags

M - Manually Integrated

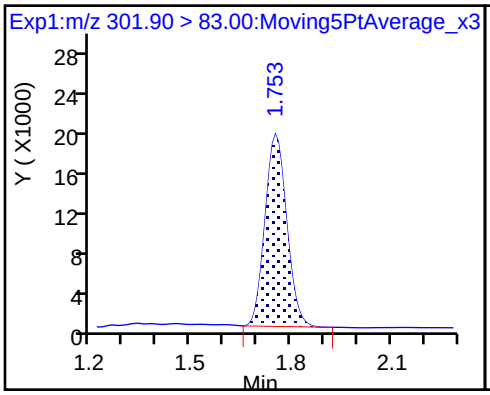
Report Date: 25-Mar-2018 10:51:18 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

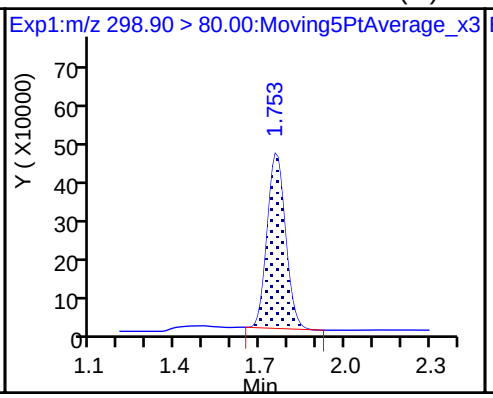
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_014.d

Injection Date:	24-Mar-2018 20:21:40	Instrument ID:	A8_N		
Lims ID:	320-36960-B-24-A	Lab Sample ID:	320-36960-24		
Client ID:	MW-BNA01-01-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		

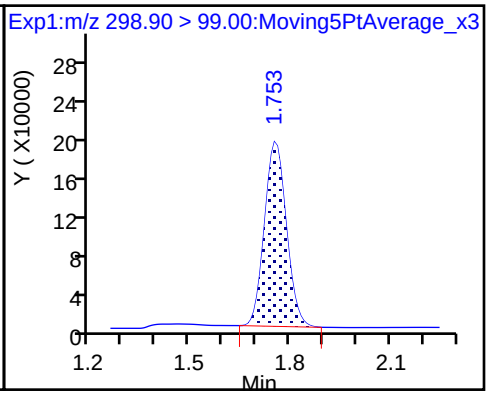
D 47 13C3-PFBS



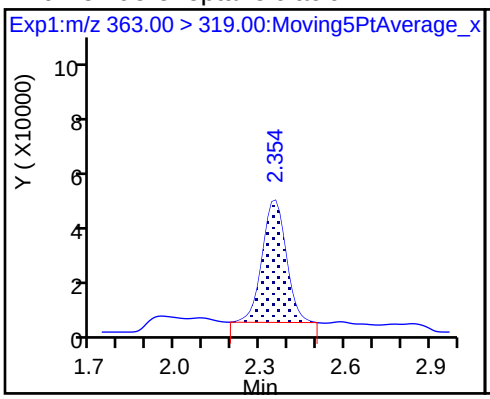
5 Perfluorobutanesulfonic acid (M)



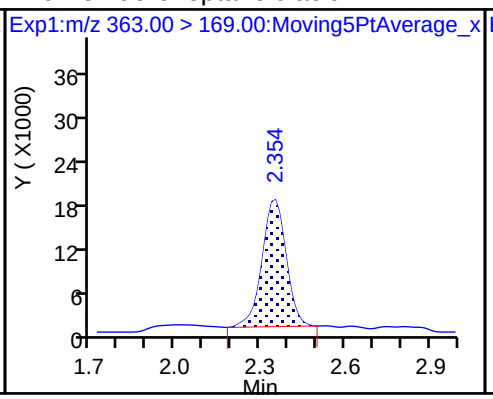
5 Perfluorobutanesulfonic acid



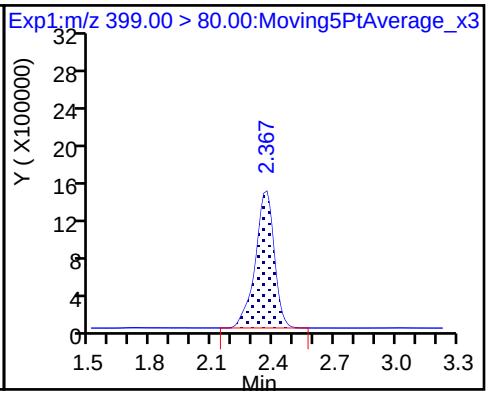
10 Perfluoroheptanoic acid



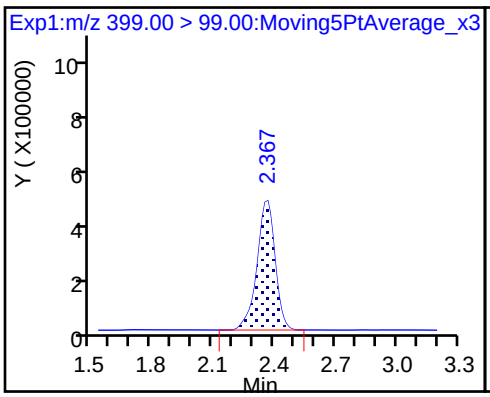
10 Perfluoroheptanoic acid



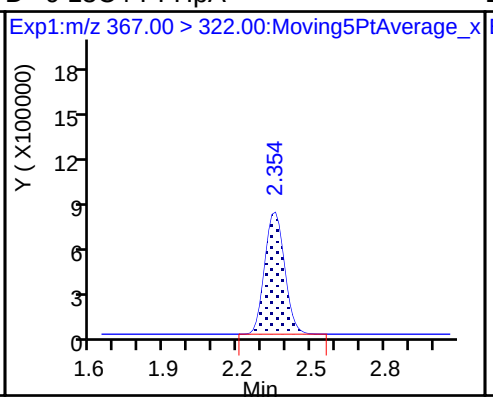
8 Perfluorohexanesulfonic acid



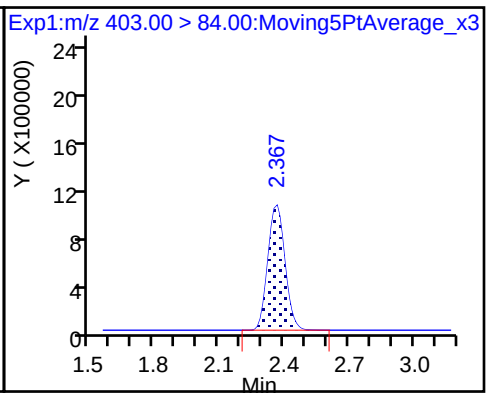
8 Perfluorohexanesulfonic acid



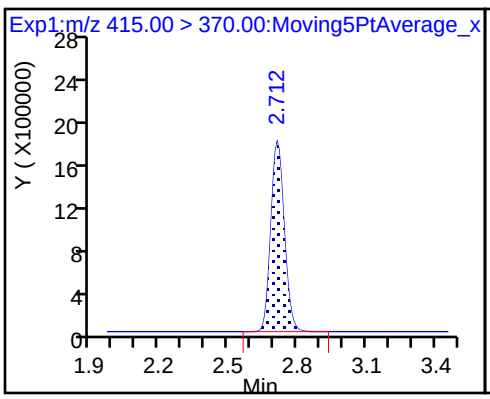
D 9 13C4-PFHpA



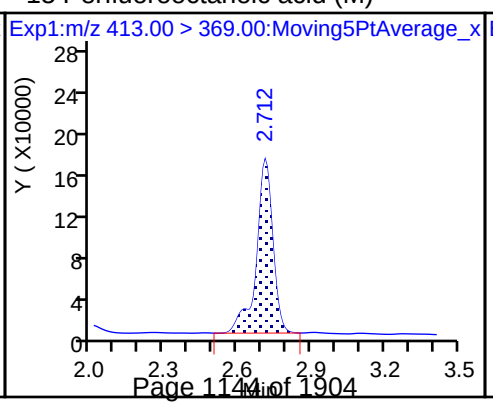
D 11 18O2 PFHxS



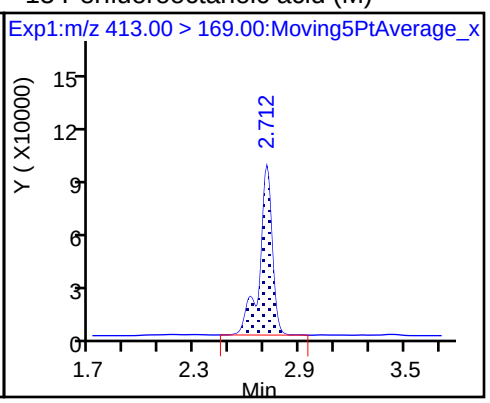
* 62 13C2-PFOA



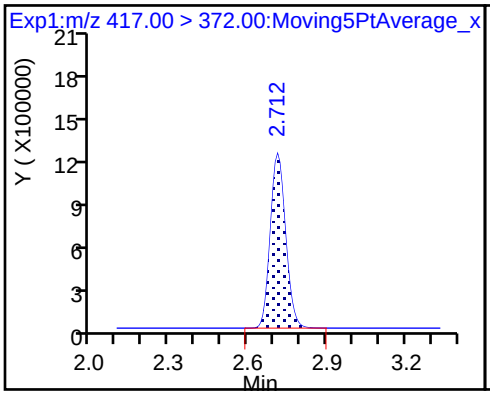
15 Perfluorooctanoic acid (M)



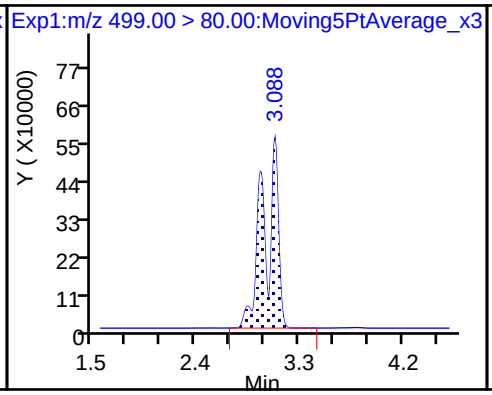
15 Perfluorooctanoic acid (M)



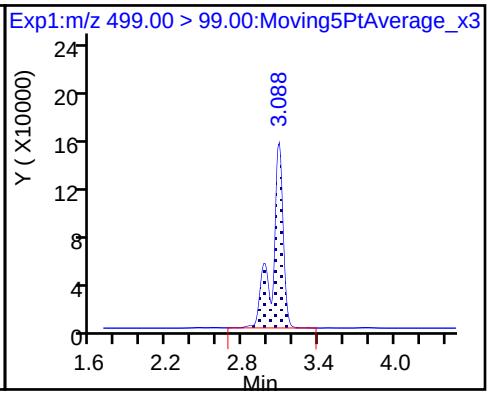
D 14 13C4 PFOA



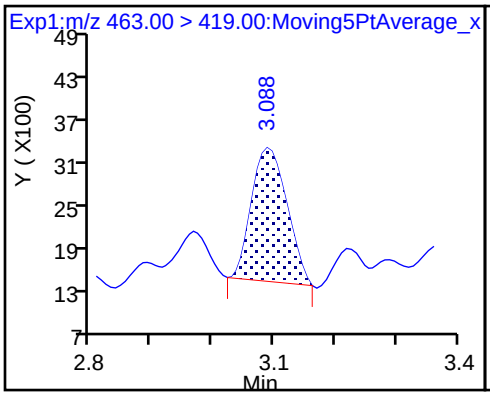
17 Perfluorooctane sulfonic acid



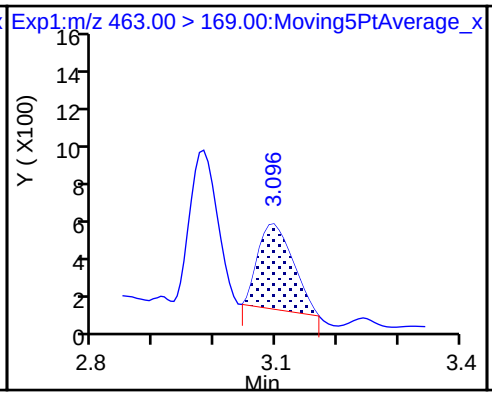
17 Perfluorooctane sulfonic acid



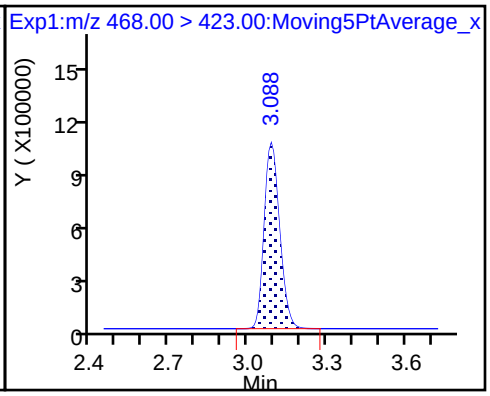
20 Perfluorononanoic acid



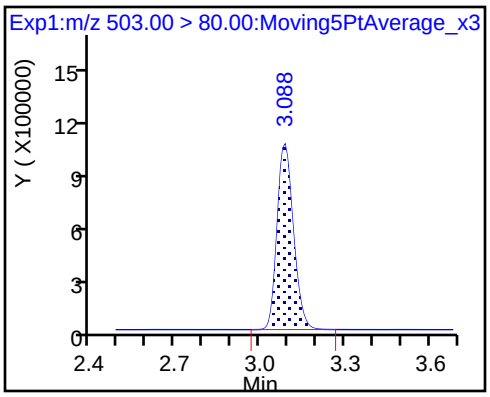
20 Perfluorononanoic acid



D 19 13C5 PFNA



D 18 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

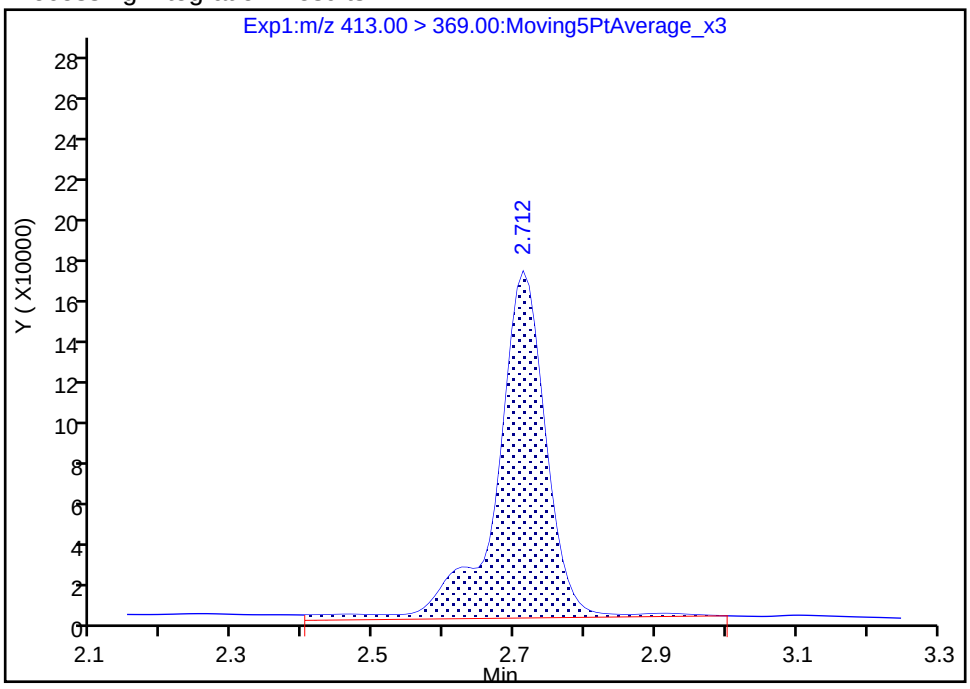
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_014.d				
Injection Date:	24-Mar-2018 20:21:40	Instrument ID:	A8_N		
Lims ID:	320-36960-B-24-A	Lab Sample ID:	320-36960-24		
Client ID:	MW-BNA01-01-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

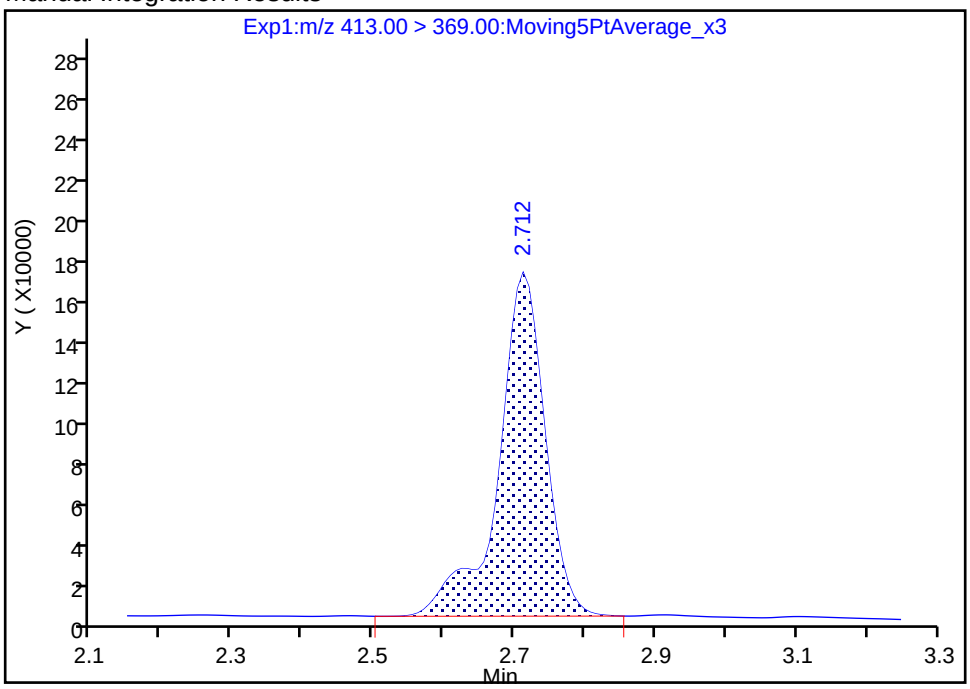
Processing Integration Results

RT: 2.71
Area: 824579
Amount: 0.372423
Amount Units: ng/ml



Manual Integration Results

RT: 2.71
Area: 766515
Amount: 0.346198
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:49:31

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

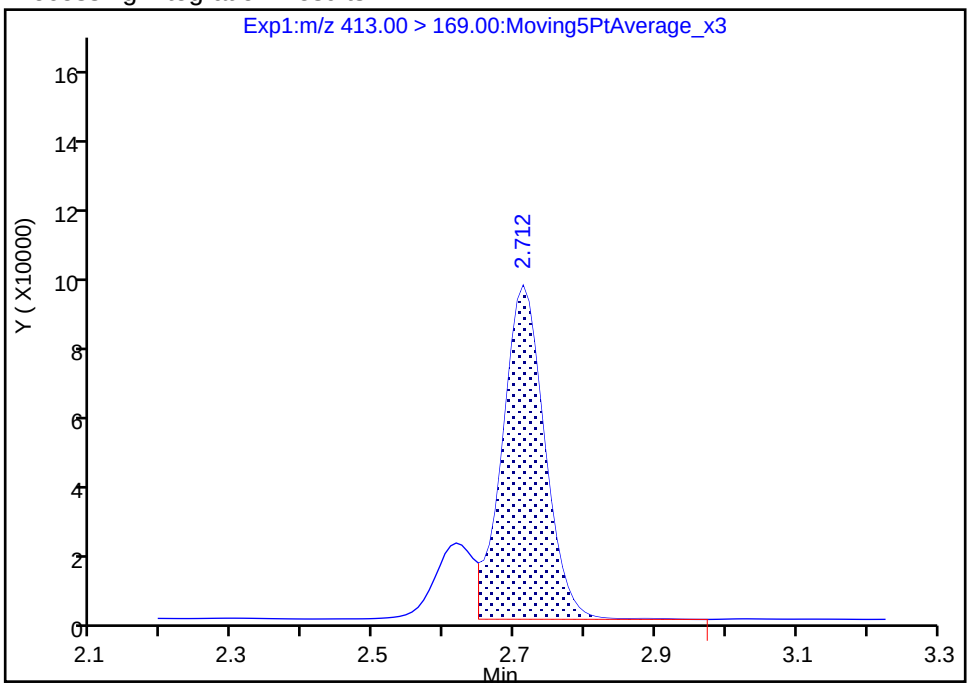
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_014.d				
Injection Date:	24-Mar-2018 20:21:40	Instrument ID:	A8_N		
Lims ID:	320-36960-B-24-A	Lab Sample ID:	320-36960-24		
Client ID:	MW-BNA01-01-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

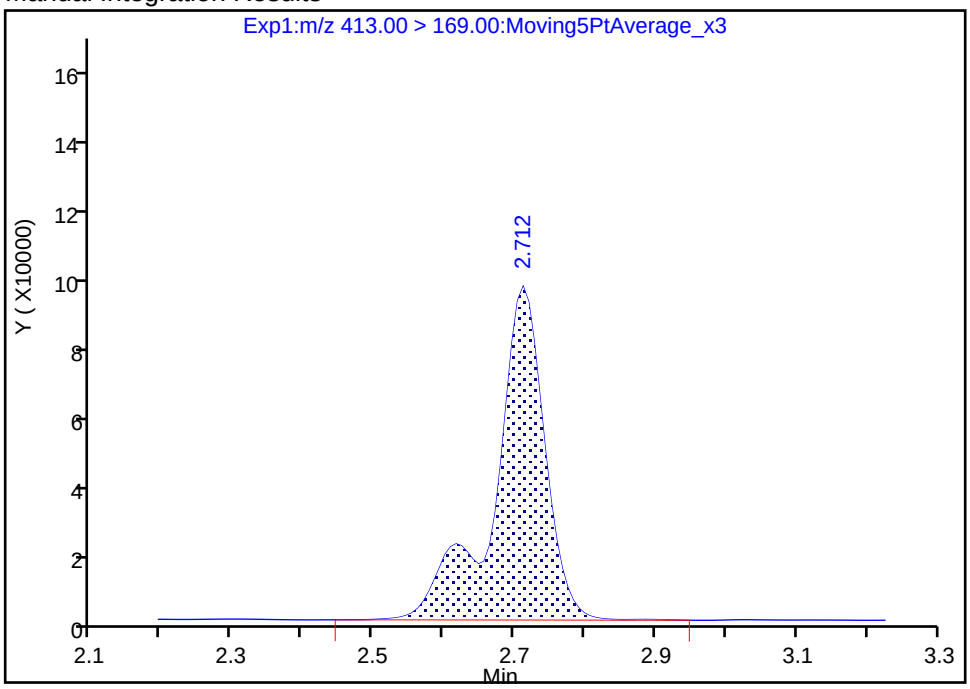
Processing Integration Results

RT: 2.71
Area: 402570
Amount: 0.372423
Amount Units: ng/ml



Manual Integration Results

RT: 2.71
Area: 486675
Amount: 0.346198
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:49:34

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

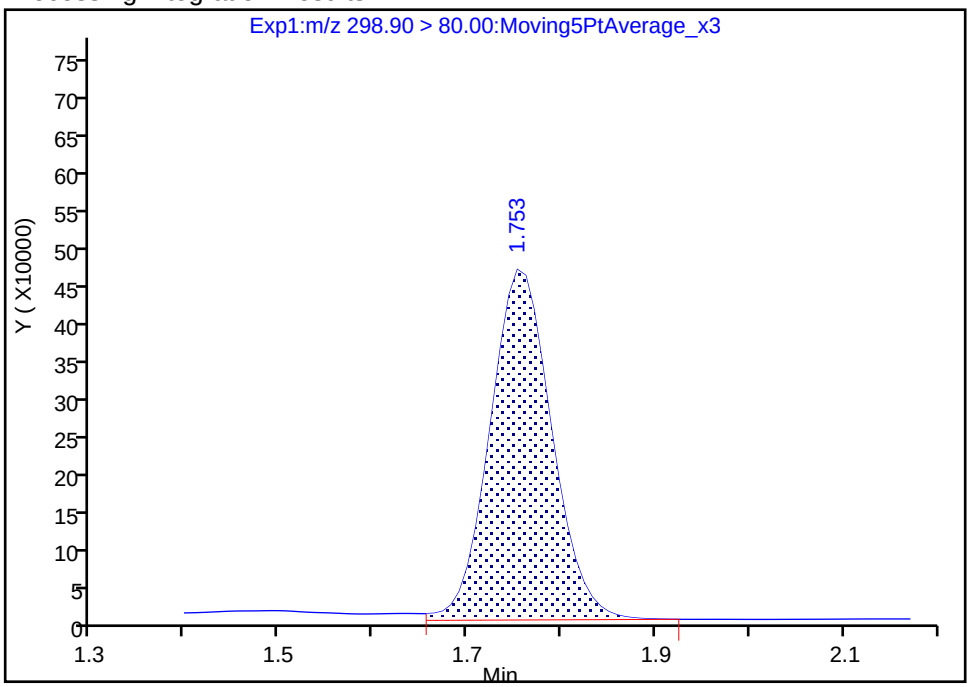
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_014.d				
Injection Date:	24-Mar-2018 20:21:40	Instrument ID:	A8_N		
Lims ID:	320-36960-B-24-A	Lab Sample ID:	320-36960-24		
Client ID:	MW-BNA01-01-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

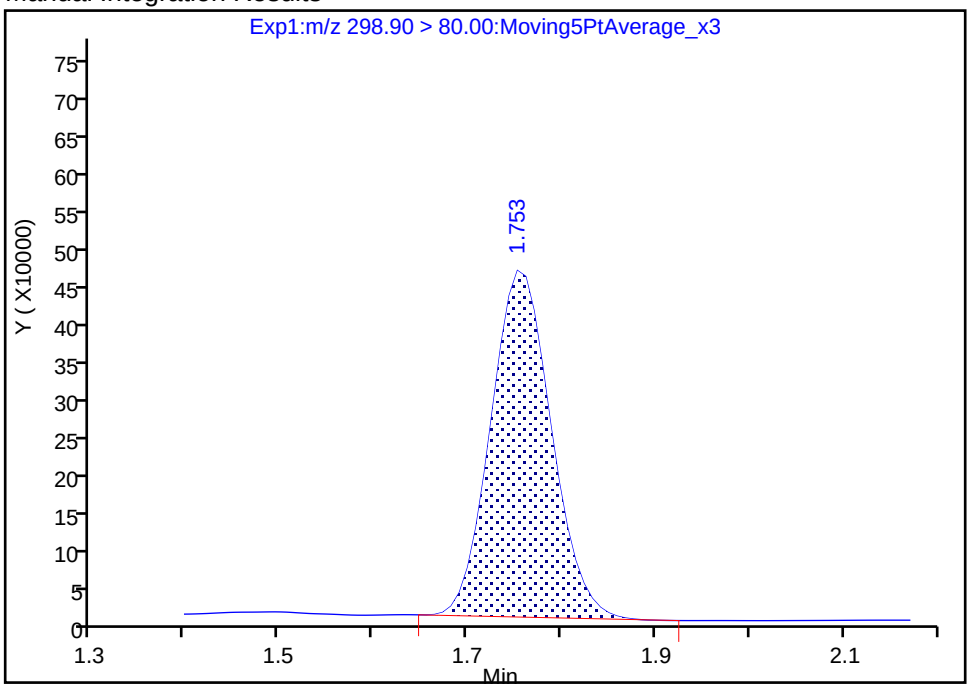
Processing Integration Results

RT: 1.75
Area: 2119978
Amount: 0.732981
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 2049636
Amount: 0.708661
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:49:26

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA04-SW1-01 | Lab Sample ID: 320-36960-25

Matrix: Water | Lab File ID: 2018.03.24LLAA_015.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 13:40

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 262.7(mL) | Date Analyzed: 03/24/2018 20:29

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5		1.9	1.4	0.58
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	M	1.9	1.4	0.51
375-95-1	Perfluorononanoic acid (PFNA)	0.80	J	1.9	1.4	0.49
375-73-5	Perfluorobutanesulfonic acid (PFBS)	11		1.9	0.95	0.44
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	59		1.9	0.95	0.36
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	50		3.8	2.9	1.0

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	67		50-150
STL01892	13C4-PFHpA	68		50-150
STL00990	13C4 PFOA	68		50-150
STL00995	13C5 PFNA	64		50-150
STL00994	18O2 PFHxS	73		50-150
STL00991	13C4 PFOS	67		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_015.d
Lims ID: 320-36960-B-25-A
Client ID: BNA04-SW1-01
Sample Type: Client
Inject. Date: 24-Mar-2018 20:29:32 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-b-25-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:49:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.762	-0.009	0.646	81118	1.55		66.7	261	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.753	1.767	-0.014	1.000	779141	0.2874			344	
298.90 > 99.00	1.753	1.767	-0.014	1.000	342391		2.28(1.25-3.74)		632	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.348	-0.007	1.000	159732	0.0907			86.1	
363.00 > 169.00	2.341	2.348	-0.007	1.000	56041		2.85(1.13-3.40)		128	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.354	2.361	-0.007	1.000	3838534	1.54			4003	
399.00 > 99.00	2.354	2.361	-0.007	1.000	1160384		3.31(1.50-4.49)		2024	
D 9 13C4-PFHpA										
367.00 > 322.00	2.341	2.368	-0.027	0.863	4256800	1.70		68.1	81006	
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.380	-0.026	0.868	5293207	1.72		72.6	101663	
* 62 13C2-PFOA										
415.00 > 370.00	2.712	2.714	-0.002		6821169	2.50			100693	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.712	2.714	-0.002	1.000	374920	0.1919			92.6	
413.00 > 169.00	2.712	2.714	-0.002	1.000	230969		1.62(0.84-2.52)		687	M
D 14 13C4 PFOA										
417.00 > 372.00	2.712	2.728	-0.016	1.000	4323123	1.69		67.6	91670	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.088	3.090	-0.002	1.000	2175517	1.31			7331	
499.00 > 99.00	3.088	3.090	-0.002	1.000	442511		4.92(2.31-6.93)		2884	
20 Perfluorononanoic acid										
463.00 > 419.00	3.088	3.090	-0.002	1.000	30280	0.0210			29.1	
463.00 > 169.00	3.088	3.090	-0.002	1.000	7189		4.21(1.90-5.69)		139	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.112	-0.024	1.139	3616511	1.60		64.1	66951	
D 18 13C4 PFOS										
503.00 > 80.00	3.088	3.112	-0.024	1.139	3566772	1.59		66.5	37440	

QC Flag Legend

Review Flags

M - Manually Integrated

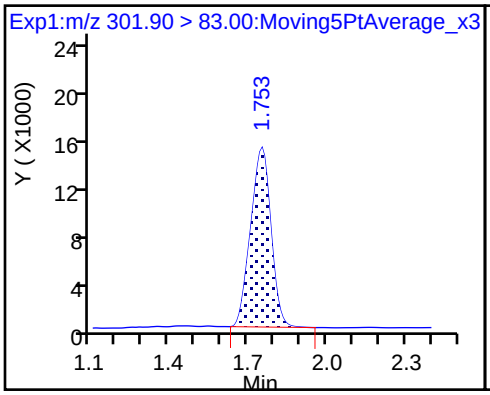
Report Date: 25-Mar-2018 10:51:19 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

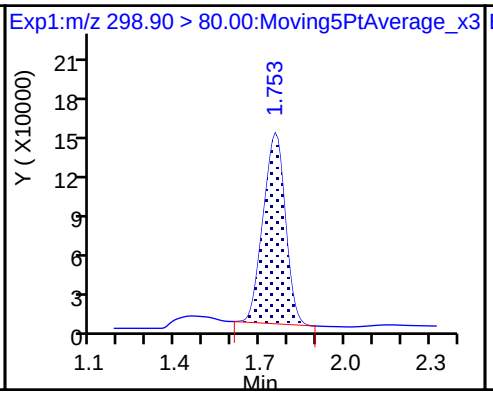
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_015.d

Injection Date:	24-Mar-2018 20:29:32	Instrument ID:	A8_N
Lims ID:	320-36960-B-25-A	Lab Sample ID:	320-36960-25
Client ID:	BNA04-SW1-01		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9 Worklist Smp#: 13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL

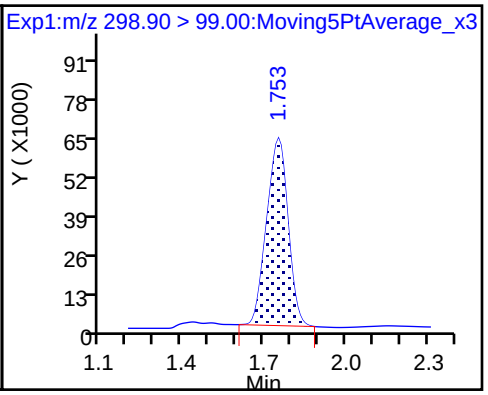
D 47 13C3-PFBS



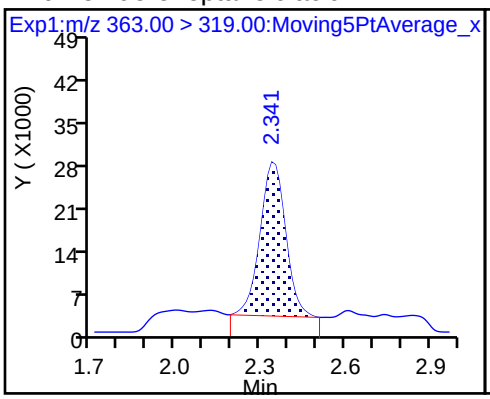
5 Perfluorobutanesulfonic acid



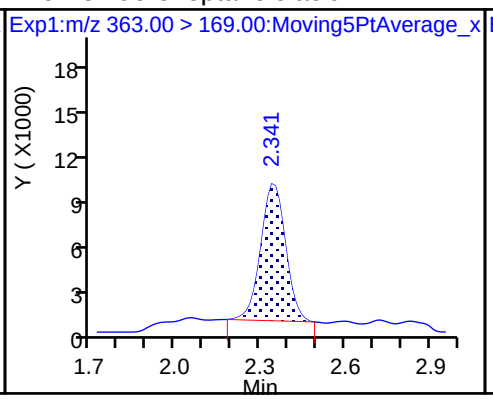
5 Perfluorobutanesulfonic acid



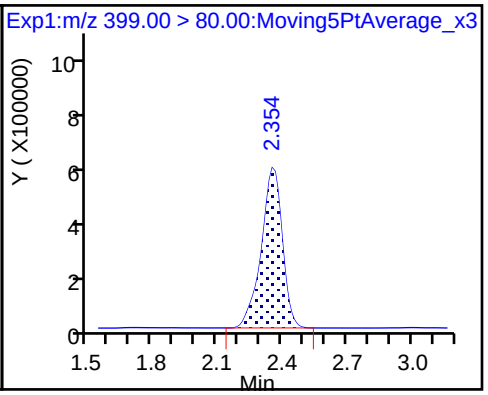
10 Perfluoroheptanoic acid



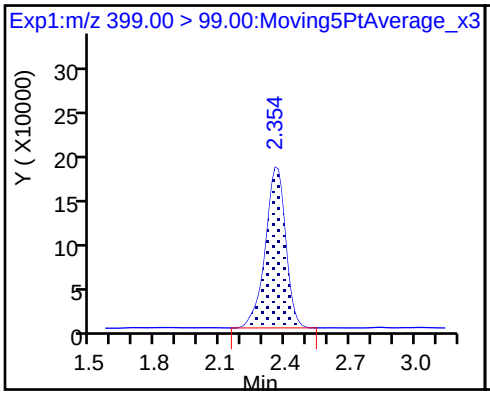
10 Perfluoroheptanoic acid



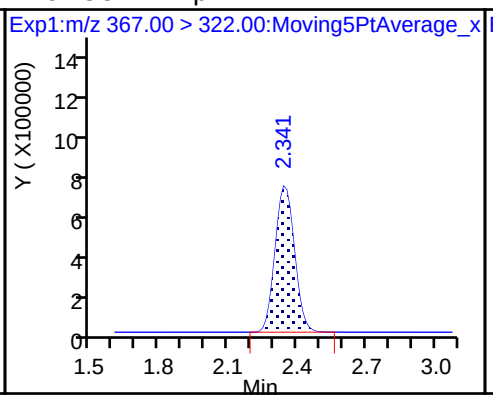
8 Perfluorohexanesulfonic acid



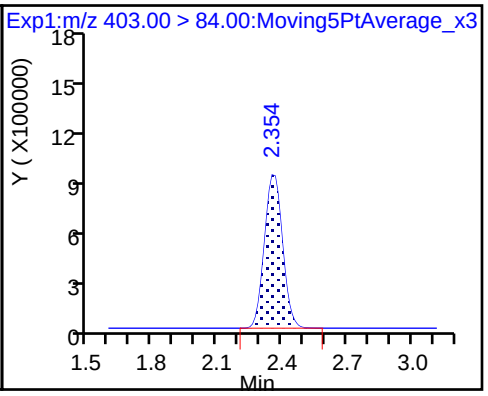
8 Perfluorohexanesulfonic acid



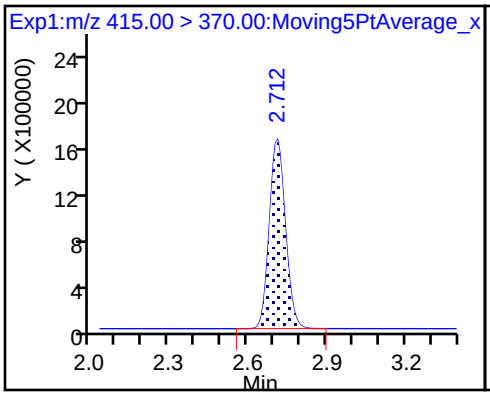
D 9 13C4-PFHpA



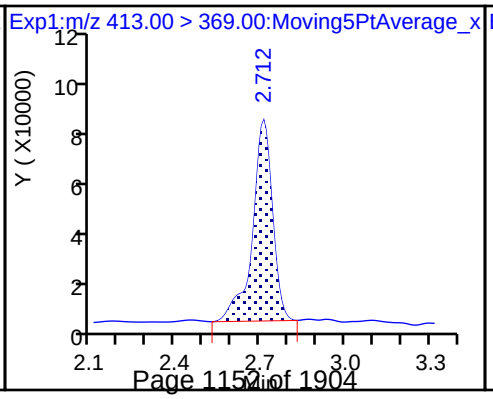
D 11 18O2 PFHxS



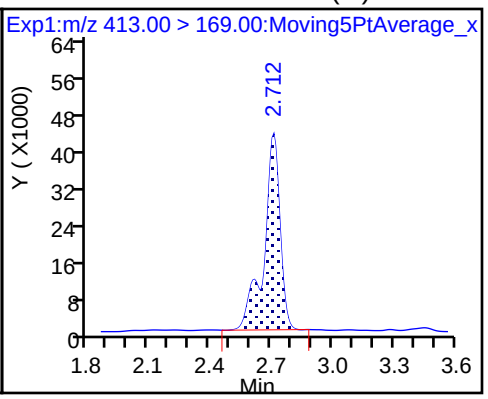
* 62 13C2-PFOA



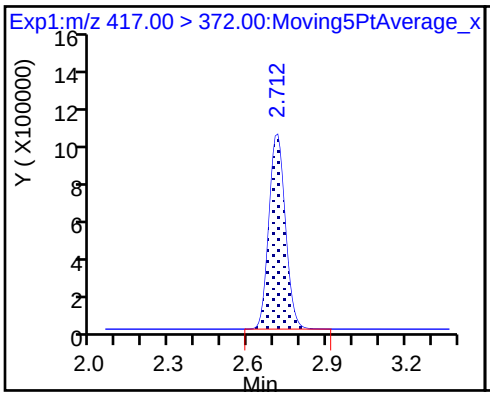
15 Perfluorooctanoic acid



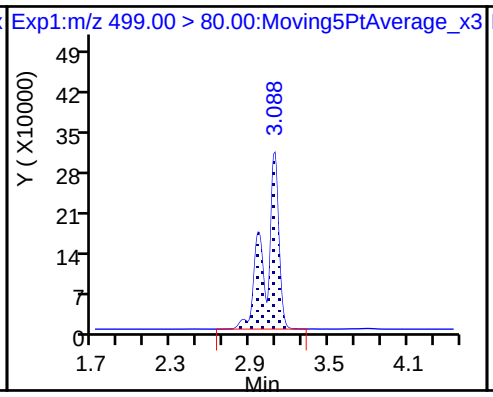
15 Perfluorooctanoic acid (M)



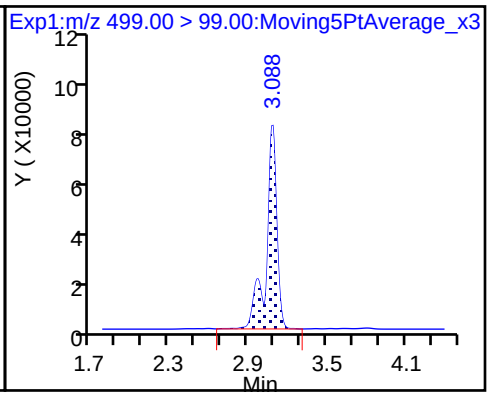
D 14 13C4 PFOA



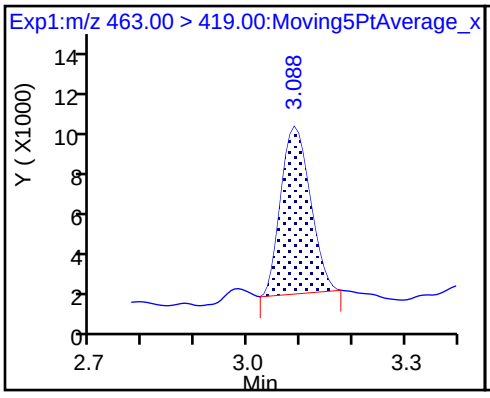
17 Perfluorooctane sulfonic acid



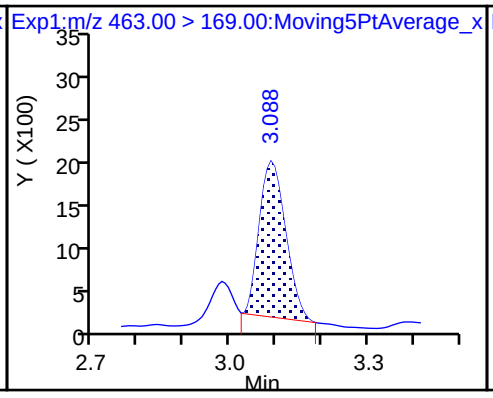
17 Perfluorooctane sulfonic acid



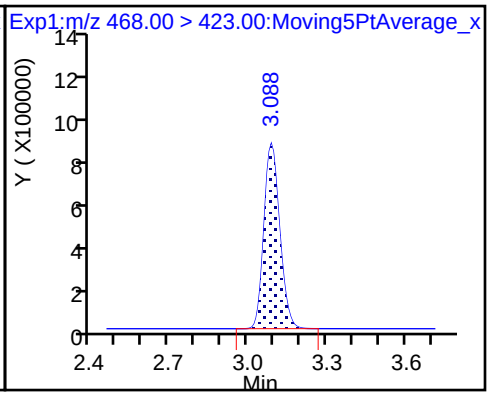
20 Perfluorononanoic acid



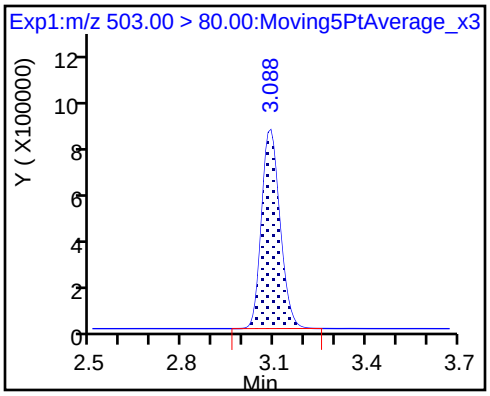
20 Perfluorononanoic acid



D 19 13C5 PFNA



D 18 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

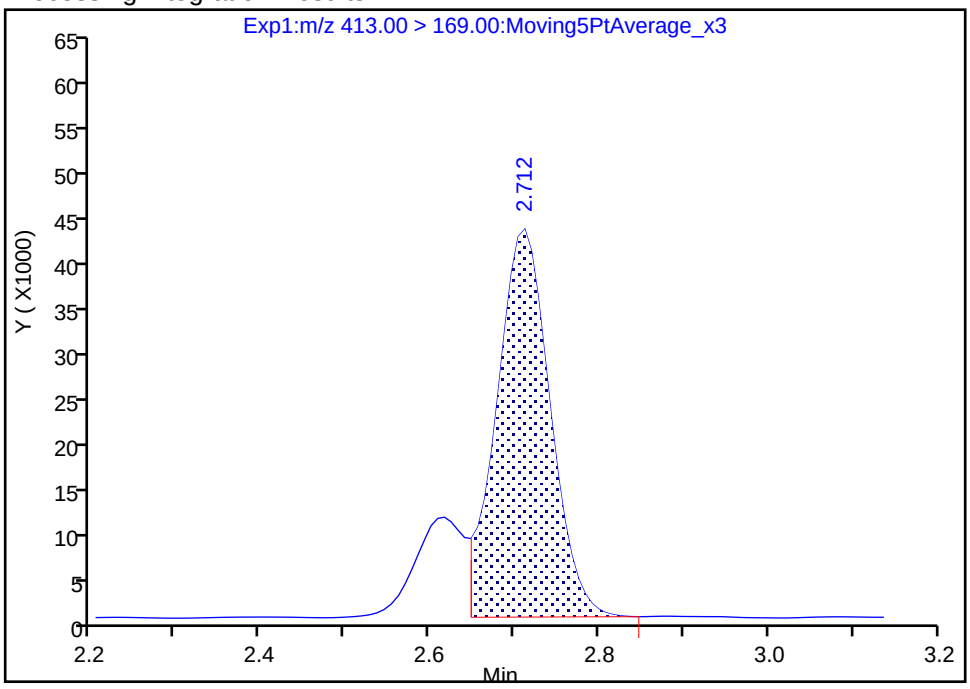
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_015.d				
Injection Date:	24-Mar-2018 20:29:32	Instrument ID:	A8_N		
Lims ID:	320-36960-B-25-A	Lab Sample ID:	320-36960-25		
Client ID:	BNA04-SW1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

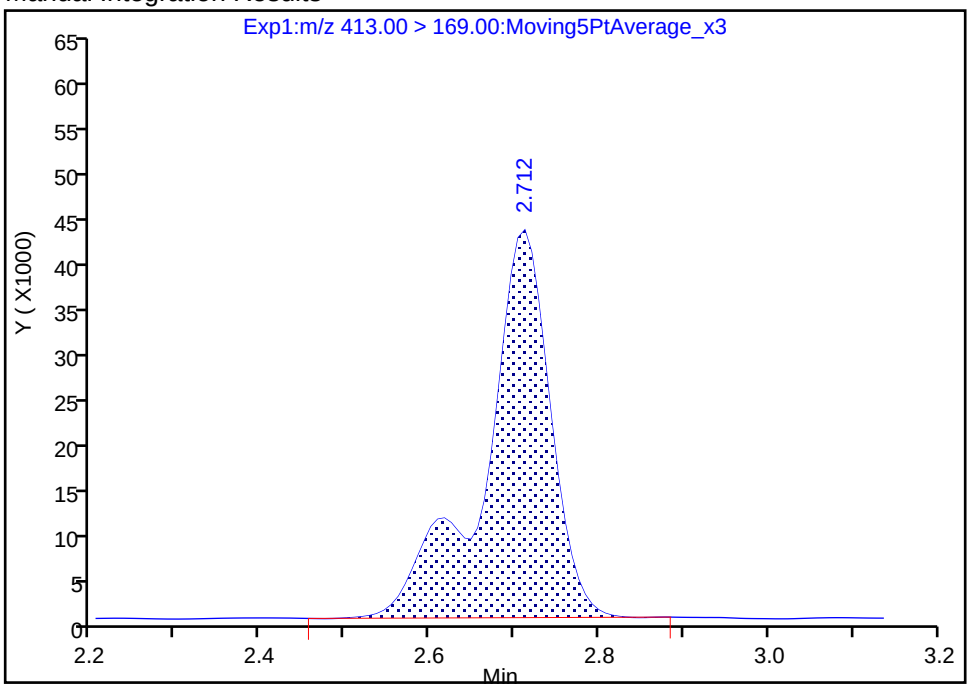
Processing Integration Results

RT: 2.71
Area: 186575
Amount: 0.191923
Amount Units: ng/ml



Manual Integration Results

RT: 2.71
Area: 230969
Amount: 0.191923
Amount Units: ng/ml



Reviewer: westendorfc, 25-Mar-2018 10:49:49

Audit Action: Manually Integrated Audit Reason: Isomers

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 213555

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.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 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9031 0.9533	0.9199 0.9384	0.9308	0.8987	0.9480	AveID		0.9274				2.3		20.0			
Perfluoropentanoic acid (PFPeA)	1.2009 1.1519	1.2167 1.1599	1.1152	1.1407	1.1917	AveID		1.1681				3.1		20.0			
Perfluorobutanesulfonic acid (PFBS)	78.227 81.199	75.406 70.304	75.634	77.520	83.350	AveID		77.377				5.5		20.0			
4:2 FTS	16.857 15.350	17.089 14.717	16.180	16.069	16.257	AveID		16.074				5.1		20.0			
Perfluorohexanoic acid (PFHxA)	1.0350 1.0221	1.0062 1.0289	0.9979	0.9561	1.0171	AveID		1.0090				2.6		20.0			
Perfluoroheptanoic acid (PFHpA)	1.0914 1.0923	0.9748 1.0133	1.0620	1.0062	1.0155	AveID		1.0365				4.4		20.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3314 1.0433	1.1983 1.0665	1.0904	0.9939	1.0839	AveID		1.1154				10.2		20.0			
6:2FTS	1.4578 1.7282	1.6726 1.7536	1.7189	1.5984	1.7228	AveID		1.6646				6.3		20.0			
Perfluorooctanoic acid (PFOA)	1.2771 1.1667	1.0727 1.1183	1.0176	1.0536	1.1087	AveID		1.1164				7.7		20.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.2442 1.3776	1.3119 1.2616	1.2979	1.3309	1.3750	AveID		1.3142				3.9		20.0			
Perfluorooctanesulfonic acid (PFOS)	1.1186 1.1281	1.0756 1.0976	1.0125	1.0497	1.0960	AveID		1.0826				3.7		20.0			
Perfluorononanoic acid (PFNA)	0.9418 1.1047	1.0637 1.0209	0.9751	0.9774	1.0532	AveID		1.0196				5.7		20.0			
Perfluorooctane Sulfonamide (PFOSA)	0.9443 1.0041	0.9582 0.9184	0.9707	0.9921	1.0142	AveID		0.9717				3.5		20.0			
8:2FTS	1.1650 1.3410	1.2889 1.1925	1.2506	1.2474	1.3153	AveID		1.2573				5.1		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 213555

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

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 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	0.8359 1.0050	0.9109 0.9765	0.9435	0.9911	0.9791	AveID		0.9489				6.2		20.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.9706 1.0514	1.1969 1.0691	0.9778	0.9880	1.0369	AveID		1.0415				7.5		20.0			
Perfluorodecanesulfonic acid (PFDS)	0.6130 0.6489	0.6312 0.6417	0.6325	0.6589	0.6434	AveID		0.6385				2.3		20.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	1.0125 1.0565	1.0388 0.9572	0.9286	0.9109	0.9491	AveID		0.9791				5.8		20.0			
Perfluoroundecanoic acid (PFUnA)	1.0505 0.8162	0.9268 0.8167	0.7463	0.7128	0.7970	AveID		0.8380				13.8		20.0			
Perfluorododecanoic acid (PFDoA)	0.9632 1.0357	0.9788 1.0559	1.0311	1.0661	1.0300	AveID		1.0230				3.7		20.0			
Perfluorotridecanoic Acid (PFTriA)	0.8910 1.0818	1.0005 1.0734	1.0473	1.0432	1.0643	AveID		1.0288				6.4		20.0			
Perfluorotetradecanoic acid (PFTeA)	0.3265 0.2648	0.3171 0.2554	0.2524	0.2568	0.2575	AveID		0.2758				11.5		20.0			
13C4 PFBA	1.2265 1.3466	1.2477 1.3727	1.2117	1.2531	1.2775	Ave		1.2765				4.8		20.0			
13C5-PFPeA	0.8872 0.9351	0.9058 0.9286	0.8843	0.8735	0.8895	Ave		0.9006				2.6		20.0			
13C3-PFBS	0.0208 0.0233	0.0220 0.0255	0.0212	0.0213	0.0216	Ave		0.0222				7.4		20.0			
13C2 PFHxA	0.9862 1.0374	1.0207 1.0115	0.9703	1.0040	0.9998	Ave		1.0043				2.2		20.0			
13C4-PFHpA	0.9921 0.9834	1.0180 0.9949	0.9154	0.9647	0.9683	Ave		0.9767				3.3		20.0			
18O2 PFHxS	1.2954 1.3719	1.2605 1.3987	1.2062	1.3166	1.2722	Ave		1.3031				5.1		20.0			
M2-6:2FTS	0.2545 0.2618	0.2468 0.2527	0.2417	0.2487	0.2447	Ave		0.2501				2.7		20.0			
13C4 PFOA	0.9512 0.9322	0.9573 0.9523	0.9243	0.9466	0.9377	Ave		0.9431				1.3		20.0			
13C4 PFOS	0.8639 0.9586	0.8770 1.0055	0.8622	0.8952	0.9169	Ave		0.9113				5.9		20.0			
13C5 PFNA	0.7492 0.7662	0.7527 0.7694	0.7279	0.7580	0.7581	Ave		0.7545				1.8		20.0			
13C8 FOSA	1.2871 1.3566	1.3145 1.3871	1.2648	1.3058	1.3205	Ave		1.3195				3.1		20.0			
M2-8:2FTS	0.2435 0.2384	0.2372 0.2331	0.2312	0.2322	0.2292	Ave		0.2350				2.1		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 213555

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

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 4	LVL 5		B	M1	M2								
13C2 PFDA	0.6263 0.6332	0.6245 0.6212	0.6276	0.6404	0.6390	Ave		0.6303				1.2		20.0			
d3-NMeFOSAA	0.2079 0.2129	0.1974 0.2312	0.1977	0.2031	0.2066	Ave		0.2081				5.6		20.0			
d5-NEtFOSAA	0.1986 0.1928	0.1988 0.2089	0.1891	0.2048	0.2000	Ave		0.1990				3.4		20.0			
13C2 PFUnA	0.4833 0.5045	0.4984 0.4965	0.4885	0.4973	0.4862	Ave		0.4935				1.6		20.0			
13C2 PFDoA	0.4493 0.4968	0.4705 0.5082	0.4480	0.4436	0.4594	Ave		0.4680				5.4		20.0			
13C2-PFTeDA	0.3906 0.4640	0.4021 0.4788	0.4082	0.4159	0.4304	Ave		0.4272				7.7		20.0			
13C2-PFHxDA	0.5746 0.6782	0.5826 0.6550	0.6045	0.6305	0.6481	Ave		0.6248				6.2		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 213555

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	50796 10415661	102112 19640198	528325	2048994	5293287	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	48859 8739905	98047 16422736	461977	1812805	4633188	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	65826 13581651	130200 24136015	662611	2653315	6966452	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	14987 2712672	31176 5338400	149763	581100	1435640	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	46811 8603151	91368 15868989	453548	1746371	4444832	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	49656 8715974	88286 15371232	455401	1765971	4297988	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	71975 10568253	122279 20699070	560663	2166532	5484826	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2FTS		AveID	16131 3480117	34810 6406487	184494	685622	1746834	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	55709 8824823	91352 16238419	440615	1814577	4544060	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	46925 10200411	97440 18413921	499055	2063678	5246040	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	41124 8142540	77874 15616435	379502	1586675	4076350	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	32357 6868229	71226 11976618	332490	1348017	3490132	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (PFOSA)		AveID	55737 11053457	112048 19424864	575124	2356961	5854030	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2FTS		AveID	12463 2485319	26051 4059707	129787	504855	1262293	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	24009 5163613	50605 9249996	277398	1154786	2734556	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 213555

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	9255 1816591	21013 3769629	90574	365056	936613	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	23409 4865112	47472 9484295	246261	1034588	2485881	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	9219 1652592	18367 3048852	82250	339482	829764	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	23282 3341411	41093 6182513	170791	644915	1693687	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	19846 4174943	40972 8183198	216392	860515	2068374	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	18358 4360483	41880 8318181	219791	842010	2137089	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	5848 997084	11344 1864512	48261	194321	484453	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PFOA	Ave	5624795 5463195	5550000 5232633	5676105	5699617	5583889	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5-PFPeA	13PFOA	Ave	4068590 3793612	4029181 3539835	4142560	3973031	3888024	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PFOA	Ave	88526 87984	90825 90294	92166	90021	87930	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PFOA	Ave	4522587 4208738	4540073 3855910	4545197	4566628	4369955	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PFOA	Ave	4549638 3989677	4528336 3792427	4288080	4387932	4232279	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PFOA	Ave	5619871 5265275	5304007 5044040	5345110	5665272	5260610	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PFOA	Ave	1108827 1008963	1042798 915248	1075617	1074637	1016091	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PFOA	Ave	4362221 3782089	4258090 3630259	4329764	4305669	4098618	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PFOA	Ave	3787315 3717789	3729283 3664287	3861206	3892764	3831418	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PFOA	Ave	3435835 3108543	3347940 2932926	3409796	3447867	3313741	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PFOA	Ave	5902761 5503896	5846985 5287574	5924910	5939465	5771845	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PFOA	Ave	1069796 926664	1010561 851096	1037774	1011812	959683	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PFOA	Ave	2872260 2569062	2777841 2368082	2940123	2912792	2792979	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PFOA	Ave	953572 863871	877839 881475	926313	923680	903252	2.50 2.50	2.50 2.50	2.50	2.50	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 213555

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d5-NEtFOSAA	13PF OA	Ave	910554 782136	884068 796299	885725	931709	874289	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	2216285 2046915	2216867 1892487	2288527	2262020	2125072	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	2060387 2015472	2093019 1937420	2098644	2017899	2008069	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	1791304 1882383	1788676 1825202	1912234	1891848	1881480	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	2634864 2751498	2591496 2496909	2831717	2868070	2832854	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 213555

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	-2.6 1.2	-0.8	0.4	-3.1	2.2	2.8	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	2.8 -0.7	4.2	-4.5	-2.3	2.0	-1.4	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	1.1 -9.1	-2.5	-2.3	0.2	7.7	4.9	30 30	30	30	30	30	30
4:2 FTS	4.9 -8.4	6.3	0.7	0.0	1.1	-4.5	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	2.6 2.0	-0.3	-1.1	-5.3	0.8	1.3	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	5.3 -2.2	-6.0	2.5	-2.9	-2.0	5.4	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	19.4 -4.4	7.4	-2.2	-10.9	-2.8	-6.5	30 30	30	30	30	30	30
6:2FTS	-12.4 5.3	0.5	3.3	-4.0	3.5	3.8	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	14.4 0.2	-3.9	-8.8	-5.6	-0.7	4.5	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	-5.3 -4.0	-0.2	-1.2	1.3	4.6	4.8	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	3.3 1.4	-0.6	-6.5	-3.0	1.2	4.2	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-7.6 0.1	4.3	-4.4	-4.1	3.3	8.4	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (PFOSA)	-2.8 -5.5	-1.4	-0.1	2.1	4.4	3.3	30 30	30	30	30	30	30
8:2FTS	-7.3 -5.2	2.5	-0.5	-0.8	4.6	6.7	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	-11.9 2.9	-4.0	-0.6	4.5	3.2	5.9	30 30	30	30	30	30	30

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 213555

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	-6.8 2.6	14.9	-6.1	-5.1	-0.4	0.9	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	-4.0 0.5	-1.1	-0.9	3.2	0.8	1.6	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.4 -2.2	6.1	-5.2	-7.0	-3.1	7.9	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	25.4 -2.5	10.6	-10.9	-14.9	-4.9	-2.6	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	-5.8 3.2	-4.3	0.8	4.2	0.7	1.2	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	-13.4 4.3	-2.7	1.8	1.4	3.5	5.2	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	18.4 -7.4	15.0	-8.5	-6.9	-6.6	-4.0	30 30	30	30	30	30	30

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_002.d
Lims ID: IC L1 Full
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 16-Mar-2018 23:09:38 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:40:23 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:22:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.440	0.0	0.537	5624795	2.40		96.1	97481	
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.440	0.0	1.000	50796	0.0243		97.4	35.4	
D 3 13C5-PFPeA										
267.90 > 223.00	1.699	1.696	0.003	0.634	4068590	2.46		98.5	158093	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.699	1.698	0.001	1.000	48859	0.0257		103	18.2	
D 47 13C3-PFBS										
301.90 > 83.00	1.726	1.730	-0.004	0.644	88526	2.17		93.4	449	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.735	1.733	0.002	1.005	65826	0.0223		101	30.6	
298.90 > 99.00	1.735	1.733	0.002	1.005	26391		2.49(1.25-3.74)	101	27.7	
D 60 M2-4:2FTS										
329.00 > 81.00	1.945	1.942	0.002	0.726	664416	NC			6383	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.945	1.944	0.0	1.000	14987	0.0245		105	963	
D 7 13C2 PFHxA										
315.00 > 270.00	1.975	1.979	-0.004	0.737	4522587	2.46		98.2	135381	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.985	1.982	0.003	1.005	46811	0.0256		103	114	
313.00 > 119.00	1.985	1.982	0.003	1.005	3650		12.82(5.03-15.10)	103	71.3	
D 9 13C4-PFHpA										
367.00 > 322.00	2.314	2.311	0.003	0.864	4549638	2.54		102	109297	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.314	2.311	0.003	1.000	49656	0.0263		105	111	
363.00 > 169.00	2.314	2.311	0.003	1.000	17084		2.91(1.13-3.40)	105	311	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.327	2.326	0.001	0.869	5619871	2.35		99.4	87133	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.327	2.326	0.001	1.000	71975	0.0272		119	9.7	
399.00 > 99.00	2.327	2.326	0.001	1.000	21084		3.41(1.50-4.49)	119	8.8	
D 12 M2-6:2FTS										
429.00 > 81.00	2.647	2.651	-0.004	0.988	1108827	2.42		102	28430	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.655	2.652	0.003	1.003	16131	0.0208		87.6	934	
D 14 13C4 PFOA										
417.00 > 372.00	2.678	2.678	0.0	1.000	4362221	2.52		101	92087	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.678	2.678	0.0	1.000	55709	0.0286		114	16.3	
413.00 > 169.00	2.678	2.678	0.0	1.000	27729		2.01(0.84-2.52)	114	123	
* 62 13C2-PFOA										
415.00 > 370.00	2.678	2.678	0.0		4585960	2.50			82370	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.678	2.684	-0.006	1.000	46925	0.0225		94.7	1370	
449.00 > 99.00	2.678	2.684	-0.006	1.000	12121		3.87(1.94-5.82)	94.7	305	
D 18 13C4 PFOS										
503.00 > 80.00	3.050	3.050	0.0	1.139	3787315	2.27		94.8	64073	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.050	3.050	0.0	1.000	41124	0.0240		103	182	
499.00 > 99.00	3.050	3.050	0.0	1.000	9710		4.24(2.31-6.93)	103	77.0	
D 19 13C5 PFNA										
468.00 > 423.00	3.050	3.052	-0.002	1.139	3435835	2.48		99.3	78094	
20 Perfluorononanoic acid										
463.00 > 419.00	3.050	3.052	-0.002	1.000	32357	0.0231		92.4	77.4	
463.00 > 169.00	3.050	3.052	-0.002	1.000	7238		4.47(1.90-5.69)	92.4	195	
D 21 13C8 FOSA										
506.00 > 78.00	3.387	3.388	-0.001	1.265	5902761	2.44		97.5	58949	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.387	3.388	-0.001	1.000	55737	0.0243		97.2	2105	
D 26 M2-8:2FTS										
529.00 > 81.00	3.406	3.406	0.0	1.271	1069796	2.48		104	23969	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.406	3.406	0.0	1.000	12463	0.0222		92.7	395	
D 23 13C2 PFDA										
515.00 > 470.00	3.415	3.416	-0.001	1.275	2872260	2.48		99.4	53902	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.415	3.416	-0.001	1.000	24009	0.0220		88.1	136	
513.00 > 169.00	3.415	3.416	-0.001	1.000	4159		5.77(2.36-7.09)	88.1	203	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.569	3.570	-0.001	1.332	953572	2.50		99.9	25950	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.569	3.571	-0.002	1.000	9255	0.0233		93.2	129	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.727	3.729	-0.002	1.000	23409	0.0231		96.0	834	
599.00 > 99.00	3.727	3.729	-0.002	1.000	8746		2.68(1.39-4.16)	96.0	198	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.737	3.740	-0.003	1.395	910554	2.49		99.8	2200	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.747	3.746	0.001	1.003	9219	0.0259		103	186	
D 30 13C2 PFUnA										
565.00 > 520.00	3.747	3.747	0.0	1.399	2216285	2.45		97.9	57806	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.747	3.750	-0.003	1.000	23282	0.0313		125	69.0	
563.00 > 169.00	3.747	3.750	-0.003	1.000	6053		3.85(2.12-6.36)	125	769	
D 36 13C2 PFDoA										
615.00 > 570.00	4.045	4.041	0.004	1.510	2060387	2.40		96.0	12314	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.045	4.042	0.003	1.000	19846	0.0235		94.2	3.5	
613.00 > 169.00	4.045	4.042	0.003	1.000	6752		2.94(2.13-6.40)	94.2	239	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.306	4.304	0.002	1.000	18358	0.0217		86.6	3.9	
663.00 > 169.00	4.306	4.304	0.002	1.000	6063		3.03(1.25-3.76)	86.6	75.3	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.696	1791304	2.29		91.4	12132	
42 Perfluorotetradecanoic acid										RM
713.00 > 169.00	4.553	4.545	0.008	1.002	5848	0.0296		118	85.1	R
713.00 > 219.00	4.543	4.545	-0.002	1.000	2605		2.24(0.71-2.13)	118	29.1	M
D 44 13C2-PFHxDA										
815.00 > 770.00	4.954	4.956	-0.002	1.850	2634864	2.30		92.0	9891	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.954	4.960	-0.006	1.000	51807	NC			4.6	
813.00 > 169.00	4.954	4.960	-0.006	1.000	6716		7.71(2.86-8.58)		95.1	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.322	5.320	0.002	1.000	27160	NC			4.9	
913.00 > 169.00	5.322	5.320	0.002	1.000	3181		8.54(3.83-11.48)		48.6	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL1_00005 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:40:24 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_002.d

Injection Date: 16-Mar-2018 23:09:38 Instrument ID: A8_N

Lims ID: IC L1 Full

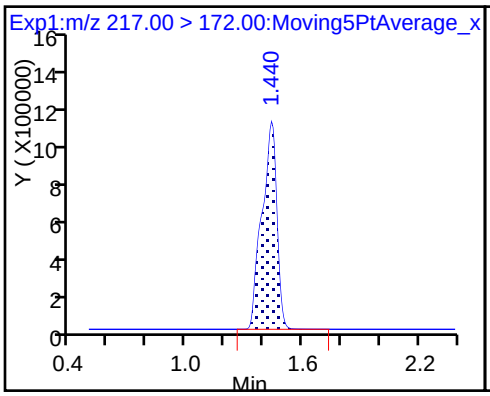
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2

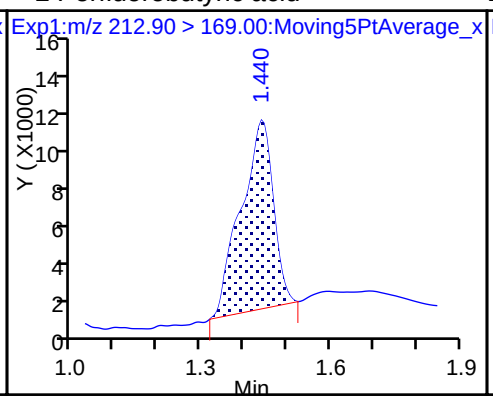
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

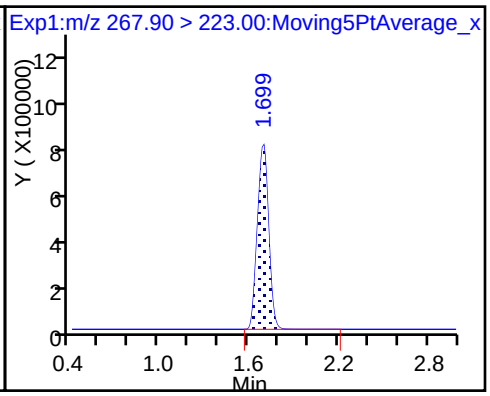
D 1 13C4 PFBA



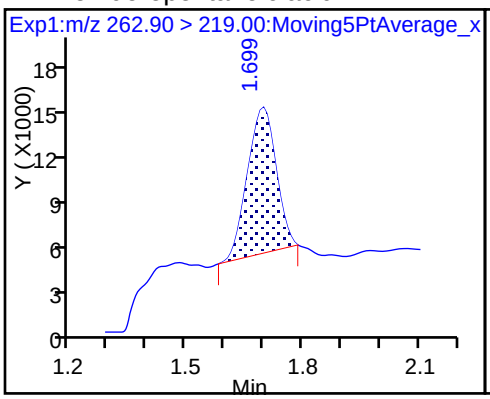
2 Perfluorobutyric acid



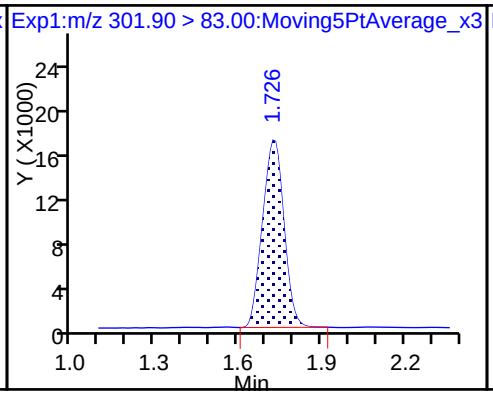
D 3 13C5-PFPeA



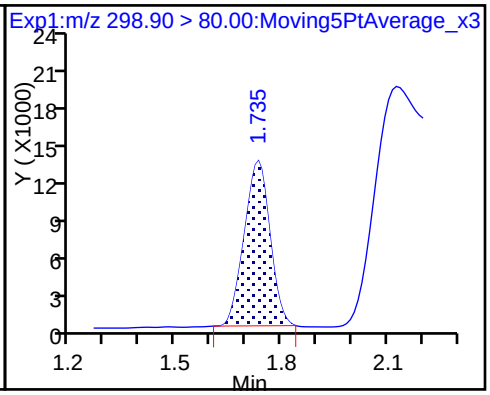
4 Perfluoropentanoic acid



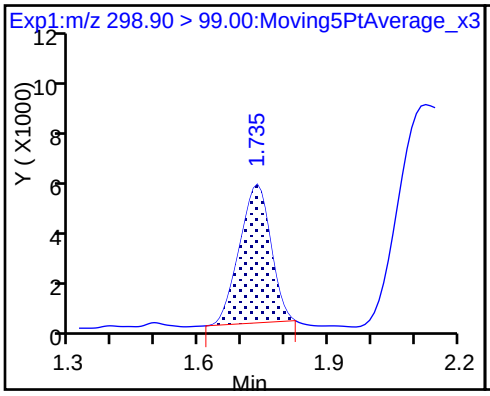
D 47 13C3-PFBS



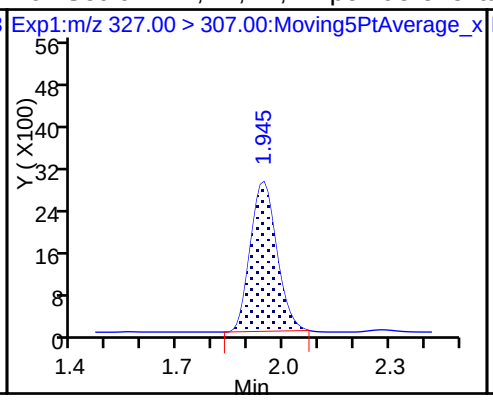
5 Perfluorobutanesulfonic acid



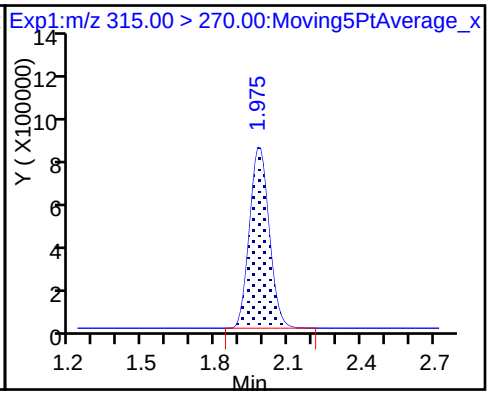
5 Perfluorobutanesulfonic acid



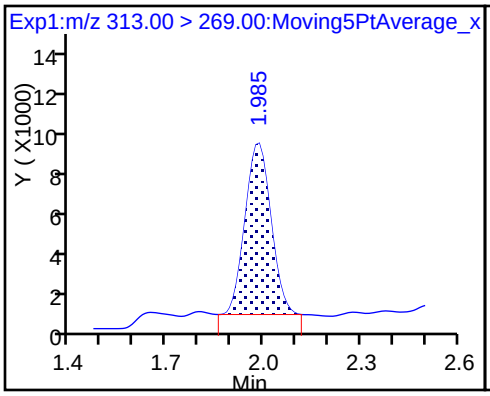
61 Sodium 1H,1H,2H,2H-perfluorohexa



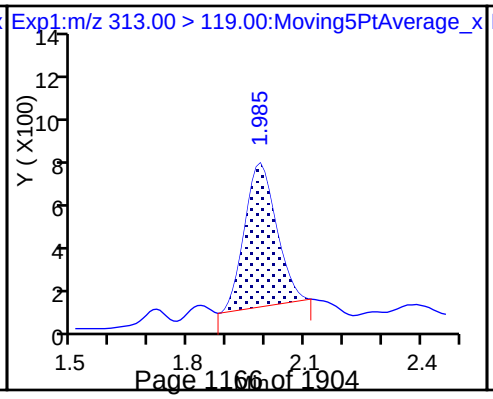
D 7 13C2 PFHxA



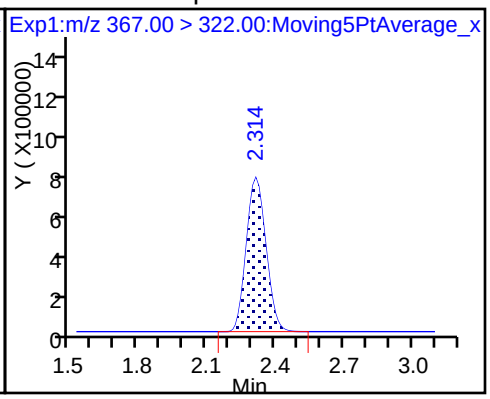
6 Perfluorohexanoic acid



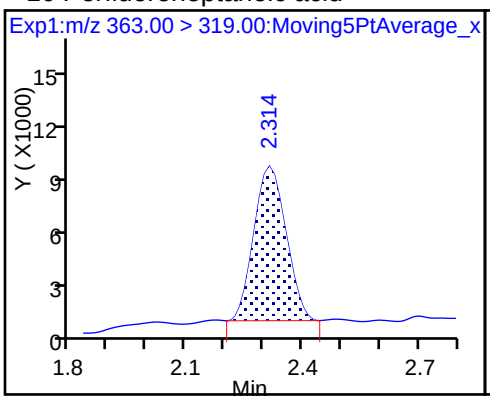
6 Perfluorohexanoic acid



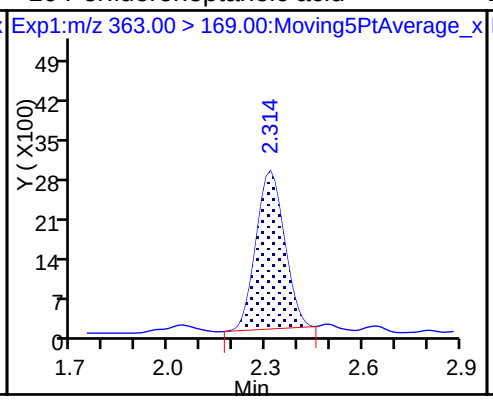
D 9 13C4-PFHpA



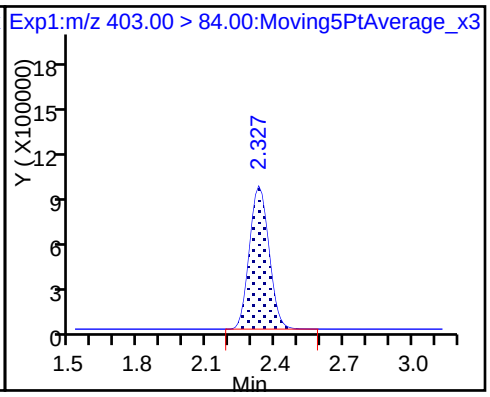
10 Perfluoroheptanoic acid



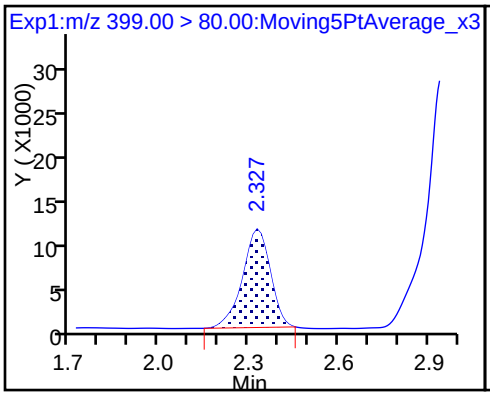
10 Perfluoroheptanoic acid



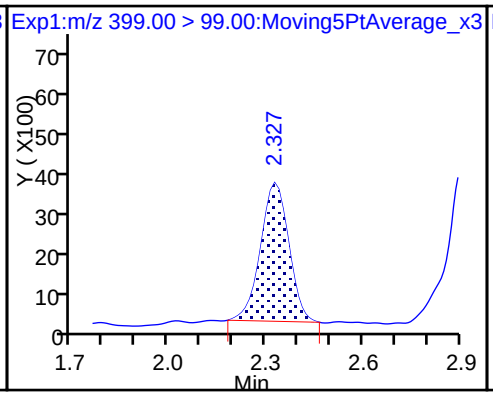
D 11 18O2 PFHxS



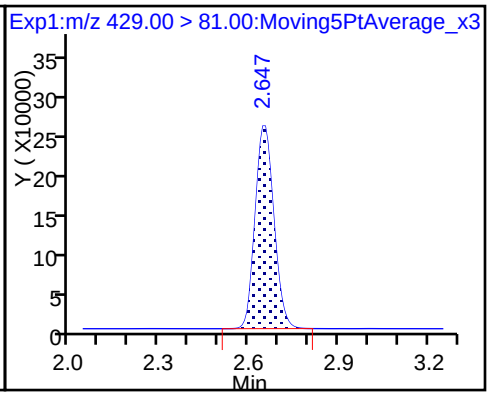
8 Perfluorohexanesulfonic acid



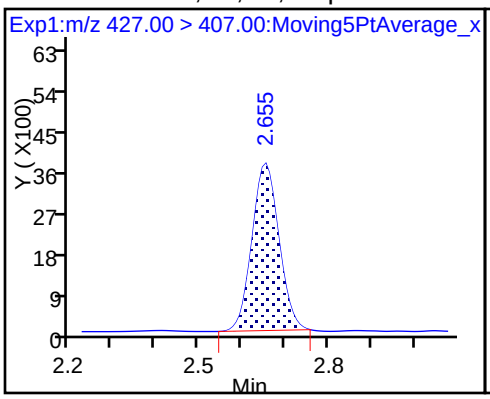
8 Perfluorohexanesulfonic acid



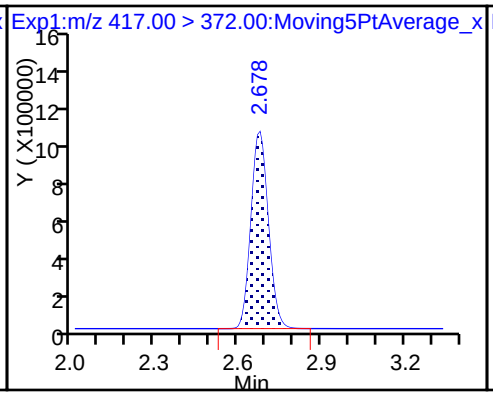
D 12 M2-6:2FTS



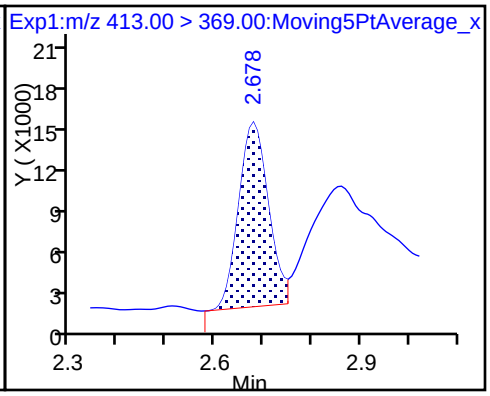
13 Sodium 1H,1H,2H,2H-perfluorooctane



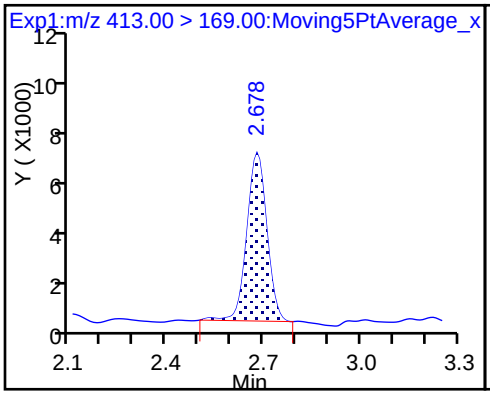
D 14 13C4 PFOA



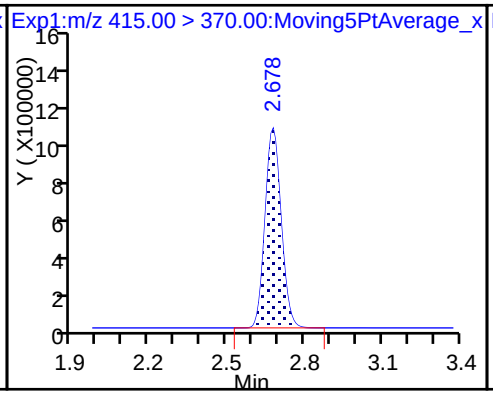
15 Perfluorooctanoic acid



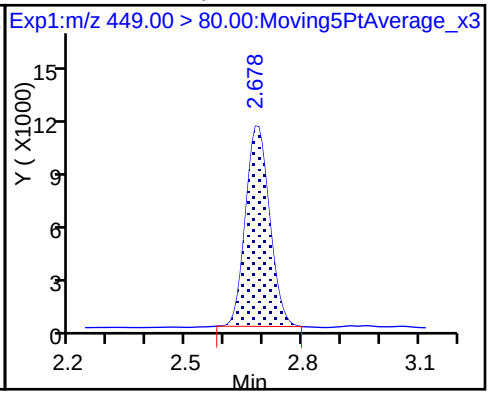
15 Perfluorooctanoic acid



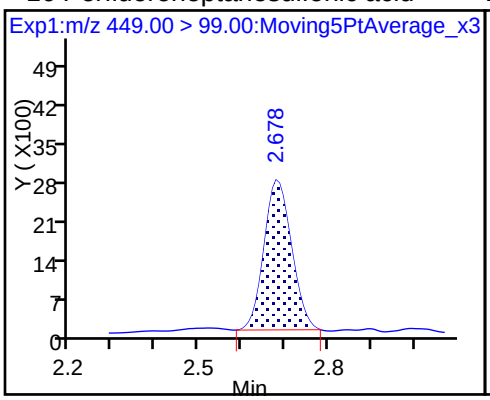
* 62 13C2-PFOA



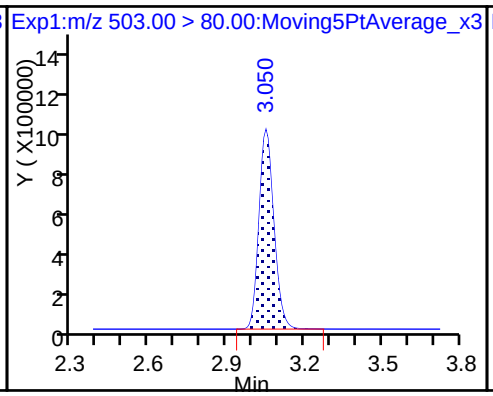
16 Perfluoroheptanesulfonic acid



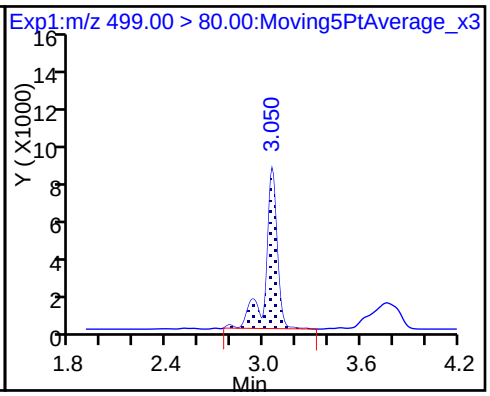
16 Perfluoroheptanesulfonic acid



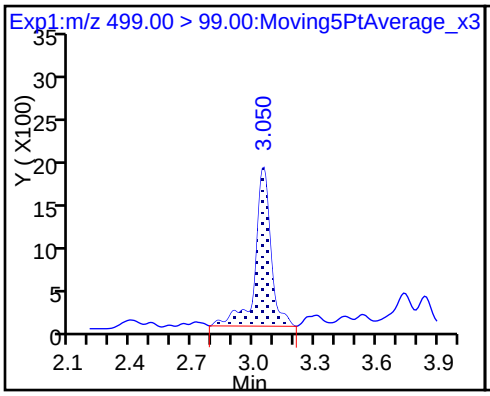
D 18 13C4 PFOS



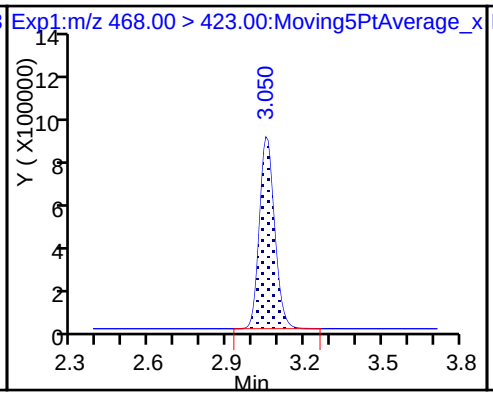
17 Perfluorooctane sulfonic acid



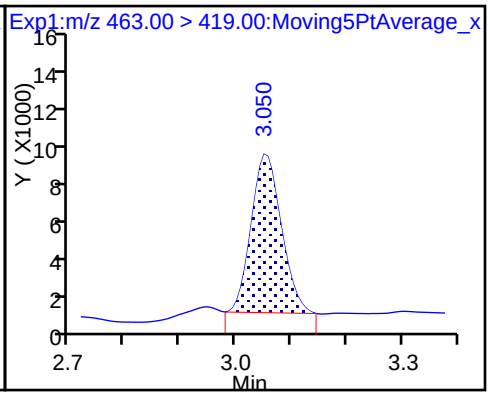
17 Perfluorooctane sulfonic acid



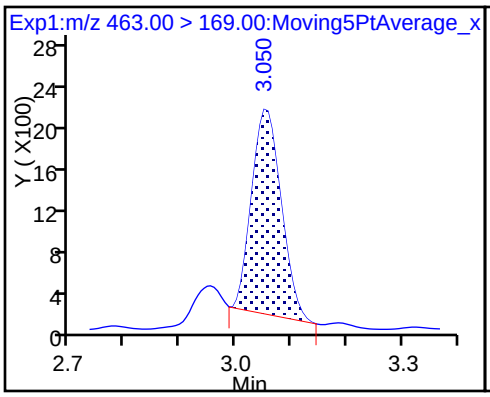
D 19 13C5 PFNA



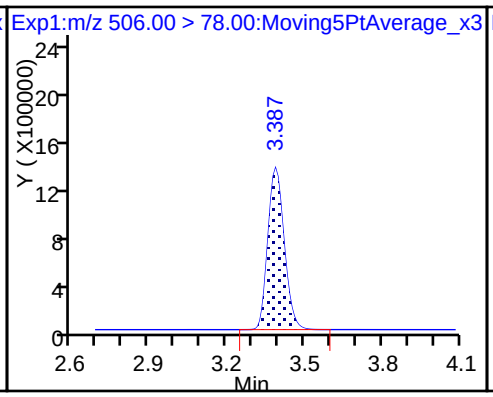
20 Perfluorononanoic acid



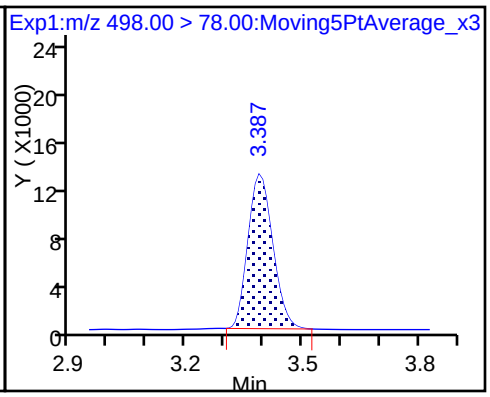
20 Perfluorononanoic acid



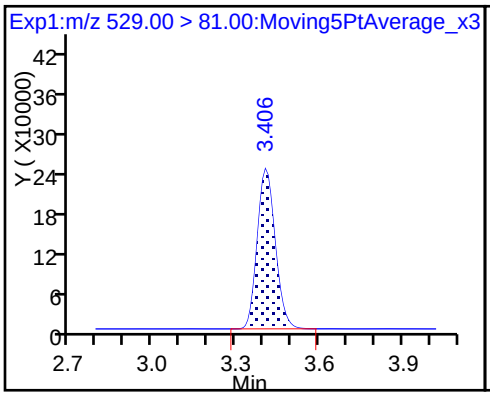
D 21 13C8 FOSA



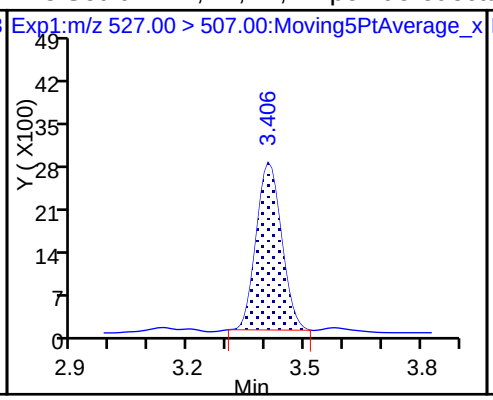
22 Perfluorooctane Sulfonamide



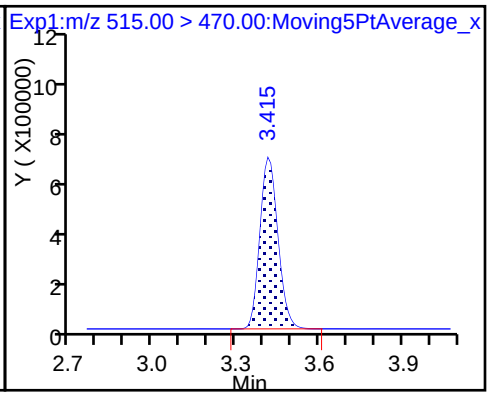
D 26 M2-8:2FTS



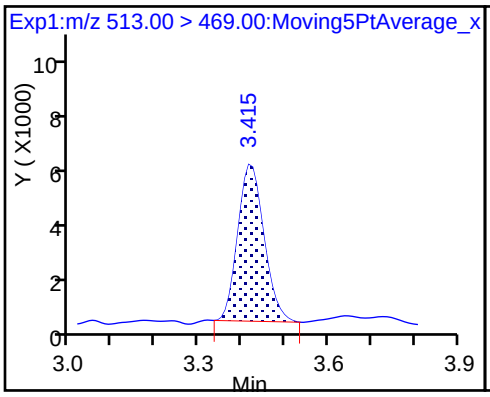
25 Sodium 1H,1H,2H,2H-perfluorodecane



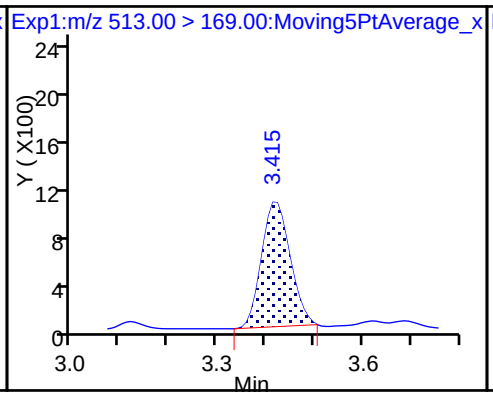
D 23 13C2 PFDA



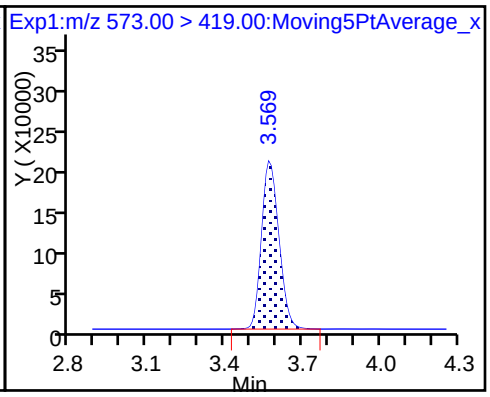
24 Perfluorodecanoic acid



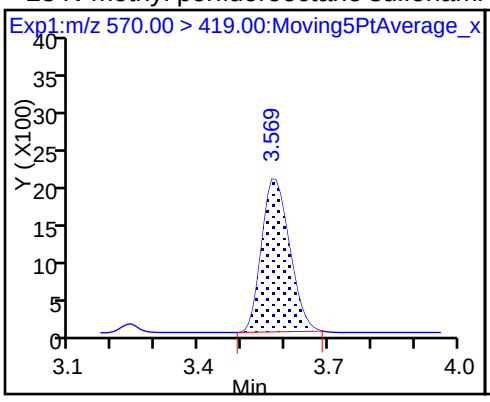
24 Perfluorodecanoic acid



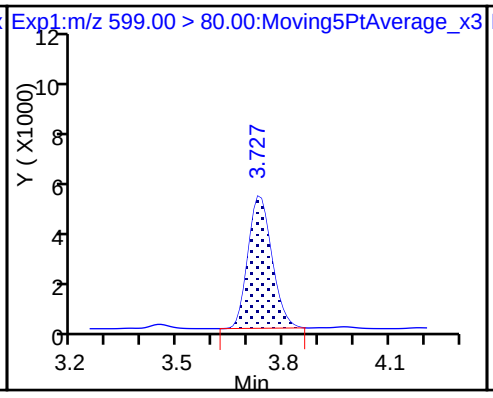
D 27 d3-NMeFOSAA



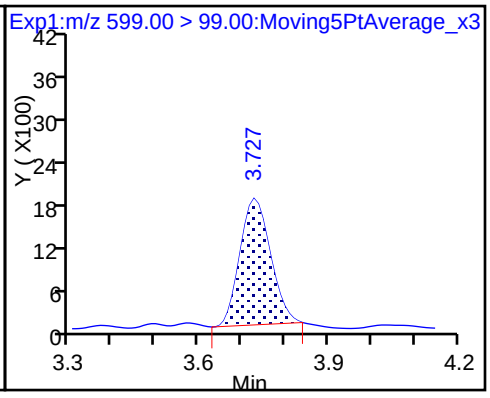
28 N-methyl perfluorooctane sulfonami



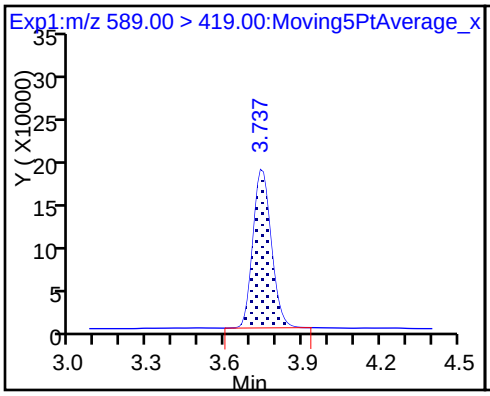
29 Perfluorodecane Sulfonic acid



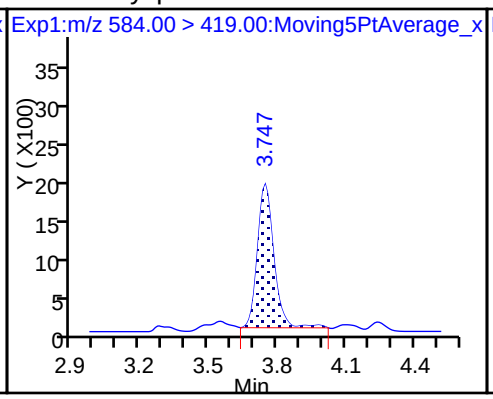
29 Perfluorodecane Sulfonic acid



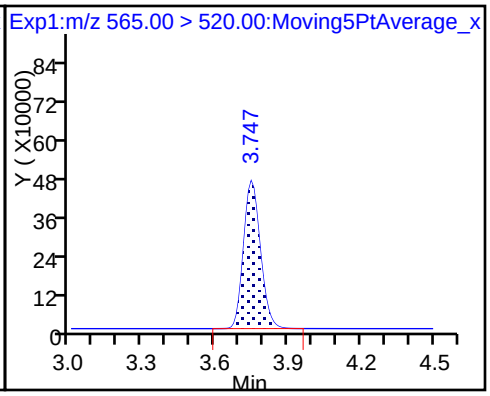
D 32 d5-NEtFOSAA



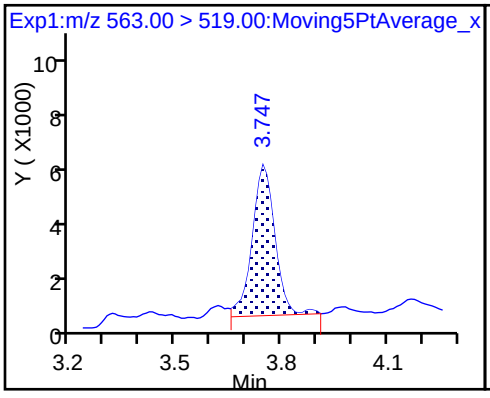
33 N-ethyl perfluorooctane sulfonamid



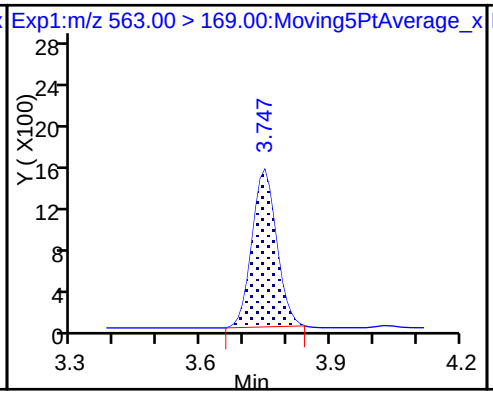
D 30 13C2 PFUnA



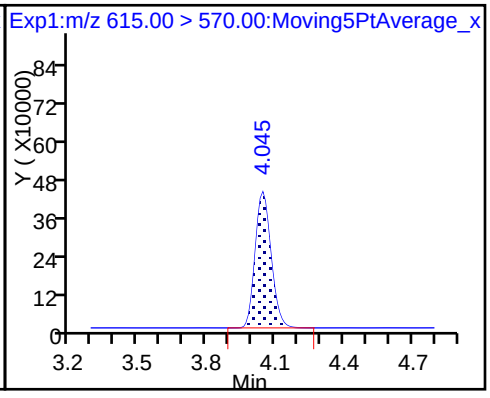
31 Perfluoroundecanoic acid



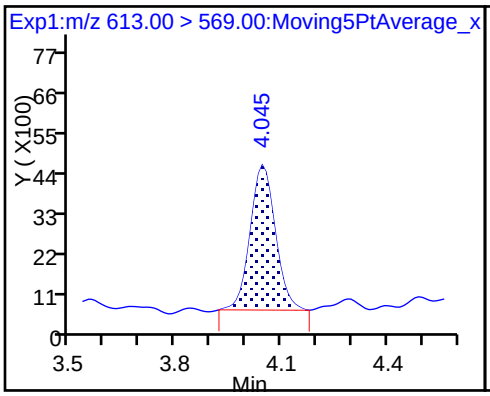
31 Perfluoroundecanoic acid



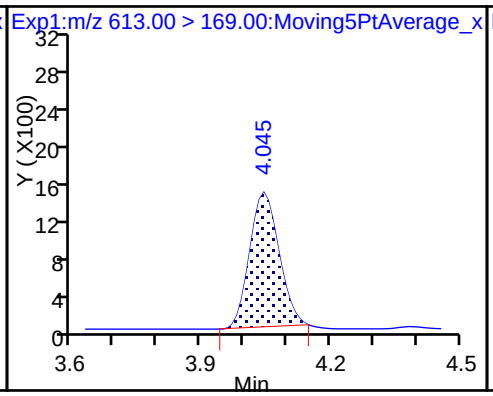
D 36 13C2 PFDoA



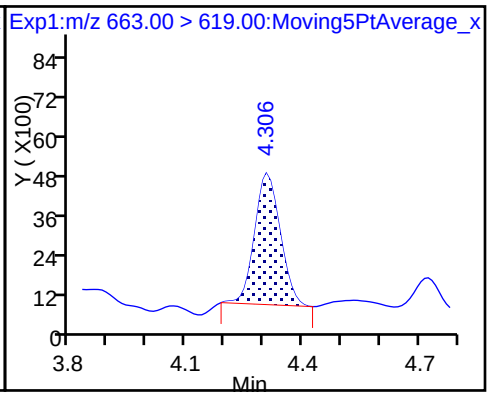
37 Perfluorododecanoic acid



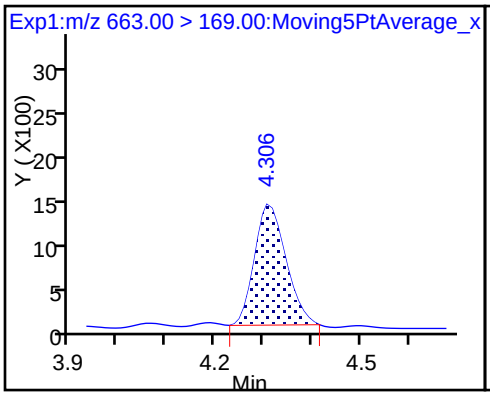
37 Perfluorododecanoic acid



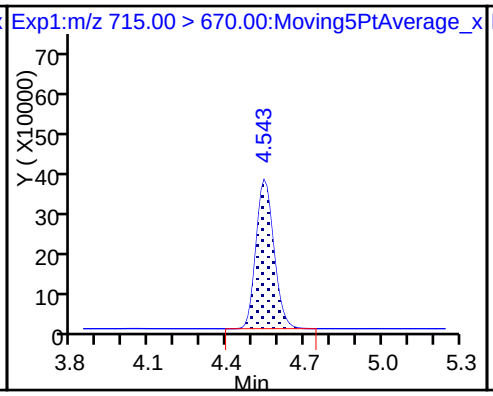
41 Perfluorotridecanoic acid



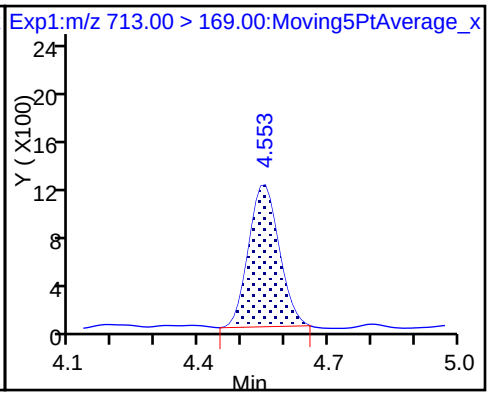
41 Perfluorotridecanoic acid



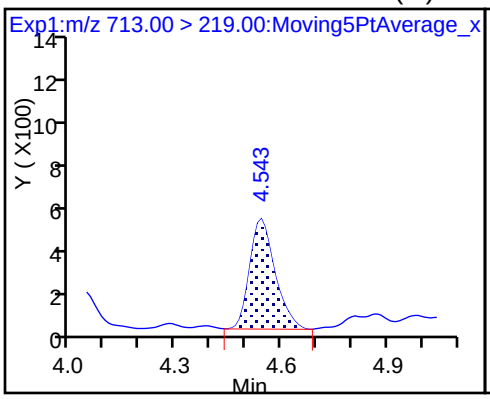
D 43 13C2-PFTeDA



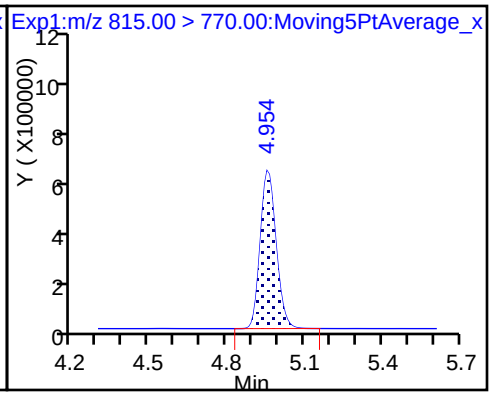
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid (M)



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

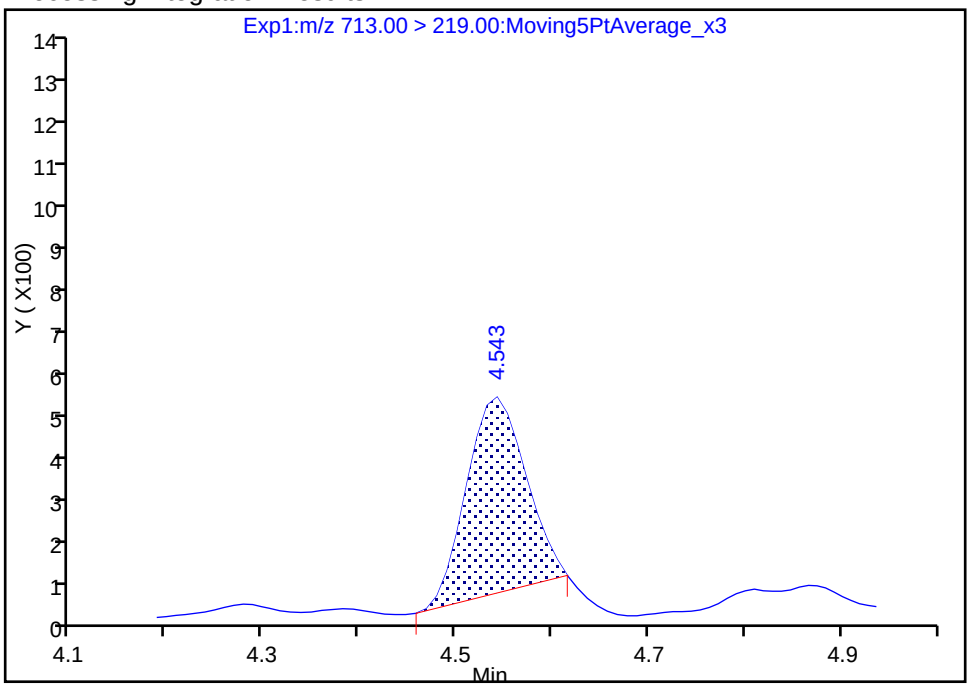
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_002.d
Injection Date: 16-Mar-2018 23:09:38 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 2

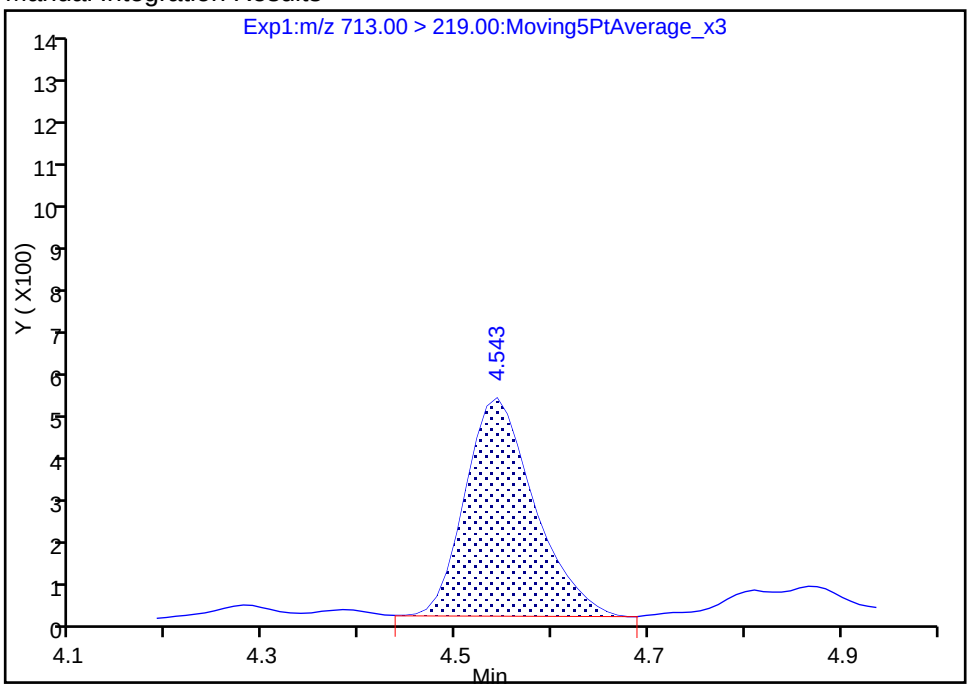
Processing Integration Results

RT: 4.54
Area: 2007
Amount: 0.029595
Amount Units: ng/ml



Manual Integration Results

RT: 4.54
Area: 2605
Amount: 0.029595
Amount Units: ng/ml



Reviewer: phomsophat, 18-Mar-2018 12:21:46
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_003.d
Lims ID: IC L2 Full
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 16-Mar-2018 23:17:30 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:40:26 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:26:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.440	-0.006	1.000	102112	0.0496		99.2	71.6	
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.537	5550000	2.44		97.7	117440	
D 3 13C5-PFPeA										
267.90 > 223.00	1.691	1.696	-0.005	0.633	4029181	2.51		101	110520	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.691	1.698	-0.007	1.000	98047	0.0521		104	37.0	M
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.646	90825	2.30		98.8	600	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.727	1.733	-0.006	1.000	130200	0.0431		97.5	57.1	
298.90 > 99.00	1.727	1.733	-0.006	1.000	54547		2.39(1.25-3.74)	97.5	56.6	
D 60 M2-4:2FTS										
329.00 > 81.00	1.935	1.942	-0.007	0.724	681561	NC			7423	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.945	1.944	0.001	1.000	31176	0.0496		106	1916	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.739	4540073	2.54		102	165466	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.976	1.982	-0.006	1.000	91368	0.0499		99.7	279	
313.00 > 119.00	1.976	1.982	-0.006	1.000	9865		9.26(5.03-15.10)	99.7	215	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.302	2.311	-0.009	1.000	88286	0.0470		94.0	203	
363.00 > 169.00	2.315	2.311	0.004	1.006	35361		2.50(1.13-3.40)	94.0	603	
D 9 13C4-PFHpA										
367.00 > 322.00	2.302	2.311	-0.009	0.861	4528336	2.61		104	107667	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	122279	0.0489		107	15.0	
399.00 > 99.00	2.315	2.326	-0.011	0.994	38807		3.15(1.50-4.49)	107	15.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.871	5304007	2.29		96.7	74003	
D 12 M2-6:2FTS										
429.00 > 81.00	2.649	2.651	-0.002	0.991	1042798	2.34		98.7	24434	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.649	2.652	-0.003	1.000	34810	0.0476		100	2049	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.678	-0.005		4448085	2.50			94177	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.678	-0.005	1.000	91352	0.0480		96.1	29.6	
413.00 > 169.00	2.673	2.678	-0.005	1.000	58410		1.56(0.84-2.52)	96.1	259	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.678	-0.005	1.000	4258090	2.54		102	99222	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.681	2.684	-0.003	1.000	97440	0.0475		99.8	3317	
449.00 > 99.00	2.681	2.684	-0.003	1.000	26688		3.65(1.94-5.82)	99.8	771	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.044	3.050	-0.006	1.000	77874	0.0461		99.4	286	
499.00 > 99.00	3.044	3.050	-0.006	1.000	17535		4.44(2.31-6.93)	99.4	155	
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.050	-0.006	1.139	3729283	2.30		96.2	62938	
20 Perfluorononanoic acid										
463.00 > 419.00	3.051	3.052	-0.001	1.000	71226	0.0522		104	158	
463.00 > 169.00	3.051	3.052	-0.001	1.000	15976		4.46(1.90-5.69)	104	477	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.052	-0.001	1.142	3347940	2.49		99.8	65056	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.388	3.388	0.0	1.000	112048	0.0493		98.6	3219	
D 21 13C8 FOSA										
506.00 > 78.00	3.388	3.388	0.0	1.268	5846985	2.49		99.6	50840	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.406	3.406	0.0	1.000	26051	0.0491		103	818	
D 26 M2-8:2FTS										
529.00 > 81.00	3.406	3.406	0.0	1.274	1010561	2.42		101	20290	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.415	3.416	-0.001	1.000	50605	0.0480		96.0	236	
513.00 > 169.00	3.415	3.416	-0.001	1.000	11137		4.54(2.36-7.09)	96.0	853	
D 23 13C2 PFDA										
515.00 > 470.00	3.415	3.416	-0.001	1.278	2777841	2.48		99.1	52102	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.569	3.570	-0.001	1.335	877839	2.37		94.8	37604	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.569	3.571	-0.002	1.000	21013	0.0575		115	312	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.728	3.729	-0.001	1.000	47472	0.0476		98.9	3260	
599.00 > 99.00	3.728	3.729	-0.001	1.000	17973		2.64(1.39-4.16)	98.9	382	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.399	884068	2.50		99.9	1895	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.738	3.746	-0.008	1.000	18367	0.0530		106	607	
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.747	0.001	1.402	2216867	2.52		101	57832	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.748	3.750	-0.002	1.000	41093	0.0553		111	118	
563.00 > 169.00	3.748	3.750	-0.002	1.000	9481		4.33(2.12-6.36)	111	797	
D 36 13C2 PFDoA										
615.00 > 570.00	4.036	4.041	-0.005	1.510	2093019	2.51		101	12512	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.036	4.042	-0.006	1.000	40972	0.0478		95.7	8.3	
613.00 > 169.00	4.036	4.042	-0.006	1.000	10185		4.02(2.13-6.40)	95.7	283	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.299	4.304	-0.005	1.000	41880	0.0486		97.3	8.6	
663.00 > 169.00	4.299	4.304	-0.005	1.000	13756		3.04(1.25-3.76)	97.3	197	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.545	-0.001	1.700	1788676	2.35		94.1	13285	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.533	4.545	-0.012	0.998	11344	0.0575		115	184	
713.00 > 219.00	4.533	4.545	-0.012	0.998	6523		1.74(0.71-2.13)	115	75.7	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.854	2591496	2.33		93.2	9208	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.955	4.960	-0.005	1.000	70421	NC			6.2	
813.00 > 169.00	4.955	4.960	-0.005	1.000	12531		5.62(2.86-8.58)		156	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.315	5.320	-0.005	1.000	50136	NC			9.6	
913.00 > 169.00	5.315	5.320	-0.005	1.000	6133		8.17(3.83-11.48)		92.0	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL2_00004 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:40:27 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_003.d

Injection Date: 16-Mar-2018 23:17:30 Instrument ID: A8_N

Lims ID: IC L2 Full

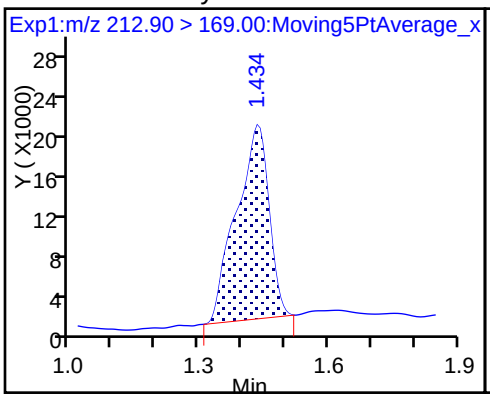
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3

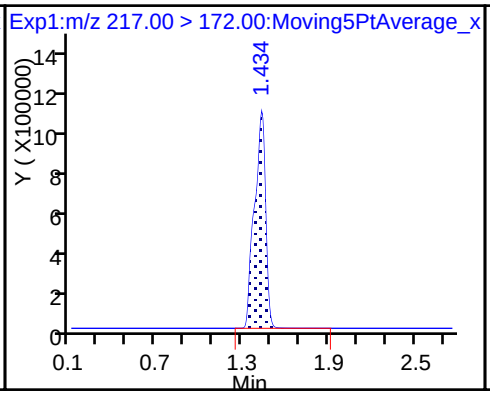
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

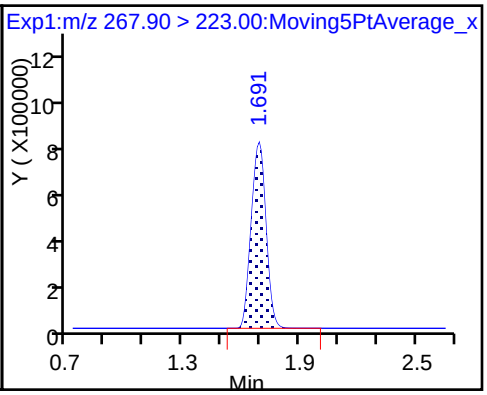
2 Perfluorobutyric acid



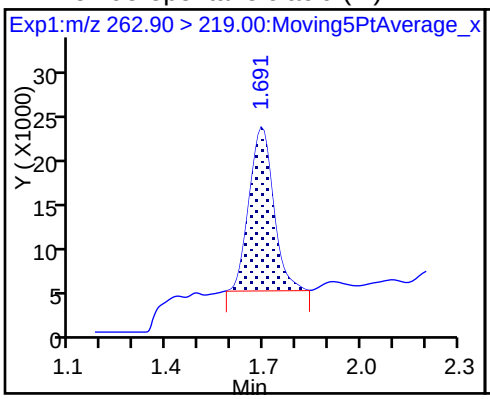
D 1 13C4 PFBA



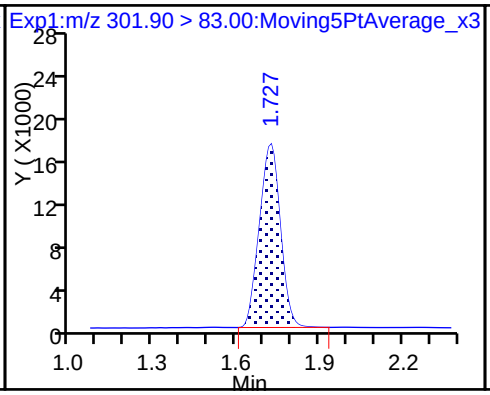
D 3 13C5-PFPeA



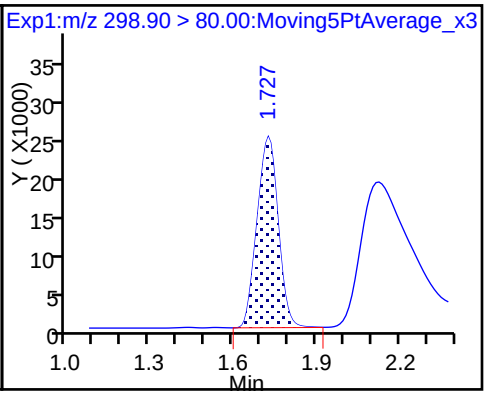
4 Perfluoropentanoic acid (M)



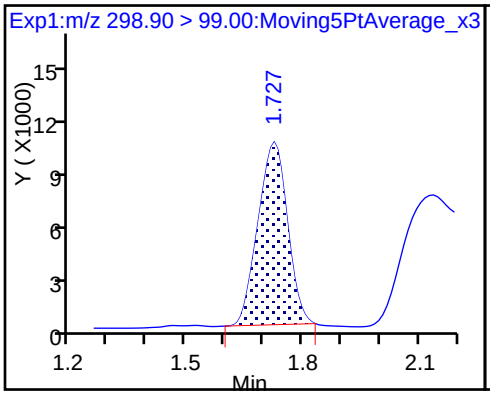
D 47 13C3-PFBS



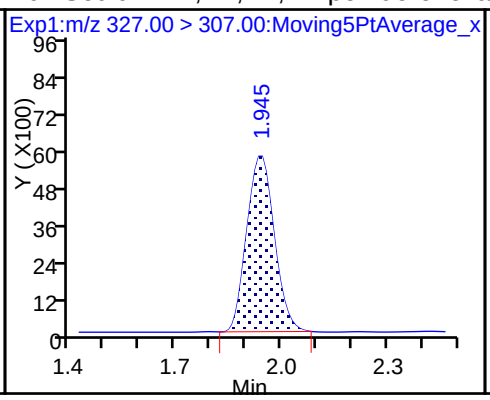
5 Perfluorobutanesulfonic acid



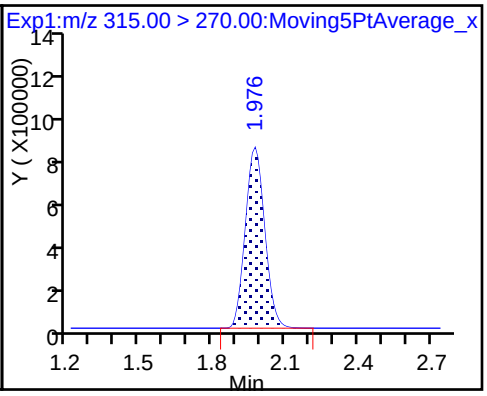
5 Perfluorobutanesulfonic acid



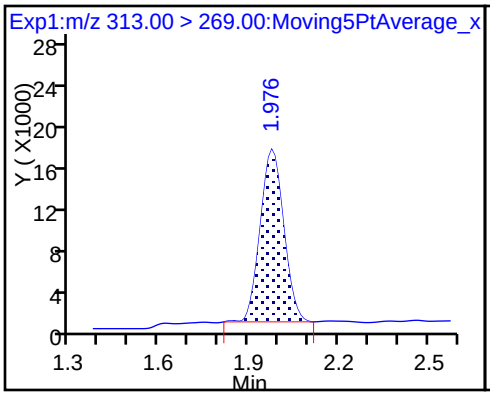
61 Sodium 1H,1H,2H,2H-perfluorohexa



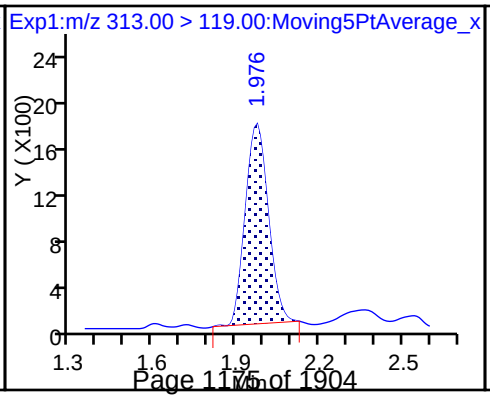
D 7 13C2 PFHxA



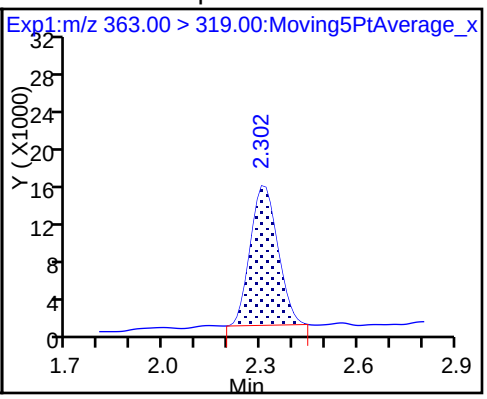
6 Perfluorohexanoic acid



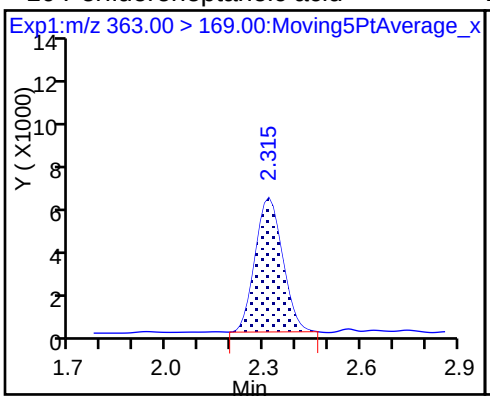
6 Perfluorohexanoic acid



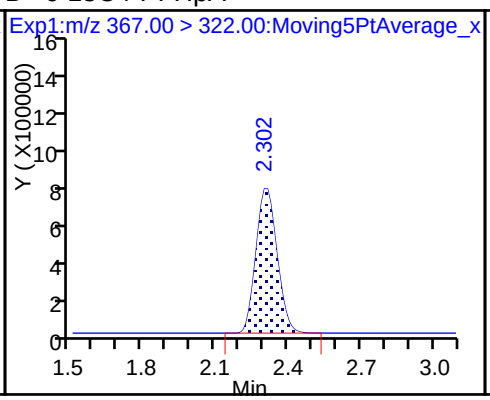
10 Perfluoroheptanoic acid



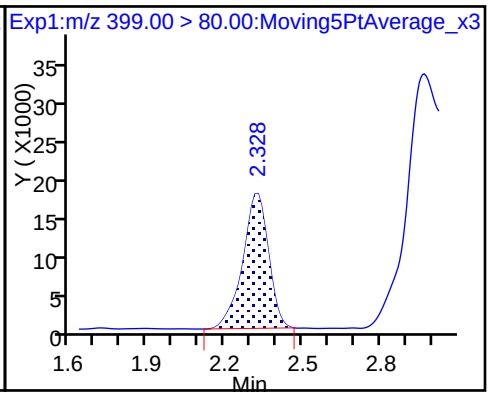
10 Perfluoroheptanoic acid



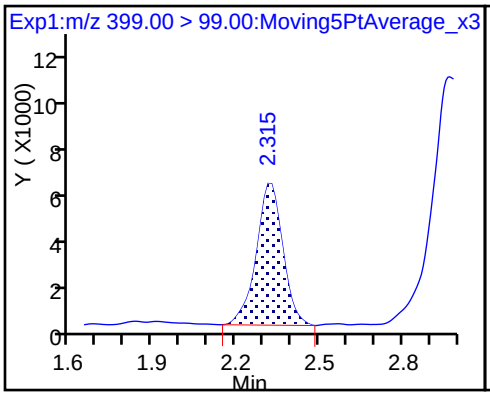
D 9 13C4-PFHpA



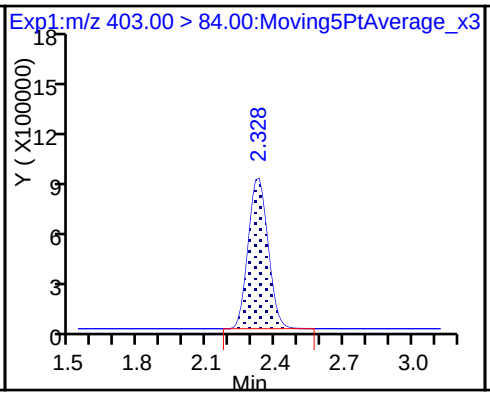
8 Perfluorohexanesulfonic acid



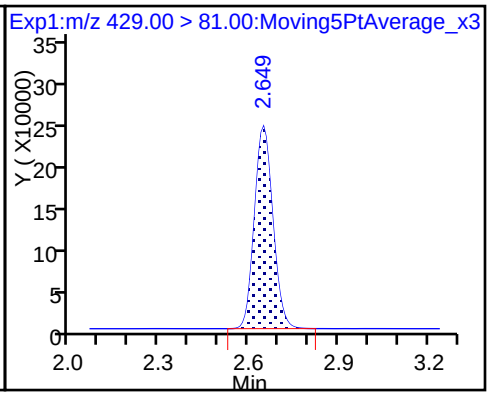
8 Perfluorohexanesulfonic acid



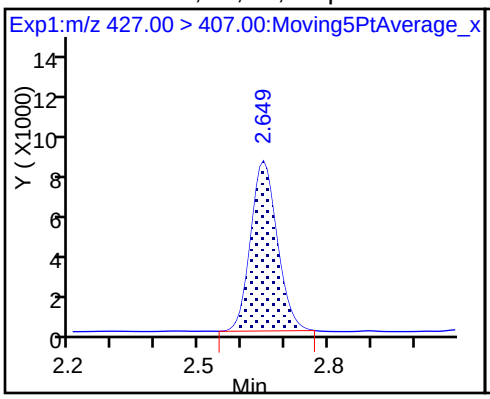
D 11 18O2 PFHxS



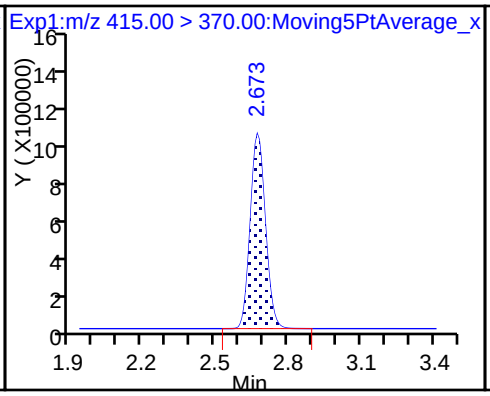
D 12 M2-6:2FTS



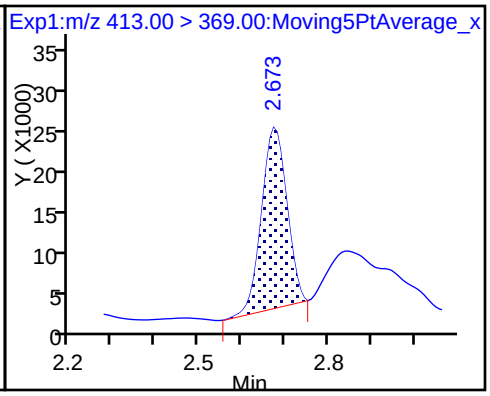
13 Sodium 1H,1H,2H,2H-perfluorooctane



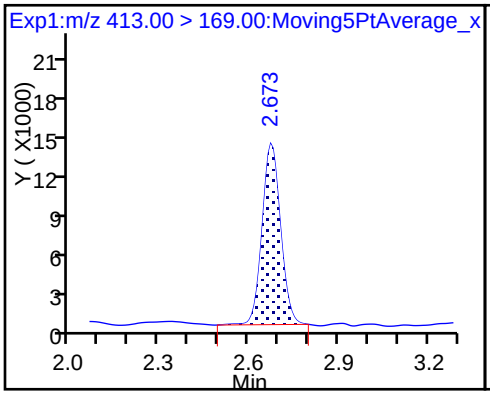
M2 13C2-PFOA



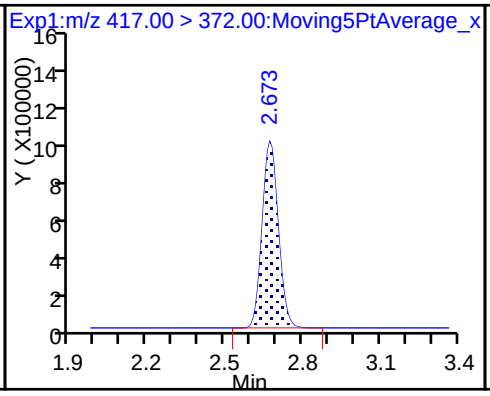
15 Perfluorooctanoic acid



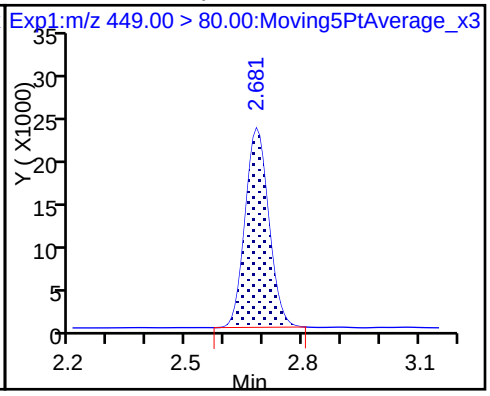
15 Perfluorooctanoic acid



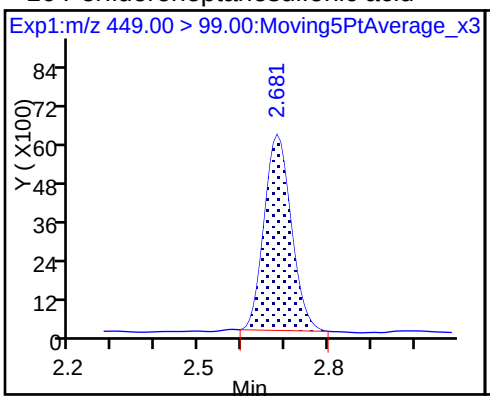
D 14 13C4 PFOA



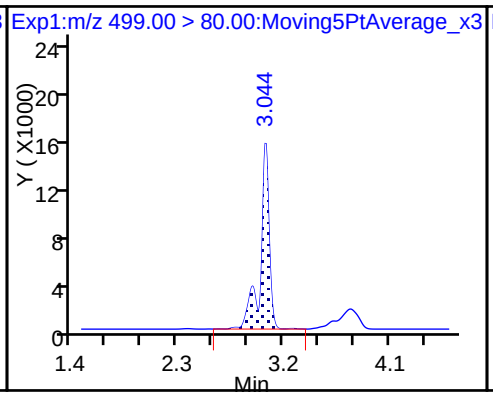
16 Perfluoroheptanesulfonic acid



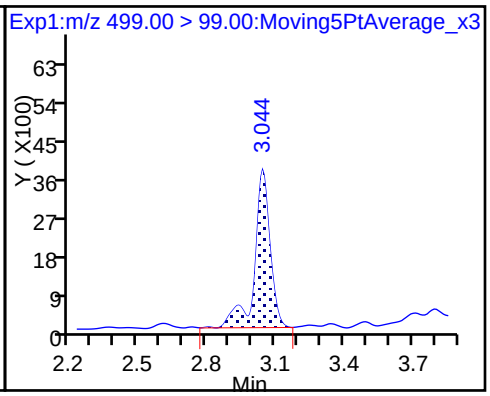
16 Perfluoroheptanesulfonic acid



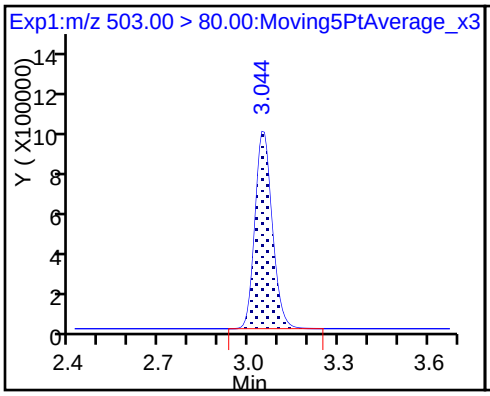
17 Perfluorooctane sulfonic acid



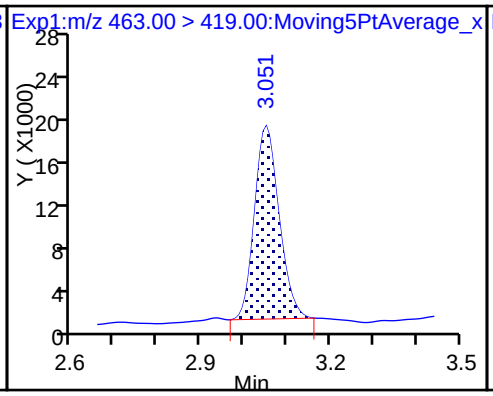
17 Perfluorooctane sulfonic acid



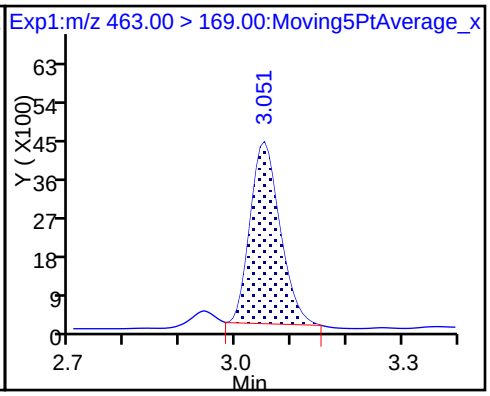
D 18 13C4 PFOS



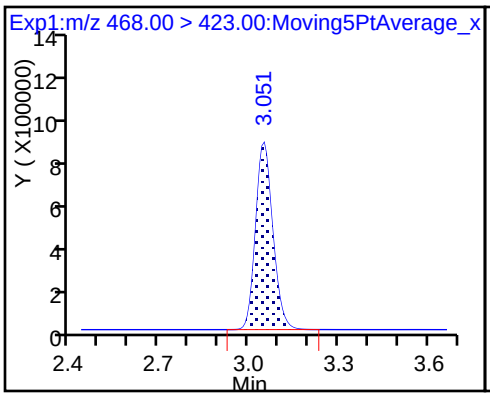
20 Perfluorononanoic acid



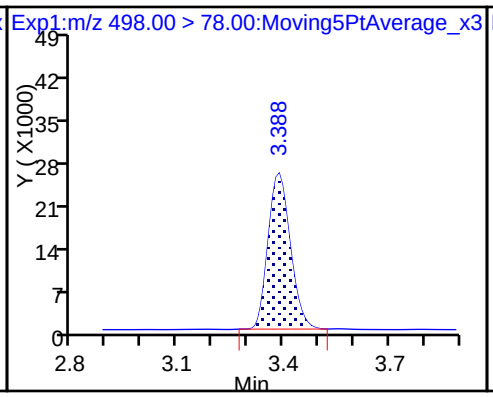
20 Perfluorononanoic acid



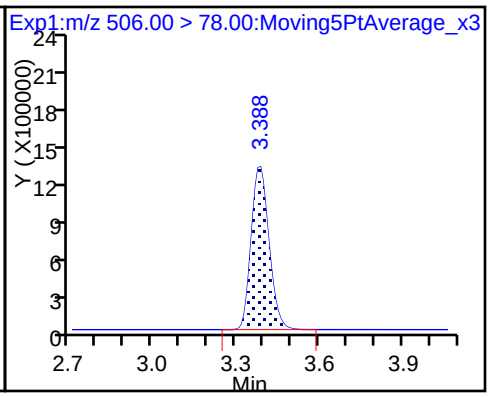
D 19 13C5 PFNA



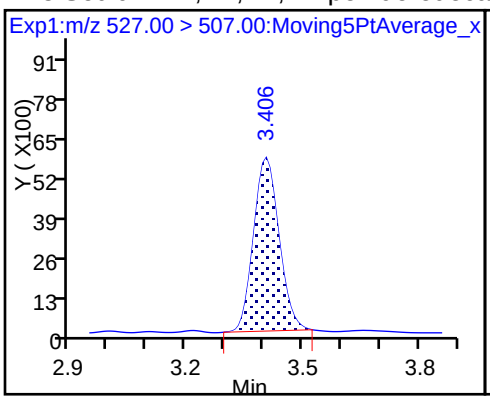
22 Perfluorooctane Sulfonamide



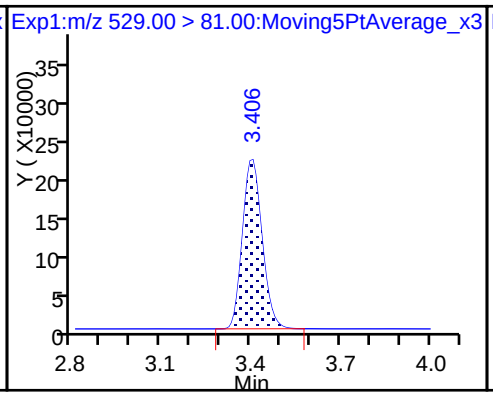
D 21 13C8 FOSA



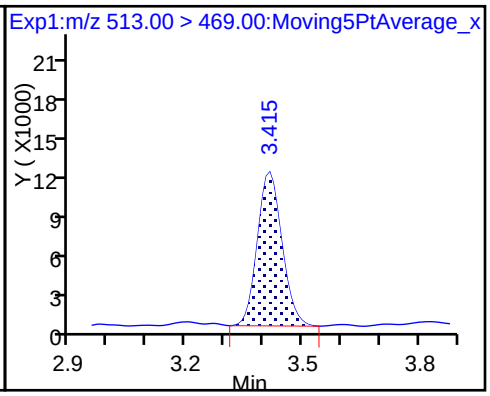
25 Sodium 1H,1H,2H,2H-perfluorodecane



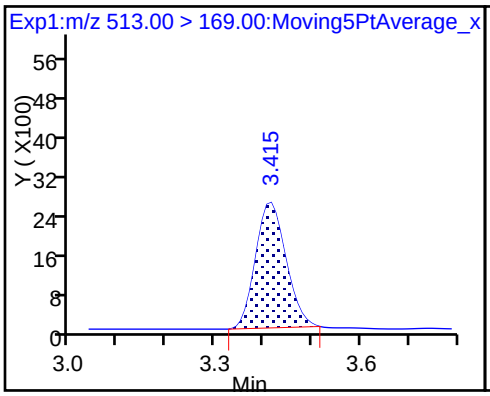
D 26 M2-8:2FTS



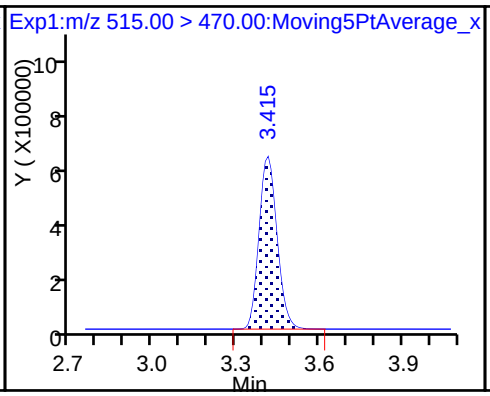
24 Perfluorodecanoic acid



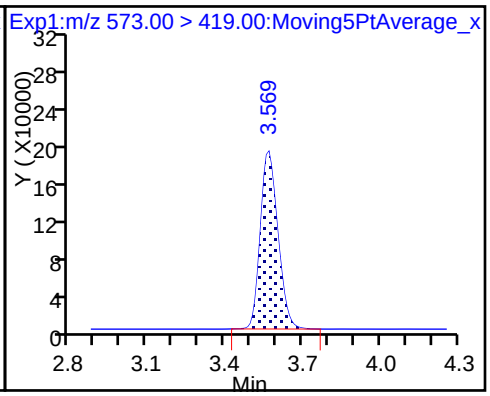
24 Perfluorodecanoic acid



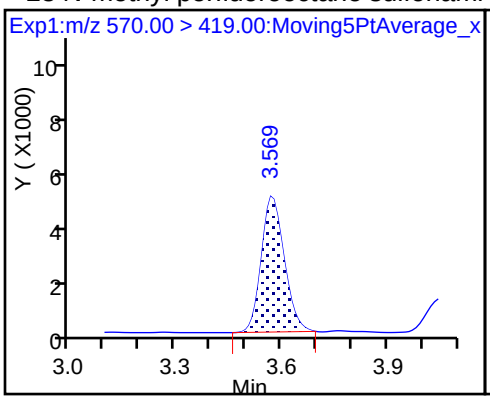
D 23 13C2 PFDA



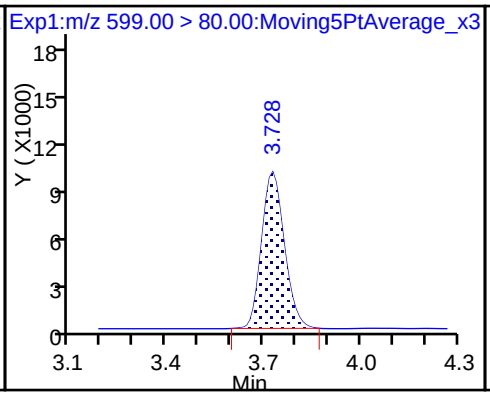
D 27 d3-NMeFOSAA



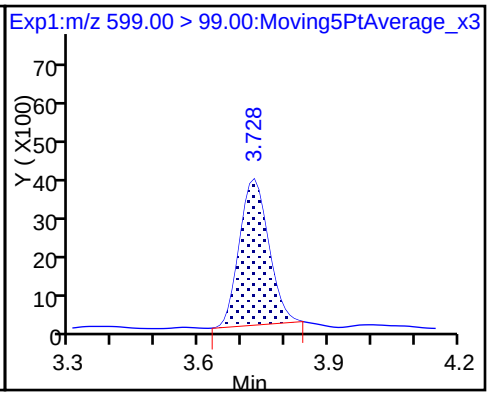
28 N-methyl perfluorooctane sulfonami



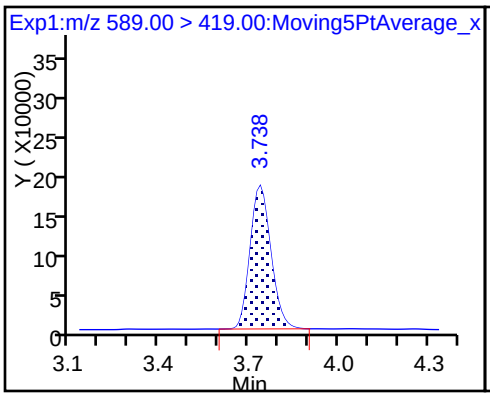
29 Perfluorodecane Sulfonic acid



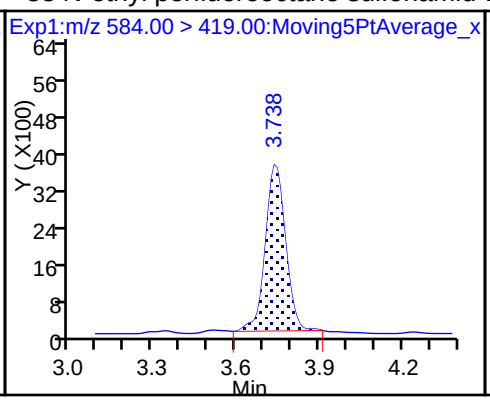
29 Perfluorodecane Sulfonic acid



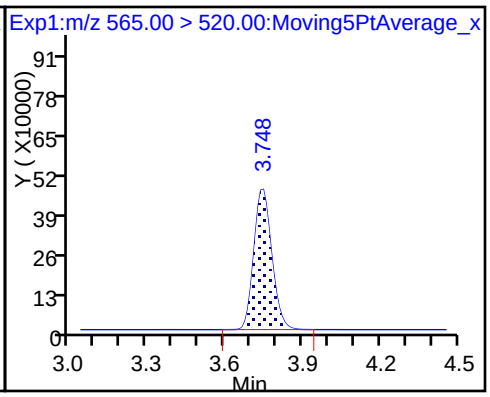
D 32 d5-NEtFOSAA



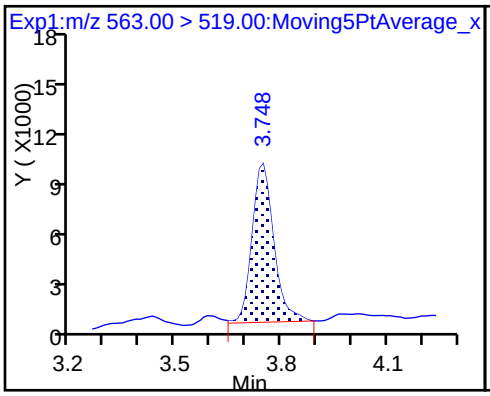
33 N-ethyl perfluorooctane sulfonamid



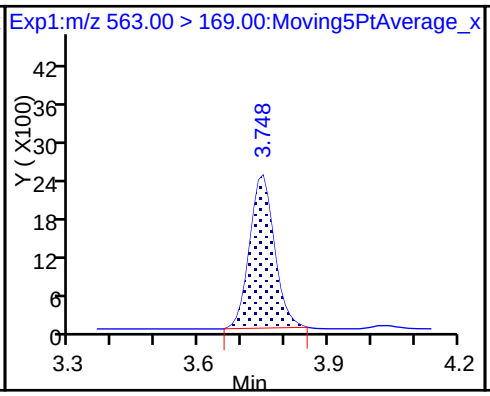
D 30 13C2 PFUnA



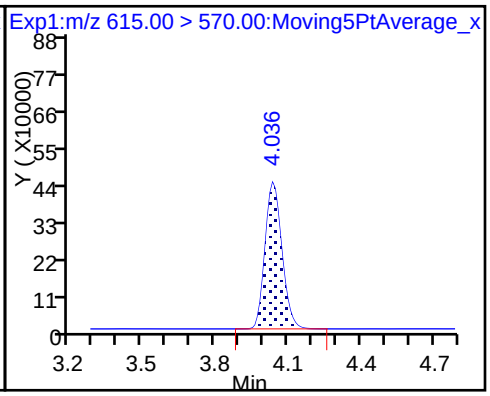
31 Perfluoroundecanoic acid



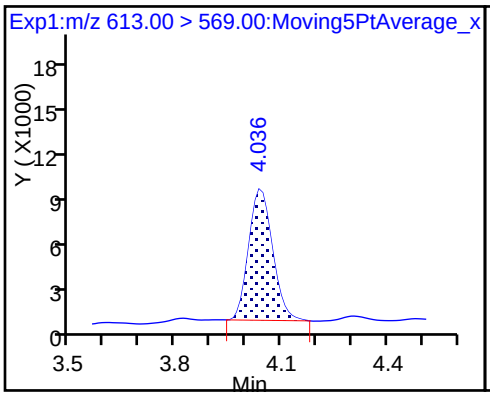
31 Perfluoroundecanoic acid



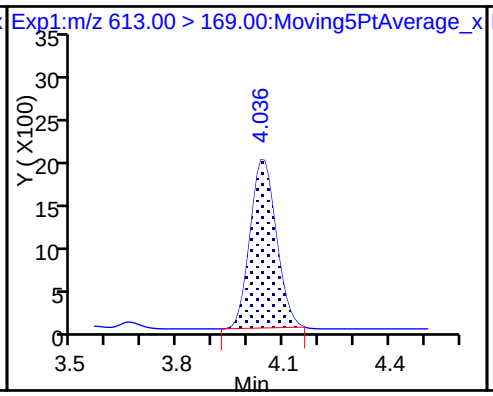
D 36 13C2 PFDoA



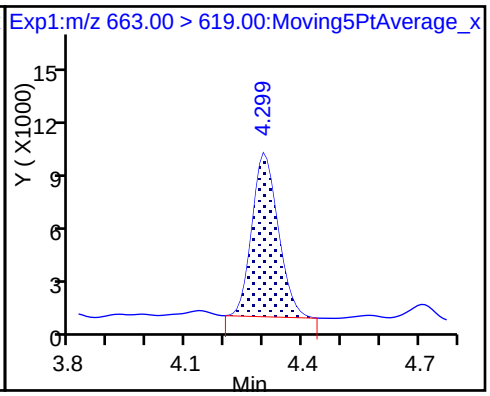
37 Perfluorododecanoic acid



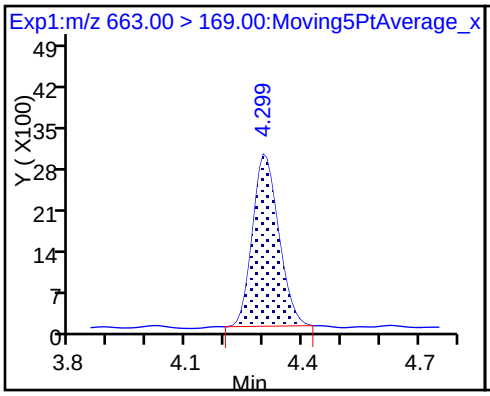
37 Perfluorododecanoic acid



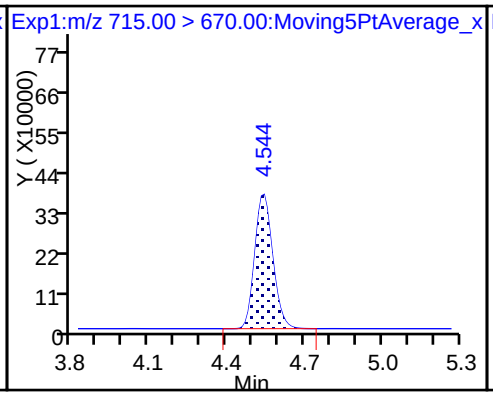
41 Perfluorotridecanoic acid



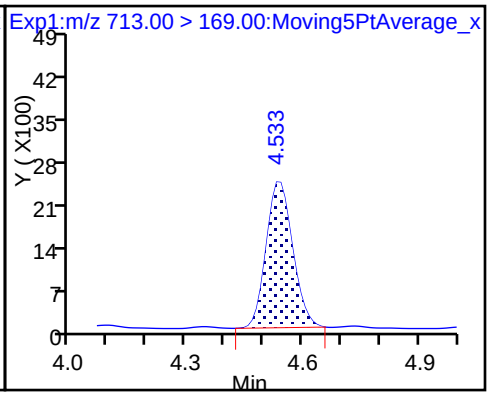
41 Perfluorotridecanoic acid



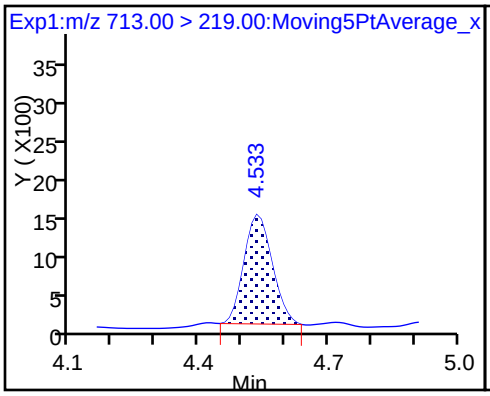
D 43 13C2-PFTeDA



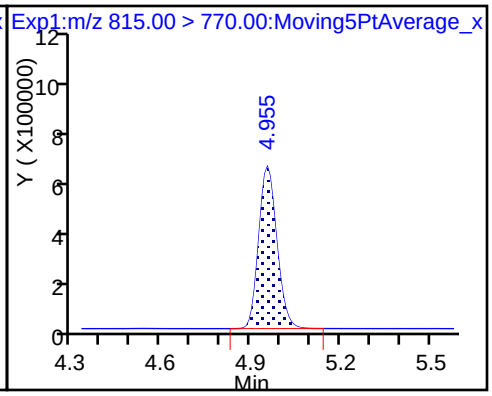
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

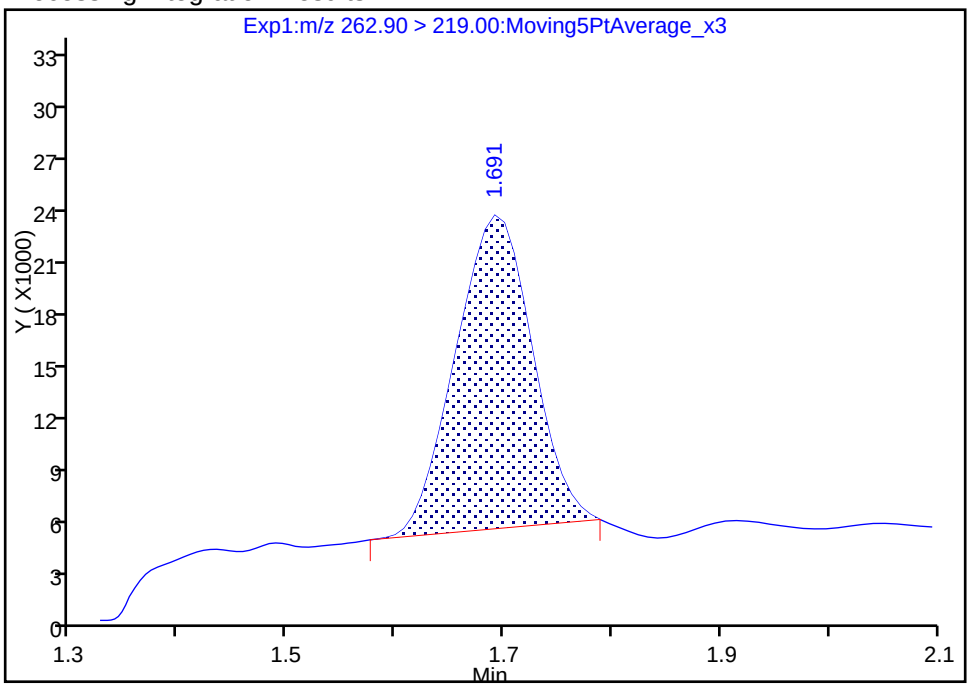
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_003.d				
Injection Date:	16-Mar-2018 23:17:30	Instrument ID:	A8_N		
Lims ID:	IC L2 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

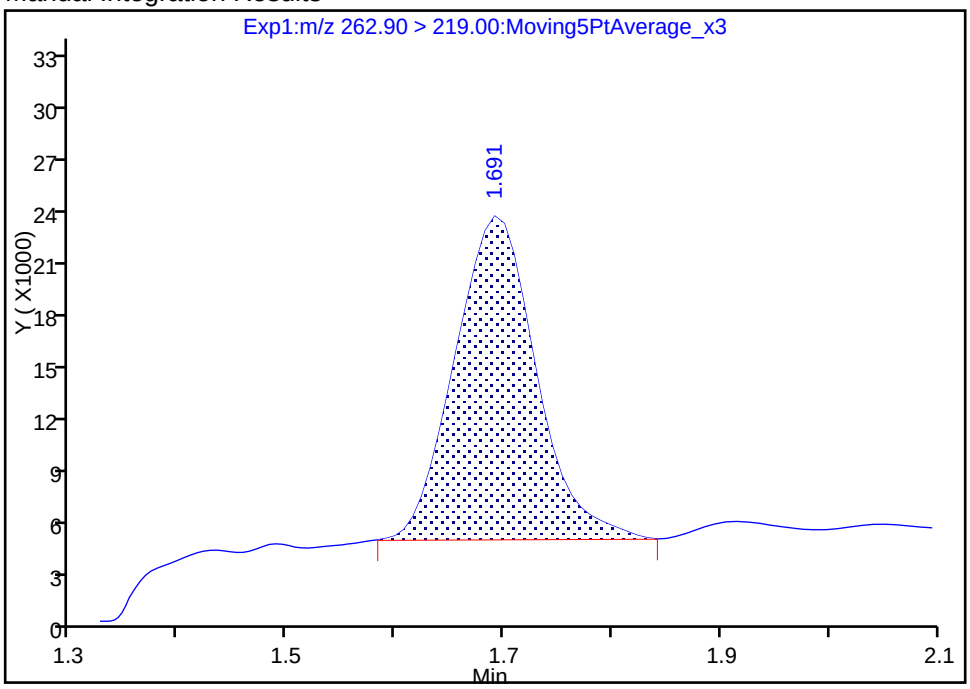
Processing Integration Results

RT: 1.69
Area: 89608
Amount: 0.048214
Amount Units: ng/ml



Manual Integration Results

RT: 1.69
Area: 98047
Amount: 0.052079
Amount Units: ng/ml



Reviewer: phomsophat, 18-Mar-2018 12:24:49

Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_004.d
Lims ID: IC L3 Full
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 16-Mar-2018 23:25:20 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:40:29 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:26:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.537	5676105	2.37		94.9	109752	
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.440	-0.006	1.000	528325	0.2509		100	384	
D 3 13C5-PFPeA										
267.90 > 223.00	1.691	1.696	-0.005	0.633	4142560	2.45		98.2	134338	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.691	1.698	-0.007	1.000	461977	0.2387		95.5	175	
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.646	92166	2.21		95.2	583	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.727	1.733	-0.006	1.000	662611	0.2160		97.7	292	
298.90 > 99.00	1.727	1.733	-0.006	1.000	285306		2.32(1.25-3.74)	97.7	291	
D 60 M2-4:2FTS										
329.00 > 81.00	1.935	1.942	-0.007	0.724	667108	NC			6920	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.935	1.944	-0.009	1.000	149763	0.2350		101	9381	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.739	4545197	2.42		96.6	103442	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.976	1.982	-0.006	1.000	453548	0.2472		98.9	1336	
313.00 > 119.00	1.976	1.982	-0.006	1.000	39826		11.39(5.03-15.10)	98.9	879	
D 9 13C4-PFHpA										
367.00 > 322.00	2.302	2.311	-0.009	0.861	4288080	2.34		93.7	102910	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.302	2.311	-0.009	1.000	455401	0.2562		102	989	
363.00 > 169.00	2.302	2.311	-0.009	1.000	171167		2.66(1.13-3.40)	102	3577	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.315	2.326	-0.011	0.866	5345110	2.19		92.6	52778	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.315	2.326	-0.011	1.000	560663	0.2224		97.8	68.7	
399.00 > 99.00	2.315	2.326	-0.011	1.000	186807		3.00(1.50-4.49)	97.8	69.9	
D 12 M2-6:2FTS										
429.00 > 81.00	2.641	2.651	-0.010	0.988	1075617	2.29		96.6	22683	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.641	2.652	-0.011	1.000	184494	0.2447		103	10820	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.678	-0.005	1.000	4329764	2.45		98.0	91608	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.678	-0.005	1.000	440615	0.2279		91.2	139	
413.00 > 169.00	2.673	2.678	-0.005	1.000	250016		1.76(0.84-2.52)	91.2	1020	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.678	-0.005		4684467	2.50			99324	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.684	-0.011	1.000	499055	0.2351		98.8	11674	
449.00 > 99.00	2.673	2.684	-0.011	1.000	131789		3.79(1.94-5.82)	98.8	3882	
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.050	-0.006	1.139	3861206	2.26		94.6	55017	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.044	3.050	-0.006	1.000	379502	0.2170		93.5	1600	
499.00 > 99.00	3.044	3.050	-0.006	1.000	84823		4.47(2.31-6.93)	93.5	1099	
D 19 13C5 PFNA										
468.00 > 423.00	3.044	3.052	-0.008	1.139	3409796	2.41		96.5	78236	
20 Perfluorononanoic acid										
463.00 > 419.00	3.044	3.052	-0.008	1.000	332490	0.2391		95.6	758	
463.00 > 169.00	3.044	3.052	-0.008	1.000	79660		4.17(1.90-5.69)	95.6	2508	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.388	-0.008	1.265	5924910	2.40		95.9	50173	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.380	3.388	-0.008	1.000	575124	0.2497		99.9	21834	
D 26 M2-8:2FTS										
529.00 > 81.00	3.398	3.406	-0.008	1.272	1037774	2.36		98.4	19457	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.398	3.406	-0.008	1.000	129787	0.2382		99.5	5835	
D 23 13C2 PFDA										
515.00 > 470.00	3.407	3.416	-0.009	1.275	2940123	2.49		99.6	50957	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.407	3.416	-0.009	1.000	277398	0.2486		99.4	1278	
513.00 > 169.00	3.407	3.416	-0.009	1.000	47991		5.78(2.36-7.09)	99.4	2723	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.561	3.570	-0.009	1.333	926313	2.38		95.0	22741	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.570	3.571	-0.001	1.002	90574	0.2347		93.9	1811	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.727	3.729	-0.002	1.000	246261	0.2387		99.1	7488	
599.00 > 99.00	3.727	3.729	-0.002	1.000	83238		2.96(1.39-4.16)	99.1	1772	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.398	885725	2.38		95.0	2102	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.738	3.746	-0.008	1.000	82250	0.2371		94.8	2411	
D 30 13C2 PFUnA										
565.00 > 520.00	3.738	3.747	-0.009	1.398	2288527	2.47		99.0	47946	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.748	3.750	-0.002	1.003	170791	0.2226		89.1	579	
563.00 > 169.00	3.738	3.750	-0.012	1.000	47832		3.57(2.12-6.36)	89.1	3804	
D 36 13C2 PFDoA										
615.00 > 570.00	4.035	4.041	-0.006	1.510	2098644	2.39		95.7	12400	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.035	4.042	-0.007	1.000	216392	0.2520		101	42.4	
613.00 > 169.00	4.035	4.042	-0.007	1.000	56005		3.86(2.13-6.40)	101	1660	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.298	4.304	-0.006	1.000	219791	0.2545		102	46.0	
663.00 > 169.00	4.298	4.304	-0.006	1.000	71054		3.09(1.25-3.76)	102	1089	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.700	1912234	2.39		95.6	14787	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.543	4.545	-0.002	1.000	48261	0.2288		91.5	592	
713.00 > 219.00	4.533	4.545	-0.012	0.998	37105		1.30(0.71-2.13)	91.5	412	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.854	2831717	2.42		96.8	9806	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	4.960	0.004	1.002	287100	NC			24.5	
813.00 > 169.00	4.964	4.960	0.004	1.002	51630		5.56(2.86-8.58)		604	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.324	5.320	0.004	1.000	261856	NC			47.1	
913.00 > 169.00	5.316	5.320	-0.004	0.999	33024		7.93(3.83-11.48)		438	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL3_00004 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:40:30 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_004.d

Injection Date: 16-Mar-2018 23:25:20 Instrument ID: A8_N

Lims ID: IC L3 Full

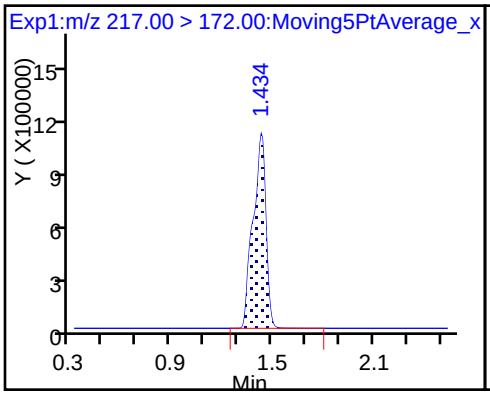
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4

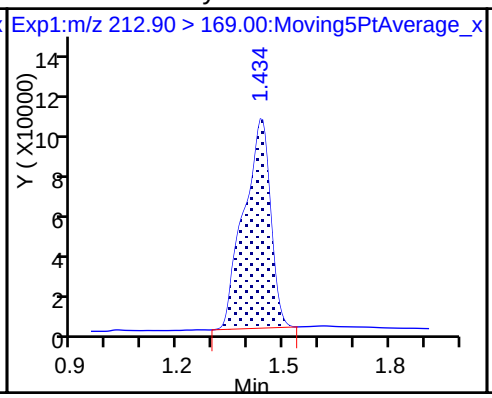
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

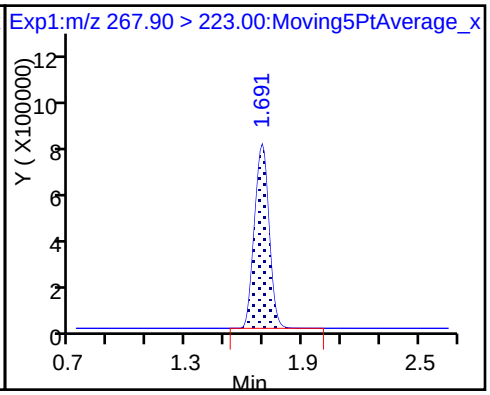
D 1 13C4 PFBA



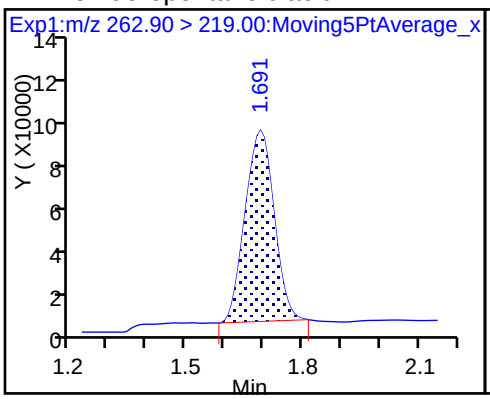
2 Perfluorobutyric acid



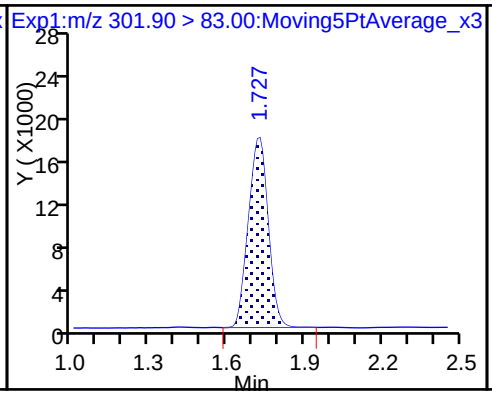
D 3 13C5-PFPeA



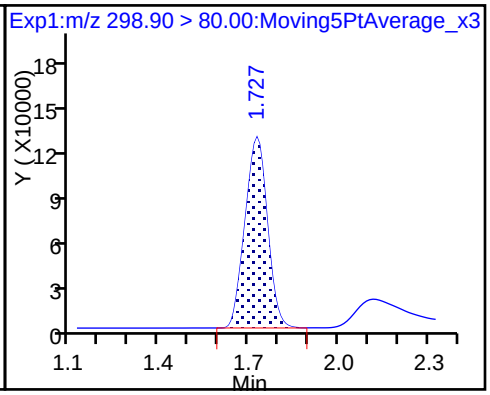
4 Perfluoropentanoic acid



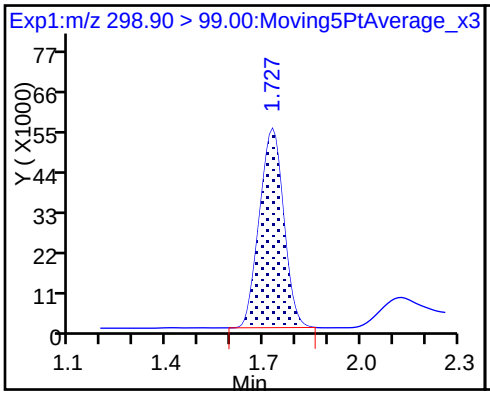
D 47 13C3-PFBS



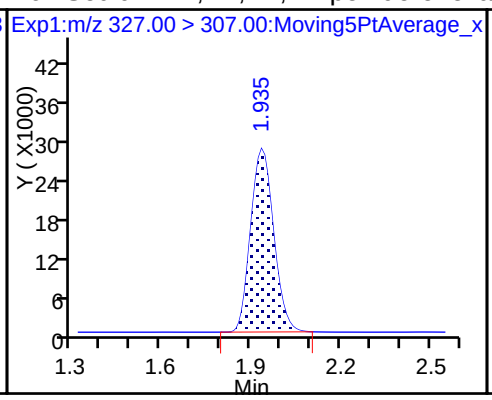
5 Perfluorobutanesulfonic acid



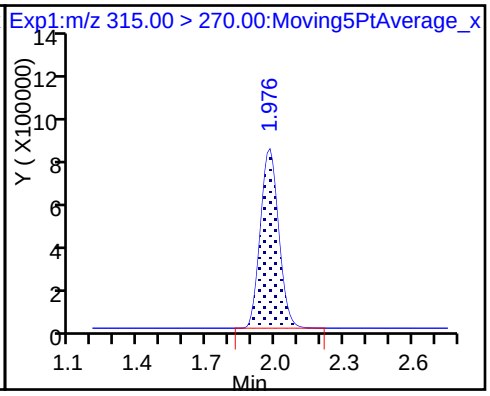
5 Perfluorobutanesulfonic acid



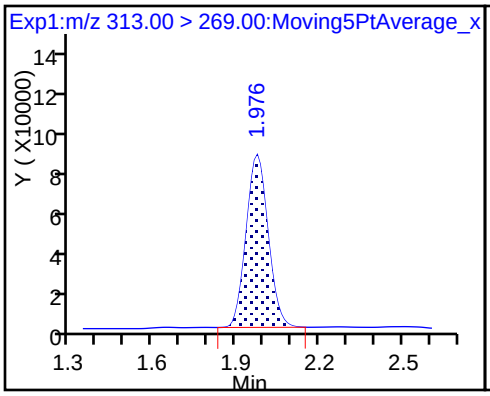
61 Sodium 1H,1H,2H,2H-perfluorohexa



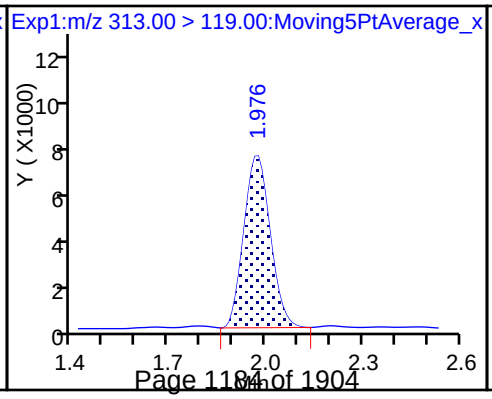
D 7 13C2 PFHxA



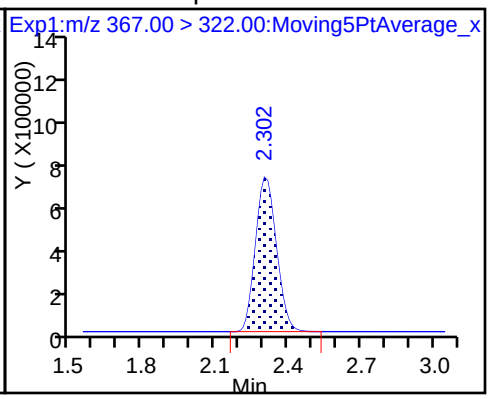
6 Perfluorohexanoic acid



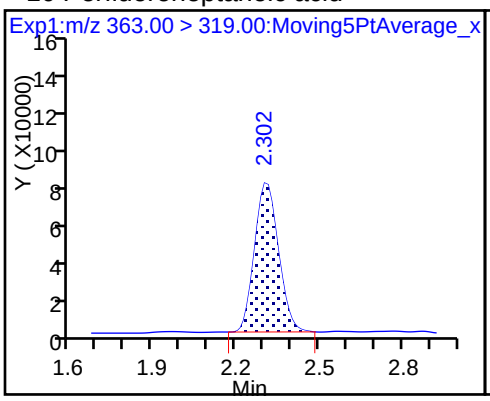
6 Perfluorohexanoic acid



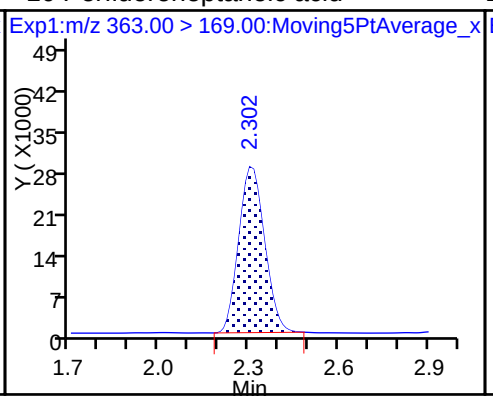
D 9 13C4-PFHpA



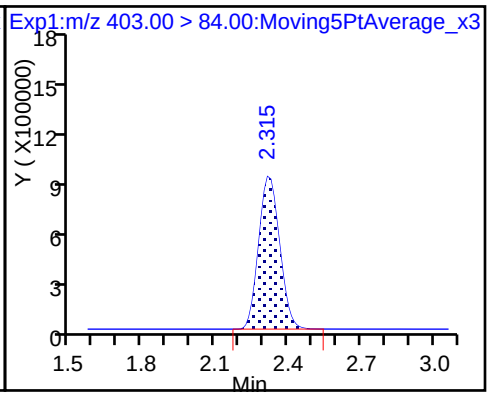
10 Perfluoroheptanoic acid



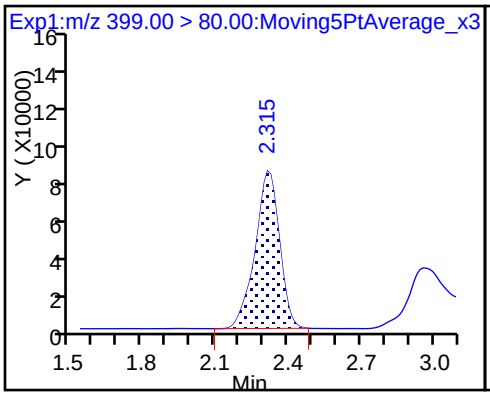
10 Perfluoroheptanoic acid



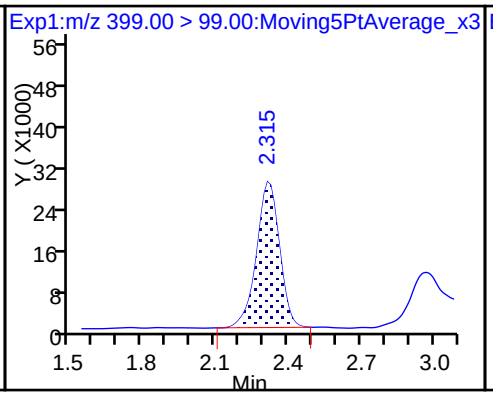
D 11 18O2 PFHxS



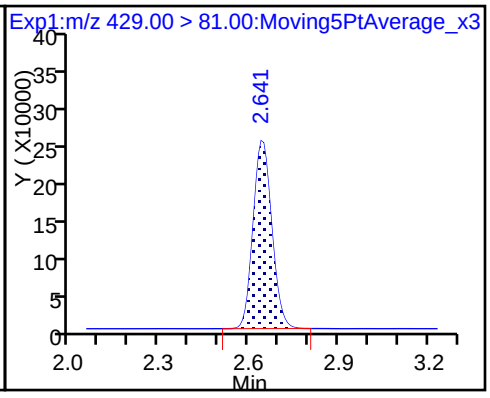
8 Perfluorohexanesulfonic acid



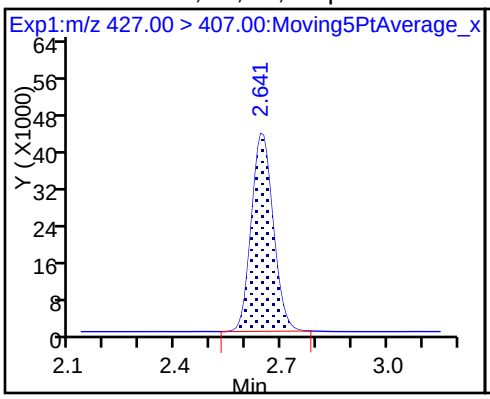
8 Perfluorohexanesulfonic acid



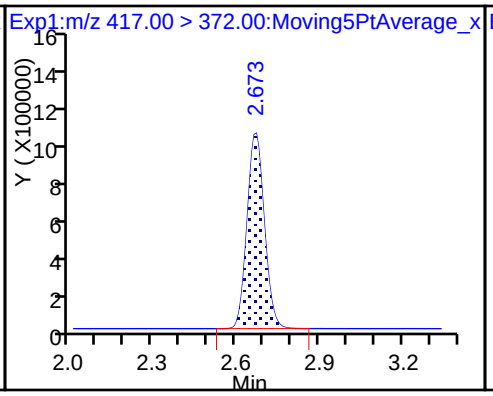
D 12 M2-6:2FTS



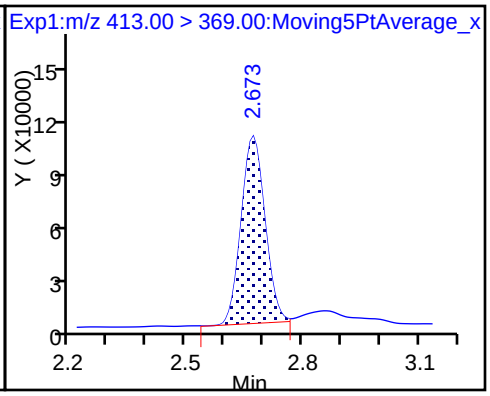
13 Sodium 1H,1H,2H,2H-perfluorooctane



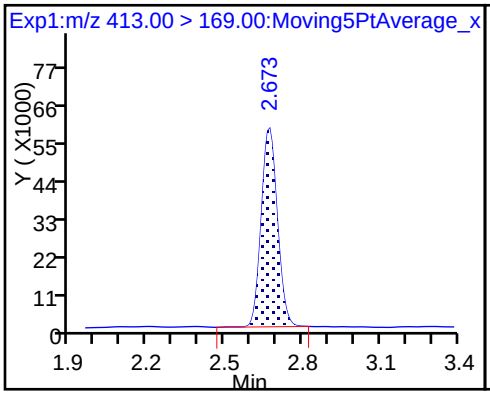
D 14 13C4 PFOA



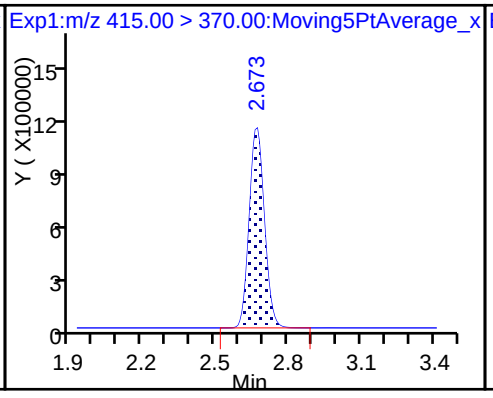
15 Perfluorooctanoic acid



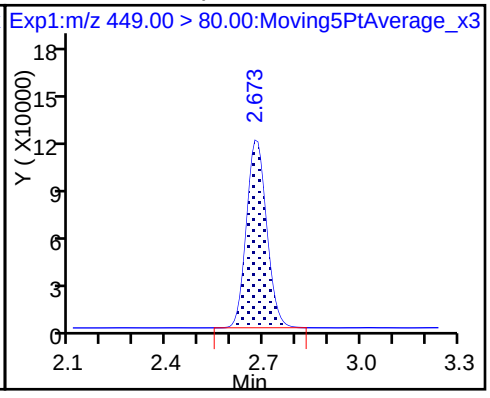
15 Perfluorooctanoic acid



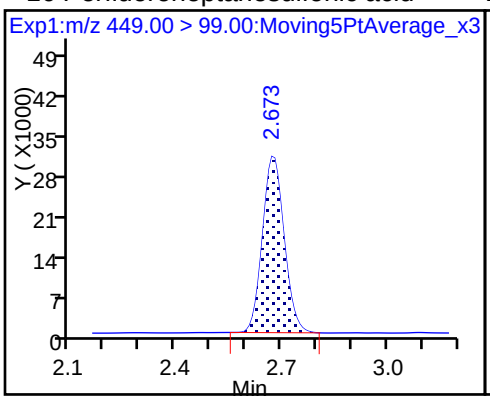
* 62 13C2-PFOA



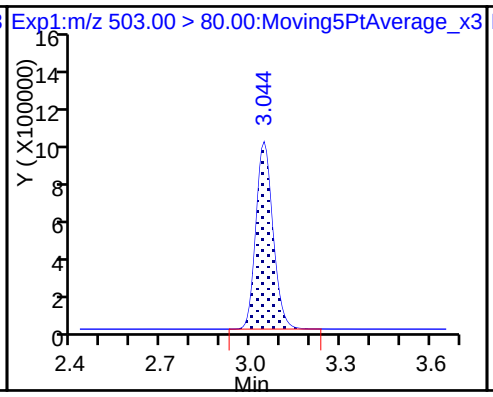
16 Perfluoroheptanesulfonic acid



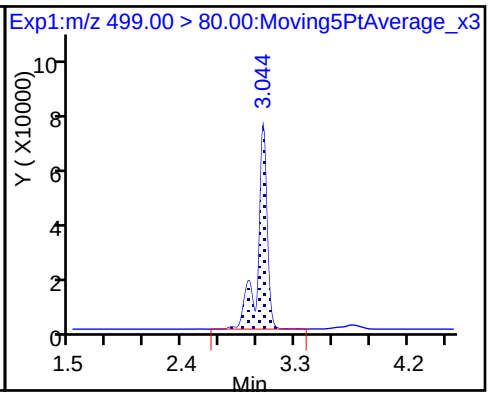
16 Perfluoroheptanesulfonic acid



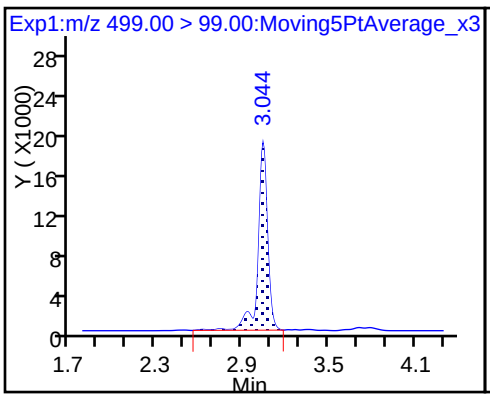
D 18 13C4 PFOS



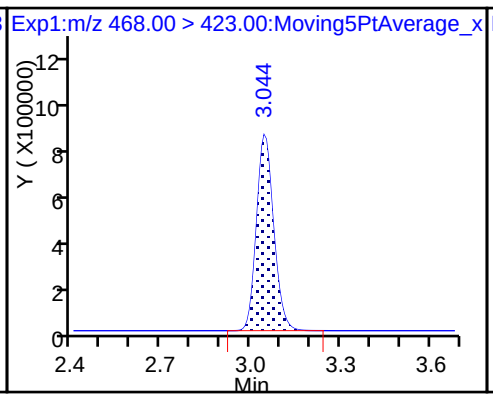
17 Perfluorooctane sulfonic acid



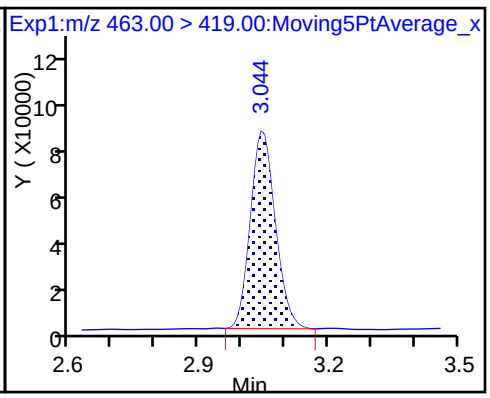
17 Perfluorooctane sulfonic acid



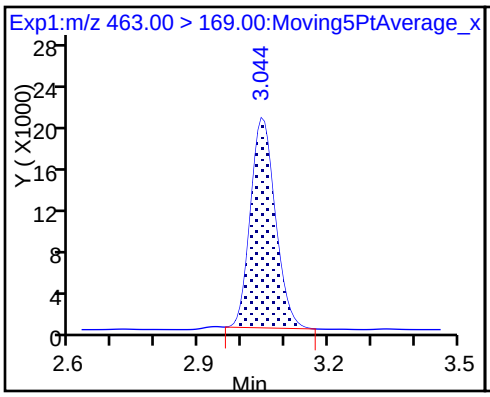
D 19 13C5 PFNA



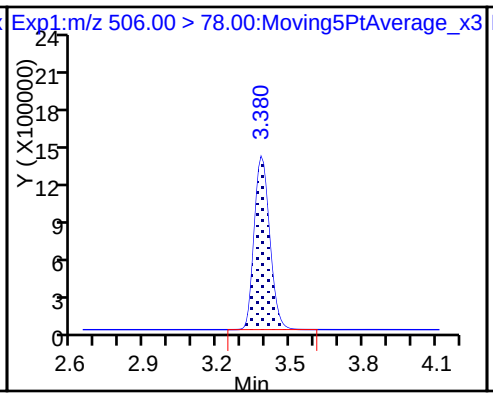
20 Perfluorononanoic acid



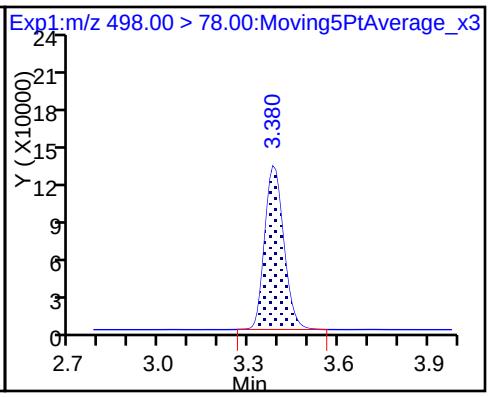
20 Perfluorononanoic acid



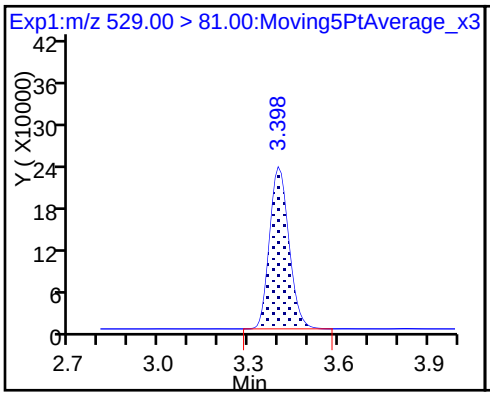
D 21 13C8 FOSA



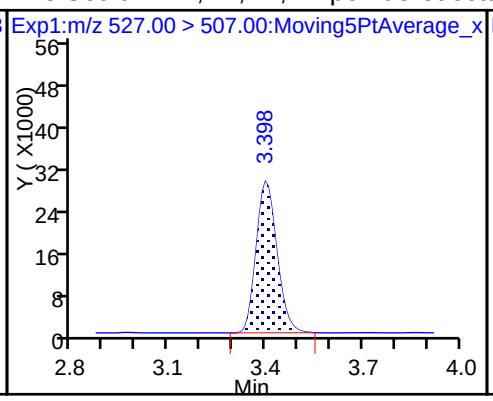
22 Perfluorooctane Sulfonamide



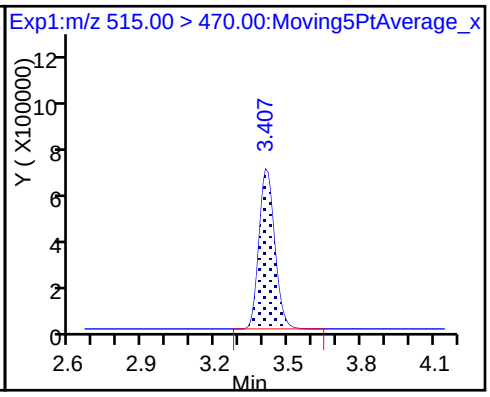
D 26 M2-8:2FTS



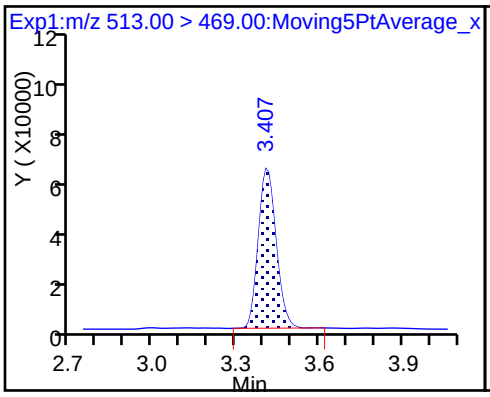
25 Sodium 1H,1H,2H,2H-perfluorodecane



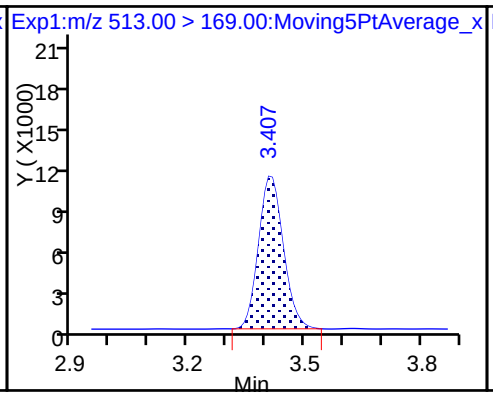
D 23 13C2 PFDA



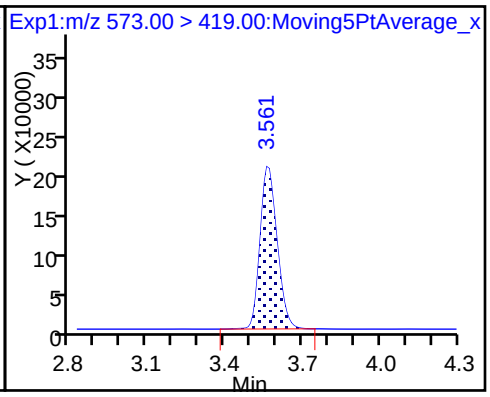
24 Perfluorodecanoic acid



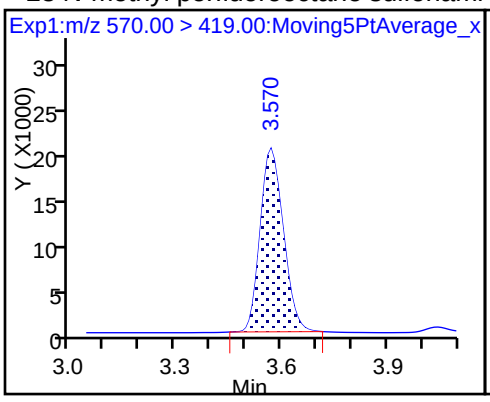
24 Perfluorodecanoic acid



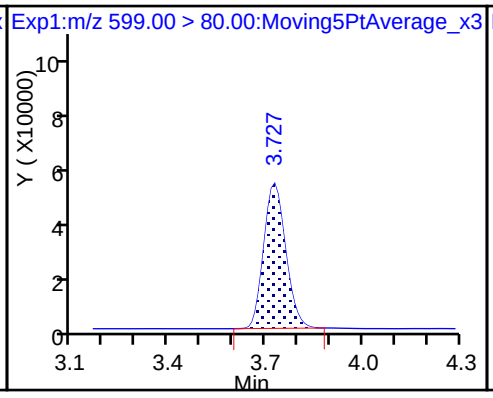
D 27 d3-NMeFOSAA



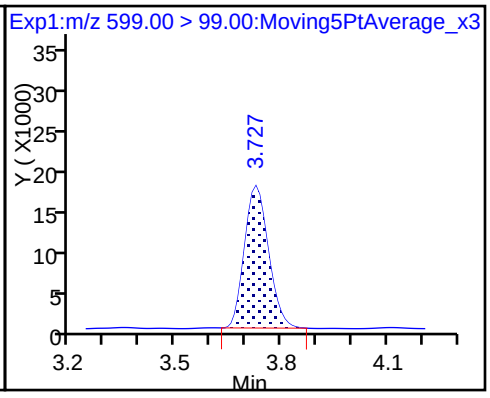
28 N-methyl perfluorooctane sulfonami



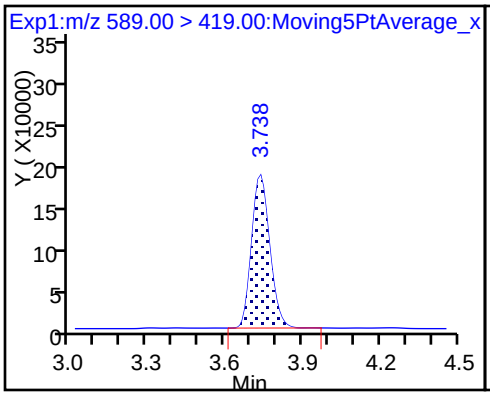
29 Perfluorodecane Sulfonic acid



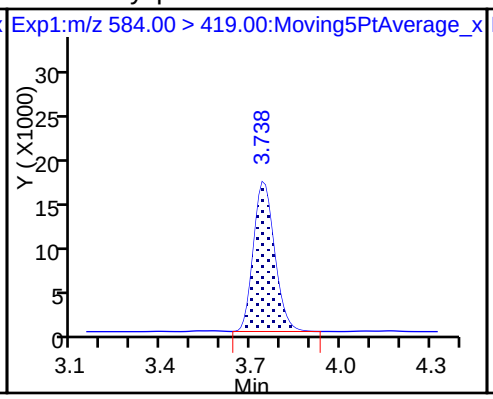
29 Perfluorodecane Sulfonic acid



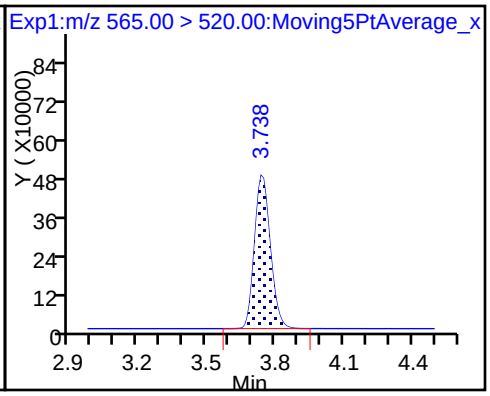
D 32 d5-NEtFOSAA



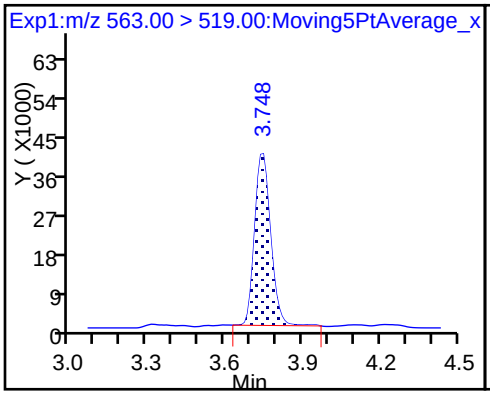
33 N-ethyl perfluorooctane sulfonamid



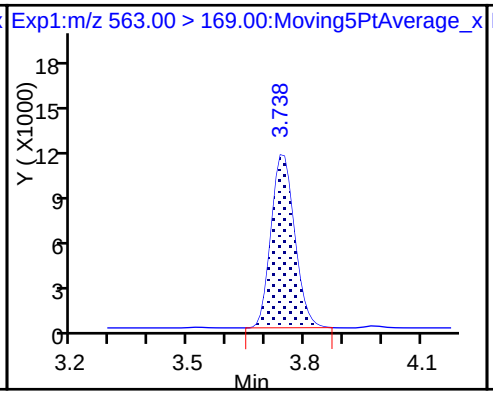
D 30 13C2 PFUnA



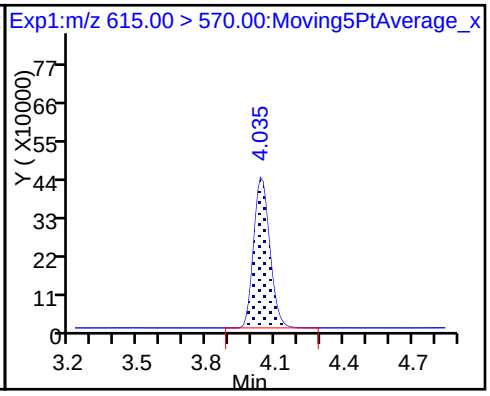
31 Perfluoroundecanoic acid



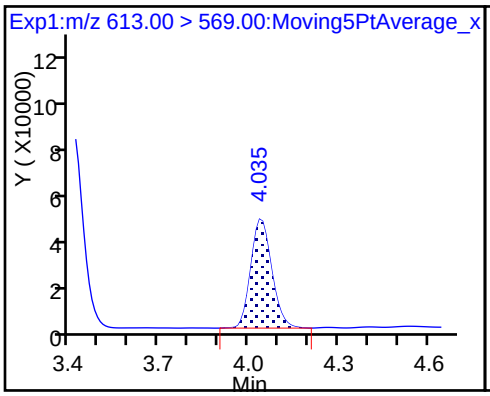
31 Perfluoroundecanoic acid



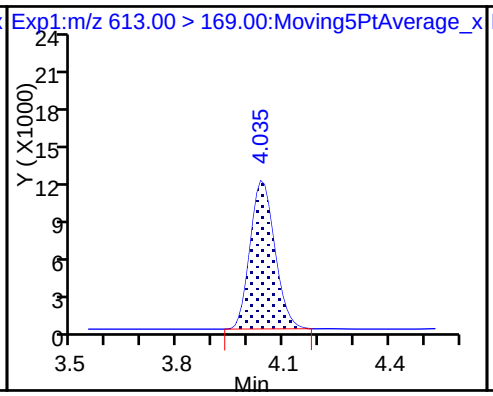
D 36 13C2 PFDoA



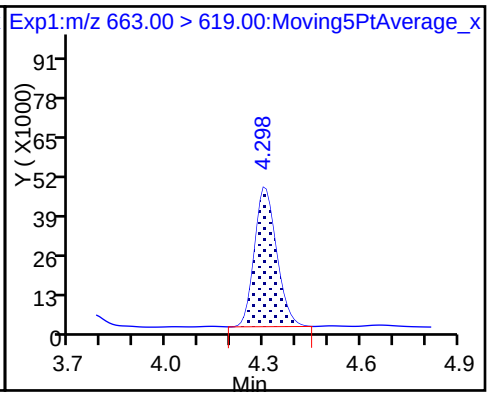
37 Perfluorododecanoic acid



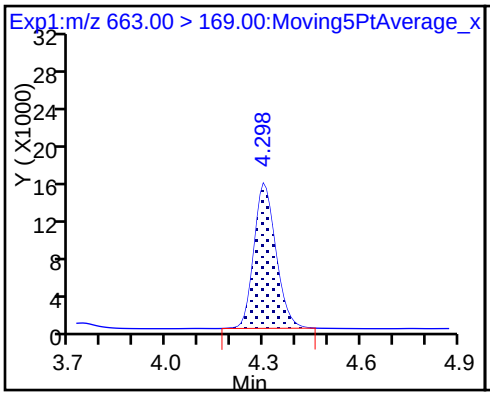
37 Perfluorododecanoic acid



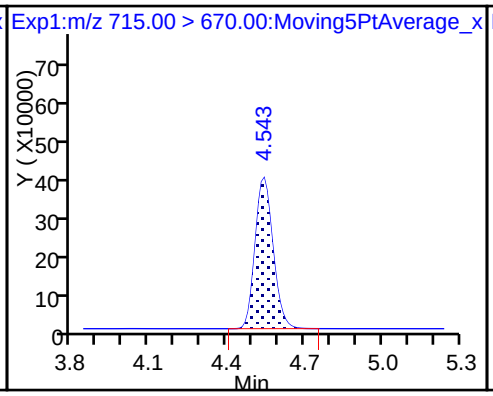
41 Perfluorotridecanoic acid



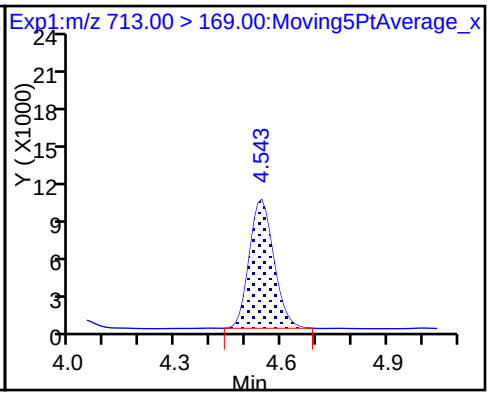
41 Perfluorotridecanoic acid



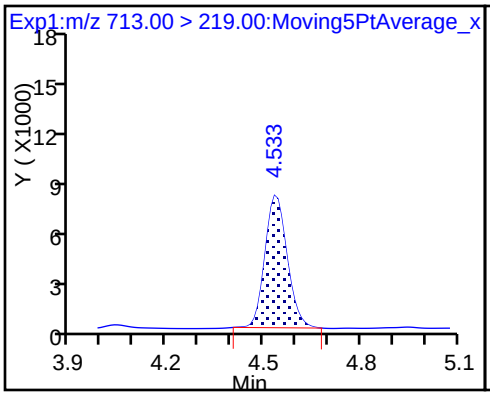
D 43 13C2-PFTeDA



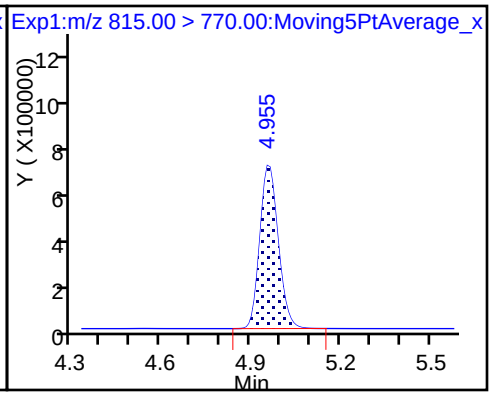
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_005.d
Lims ID: IC L4 Full
Client ID:
Sample Type: ICIS Calib Level: 4
Inject. Date: 16-Mar-2018 23:33:12 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:40:31 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:27:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.446	1.440	0.006	1.000	2048994	0.9691		96.9	1463	
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.440	0.006	0.540	5699617	2.45		98.2	108848	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.635	3973031	2.42		97.0	96403	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.698	0.002	1.000	1812805	0.9765		97.7	700	
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.730	0.005	0.648	90021	2.23		95.8	613	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.735	1.733	0.002	1.000	2653315	0.8856		100	1187	
298.90 > 99.00	1.735	1.733	0.002	1.000	1107170		2.40(1.25-3.74)	100	1201	
D 60 M2-4:2FTS										
329.00 > 81.00	1.945	1.942	0.003	0.726	678619	NC			8368	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.945	1.944	0.001	1.000	581100	0.9337		100.0	36050	
D 7 13C2 PFHxA										
315.00 > 270.00	1.986	1.979	0.007	0.741	4566628	2.50		100.0	103809	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.986	1.982	0.004	1.000	1746371	0.9475		94.7	4897	
313.00 > 119.00	1.986	1.982	0.004	1.000	160043		10.91(5.03-15.10)	94.7	4154	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.311	0.004	1.000	1765971	0.9707		97.1	4174	
363.00 > 169.00	2.315	2.311	0.004	1.000	712366		2.48(1.13-3.40)	97.1	9197	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	4387932	2.47		98.8	105925	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	2166532	0.8109		89.1	266	
399.00 > 99.00	2.328	2.326	0.002	1.000	727892		2.98(1.50-4.49)	89.1	289	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5665272	2.39		101	73746	
D 12 M2-6:2FTS										
429.00 > 81.00	2.655	2.651	0.004	0.991	1074637	2.36		99.4	20843	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.655	2.652	0.003	1.000	685622	0.9103		96.0	32328	
* 62 13C2-PFOA										
415.00 > 370.00	2.679	2.678	0.001		4548538	2.50			66870	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.679	2.678	0.001	1.000	1814577	0.9438		94.4	537	
413.00 > 169.00	2.679	2.678	0.001	1.000	996715		1.82(0.84-2.52)	94.4	4229	
D 14 13C4 PFOA										
417.00 > 372.00	2.679	2.678	0.001	1.000	4305669	2.51		100	84376	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.687	2.684	0.003	1.000	2063678	0.9641		101	34981	
449.00 > 99.00	2.687	2.684	0.003	1.000	531695		3.88(1.94-5.82)	101	12416	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.051	3.050	0.001	1.000	1586675	0.8998		97.0	5561	
499.00 > 99.00	3.051	3.050	0.001	1.000	346297		4.58(2.31-6.93)	97.0	3419	
D 18 13C4 PFOS										
503.00 > 80.00	3.051	3.050	0.001	1.139	3892764	2.35		98.2	39597	
20 Perfluorononanoic acid										
463.00 > 419.00	3.051	3.052	-0.001	1.000	1348017	0.9587		95.9	3480	
463.00 > 169.00	3.051	3.052	-0.001	1.000	327207		4.12(1.90-5.69)	95.9	13777	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.052	-0.001	1.139	3447867	2.51		100	54153	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.388	0.001	1.000	2356961	1.02		102	67255	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.265	5939465	2.47		99.0	44890	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.407	3.406	0.001	1.000	504855	0.9505		99.2	16199	
D 26 M2-8:2FTS										
529.00 > 81.00	3.407	3.406	0.001	1.272	1011812	2.37		98.8	22738	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.417	3.416	0.0	1.000	1154786	1.04		104	7234	
513.00 > 169.00	3.417	3.416	0.0	1.000	206837		5.58(2.36-7.09)	104	11727	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.0	1.275	2912792	2.54		102	59751	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.570	0.001	1.333	923680	2.44		97.6	28465	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.571	0.0	1.000	365056	0.9486		94.9	4565	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.730	3.729	0.001	1.000	1034588	0.99		103	36475	
599.00 > 99.00	3.730	3.729	0.001	1.000	336956		3.07(1.39-4.16)	103	6525	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.740	3.740	0.0	1.396	931709	2.57		103	2248	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.750	3.746	0.004	1.003	339482	0.9304		93.0	8733	
D 30 13C2 PFUnA										
565.00 > 520.00	3.750	3.747	0.003	1.400	2262020	2.52		101	67227	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.750	3.750	0.0	1.000	644915	0.8505		85.1	1928	
563.00 > 169.00	3.750	3.750	0.0	1.000	168712		3.82(2.12-6.36)	85.1	13449	
D 36 13C2 PFDoA										
615.00 > 570.00	4.038	4.041	-0.003	1.507	2017899	2.37		94.8	12596	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.049	4.042	0.007	1.003	860515	1.04		104	177	
613.00 > 169.00	4.049	4.042	0.007	1.003	216685		3.97(2.13-6.40)	104	5598	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.304	0.003	1.000	842010	1.01		101	177	
663.00 > 169.00	4.307	4.304	0.003	1.000	259137		3.25(1.25-3.76)	101	3693	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.545	-0.001	1.696	1891848	2.43		97.4	14773	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.544	4.545	-0.001	1.000	194321	0.9311		93.1	2372	
713.00 > 219.00	4.544	4.545	-0.001	1.000	138985		1.40(0.71-2.13)	93.1	1610	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.956	4.956	0.0	1.850	2868070	2.52		101	11418	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	4.960	0.004	1.002	1031926	NC			89.6	
813.00 > 169.00	4.964	4.960	0.004	1.002	177707		5.81(2.86-8.58)		2206	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.323	5.320	0.003	1.000	1049380	NC			201	
913.00 > 169.00	5.316	5.320	-0.004	0.999	136421		7.69(3.83-11.48)		1641	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:40:32 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_005.d

Injection Date: 16-Mar-2018 23:33:12 Instrument ID: A8_N

Lims ID: IC L4 Full

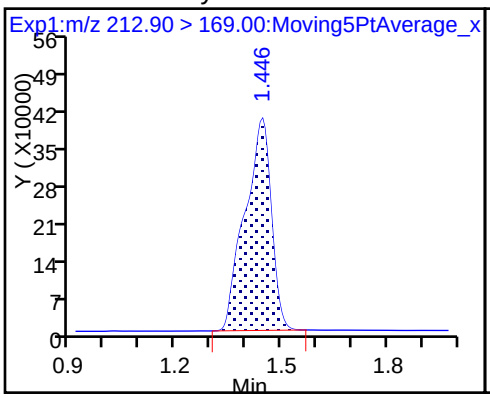
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5

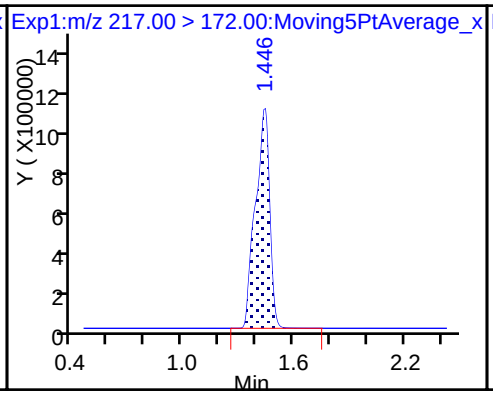
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

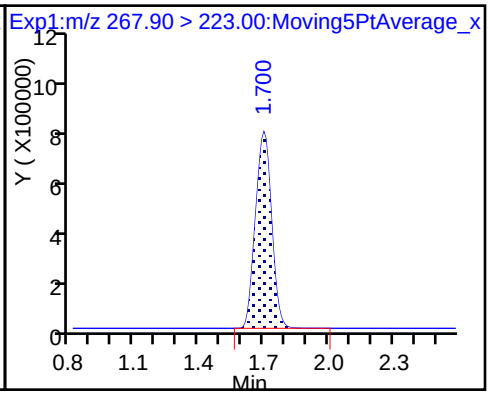
2 Perfluorobutyric acid



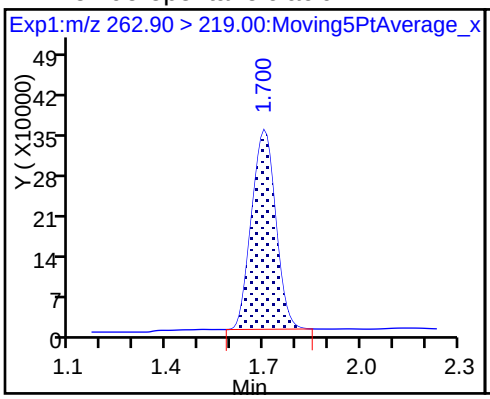
D 1 13C4 PFBA



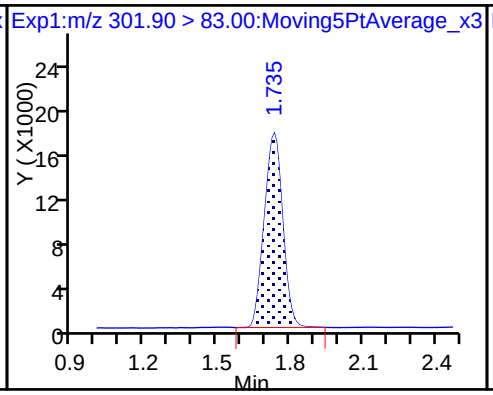
D 3 13C5-PFPeA



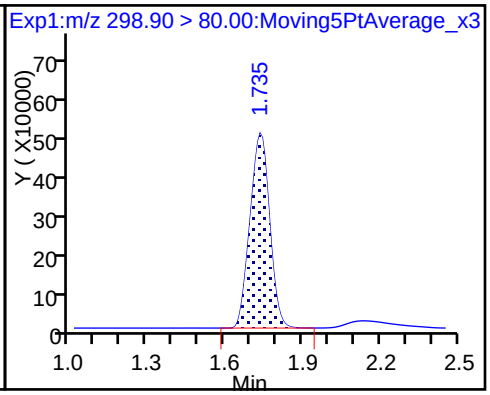
4 Perfluoropentanoic acid



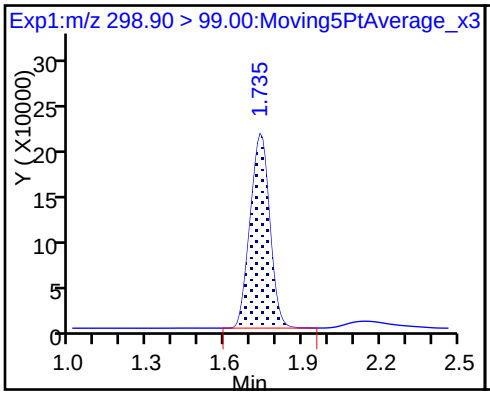
D 47 13C3-PFBS



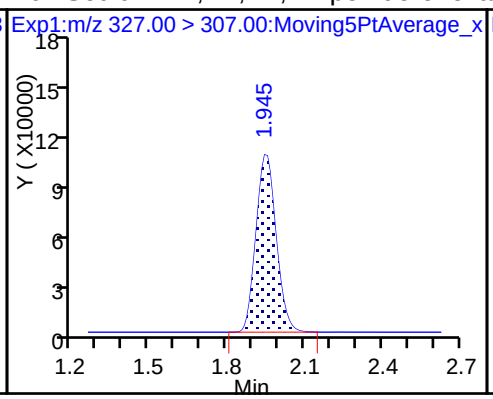
5 Perfluorobutanesulfonic acid



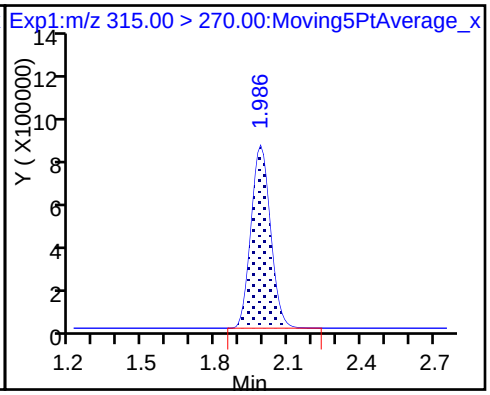
5 Perfluorobutanesulfonic acid



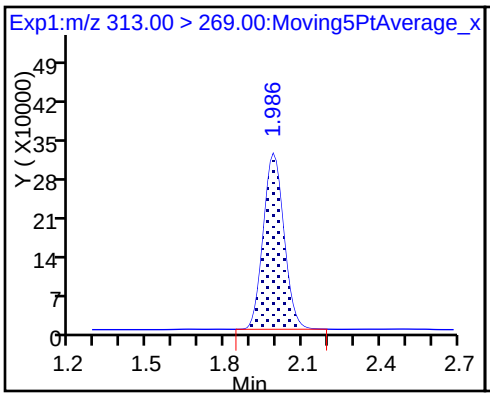
61 Sodium 1H,1H,2H,2H-perfluorohexa



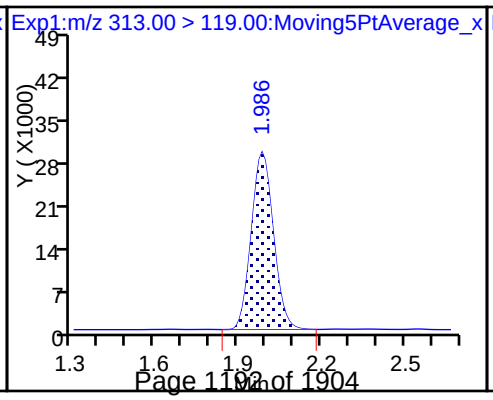
D 7 13C2 PFHxA



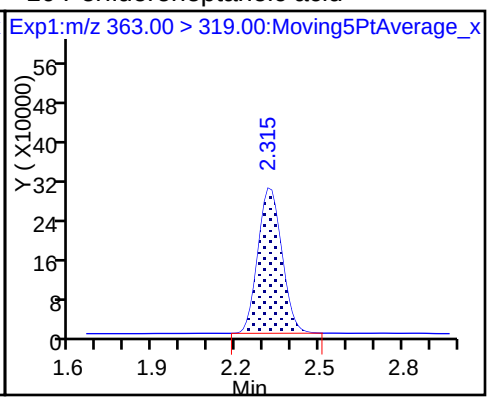
6 Perfluorohexanoic acid



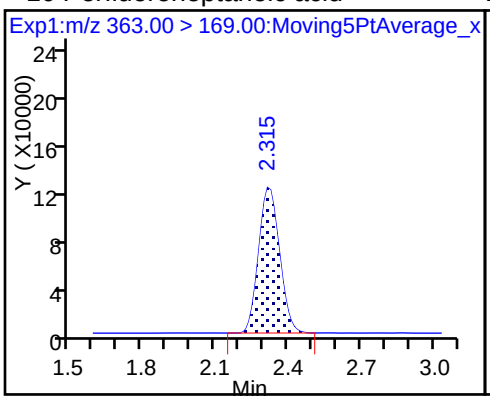
6 Perfluorohexanoic acid



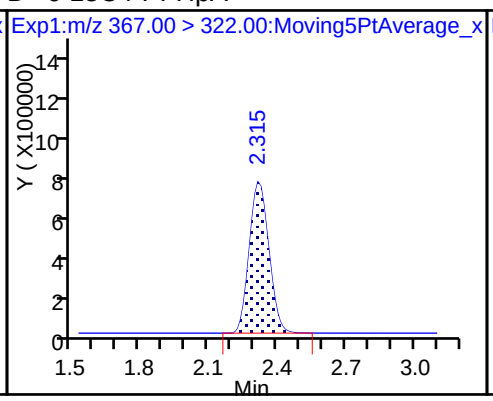
10 Perfluoroheptanoic acid



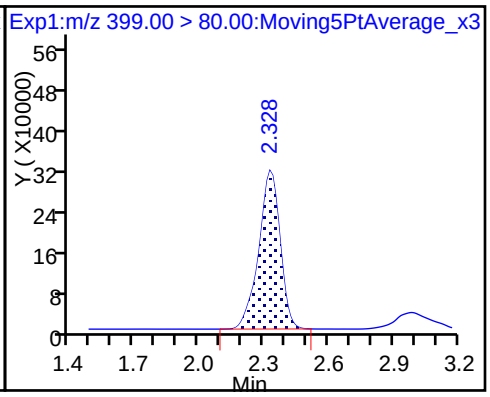
10 Perfluoroheptanoic acid



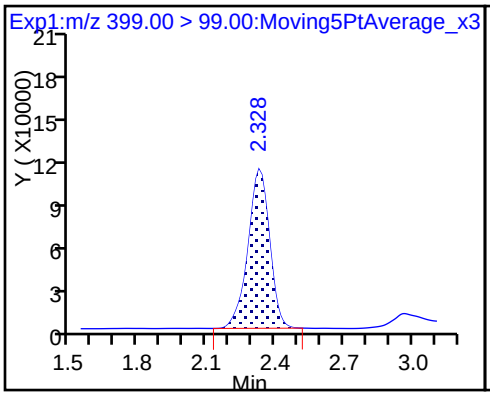
D 9 13C4-PFHpA



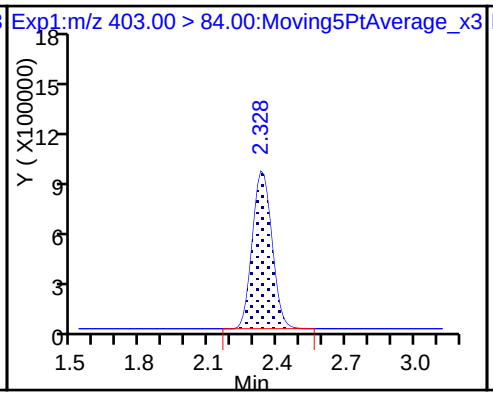
8 Perfluorohexanesulfonic acid



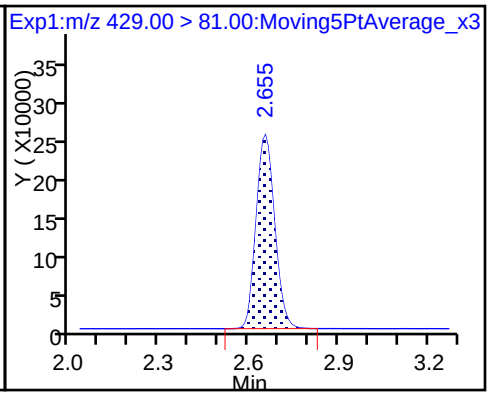
8 Perfluorohexanesulfonic acid



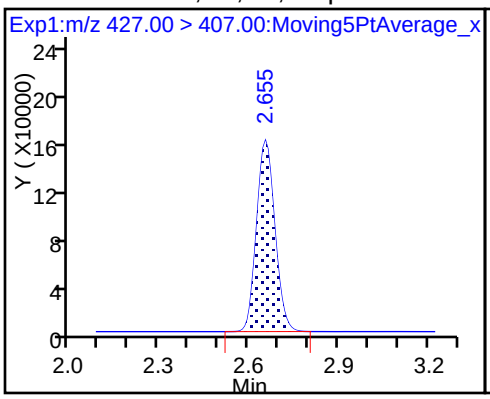
D 11 18O2 PFHxS



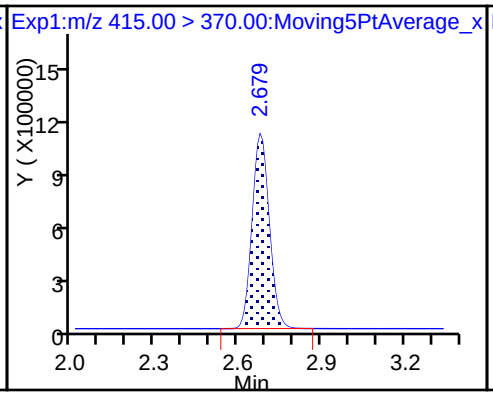
D 12 M2-6:2FTS



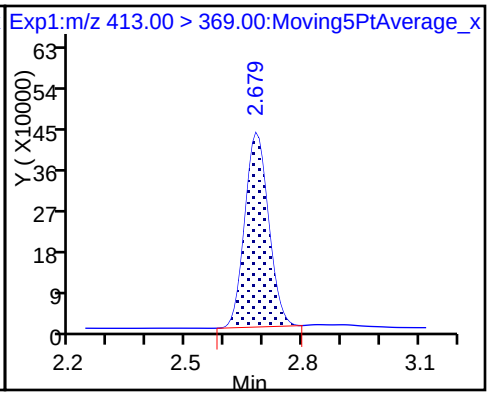
13 Sodium 1H,1H,2H,2H-perfluorooctane



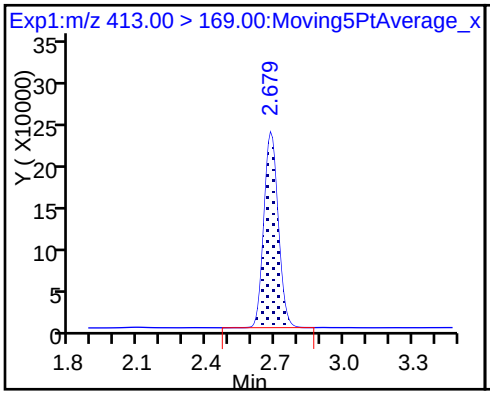
62 13C2-PFOA



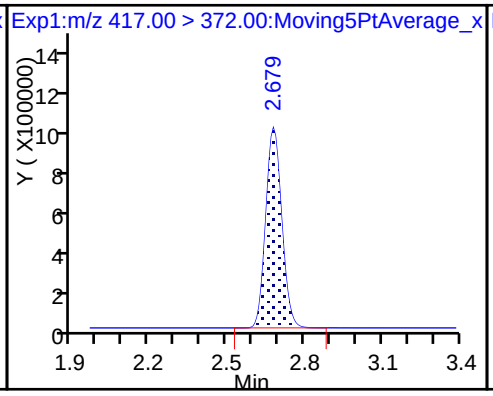
15 Perfluorooctanoic acid



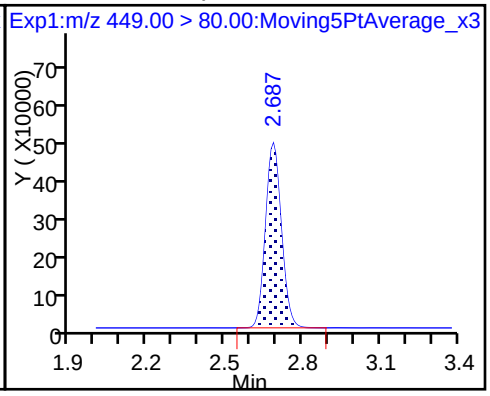
15 Perfluorooctanoic acid



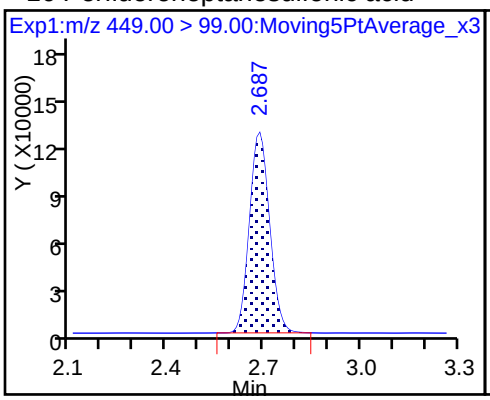
D 14 13C4 PFOA



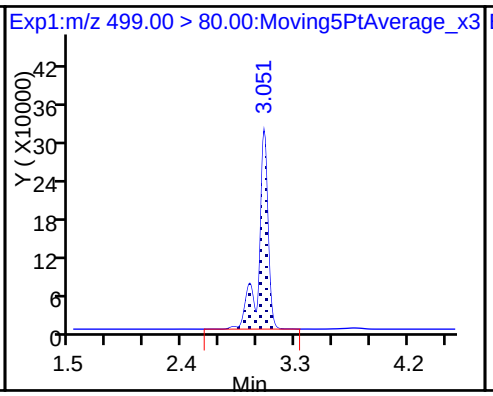
16 Perfluoroheptanesulfonic acid



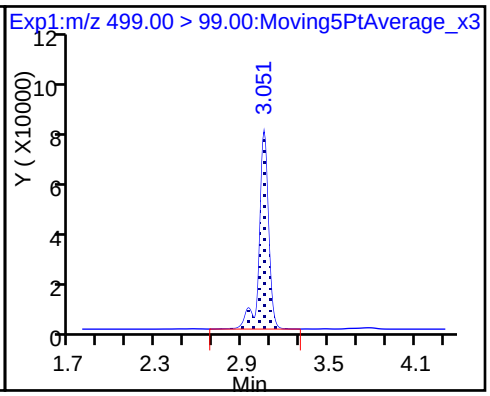
16 Perfluoroheptanesulfonic acid



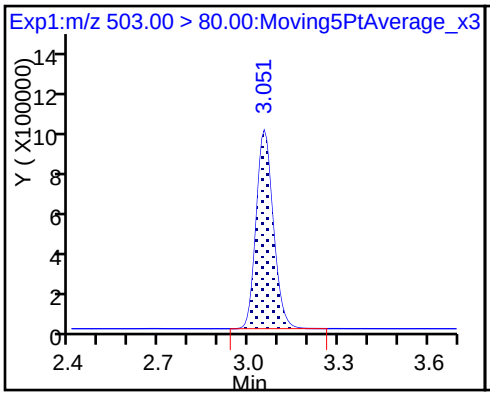
17 Perfluorooctane sulfonic acid



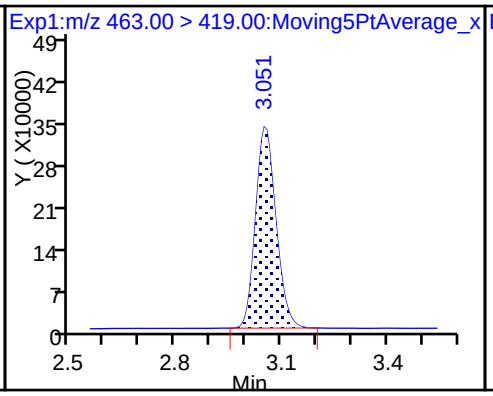
17 Perfluorooctane sulfonic acid



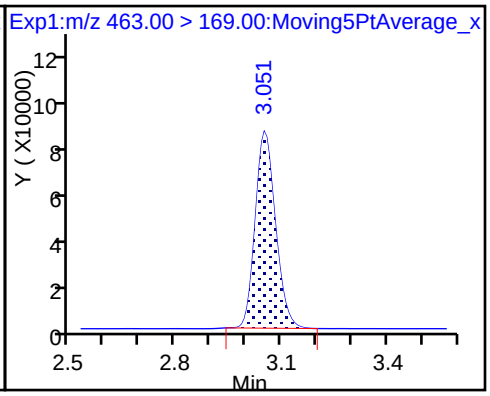
D 18 13C4 PFOS



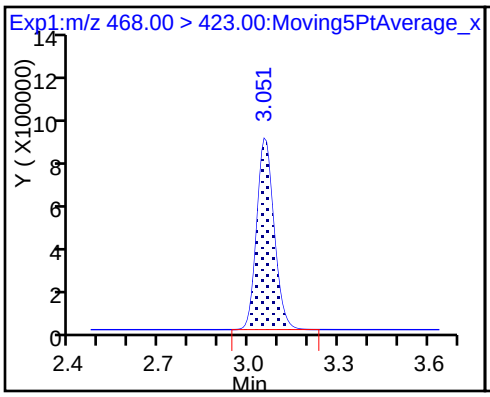
20 Perfluorononanoic acid



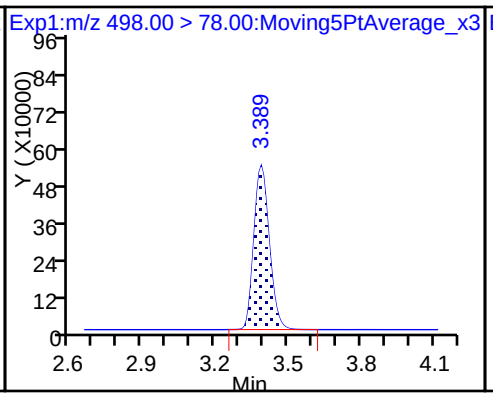
20 Perfluorononanoic acid



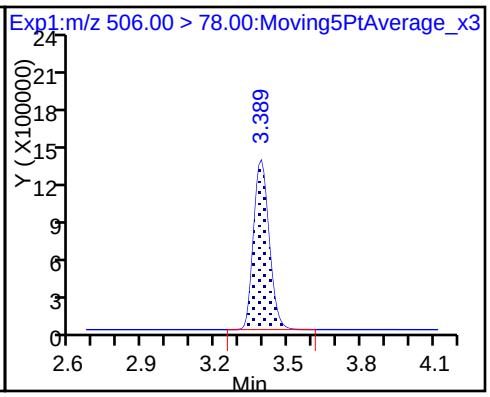
D 19 13C5 PFNA



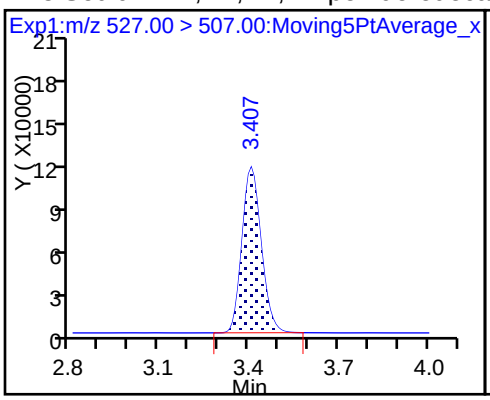
22 Perfluorooctane Sulfonamide



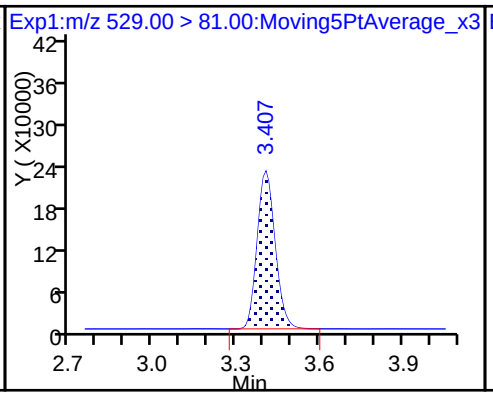
D 21 13C8 FOSA



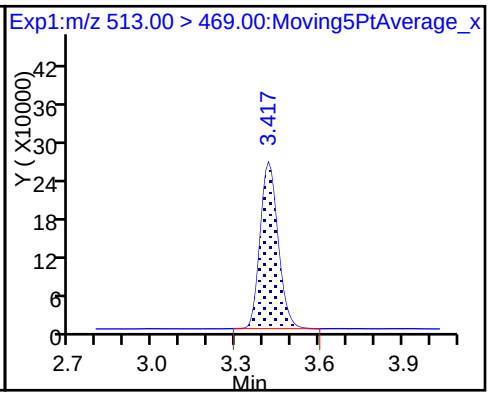
25 Sodium 1H,1H,2H,2H-perfluorodecane



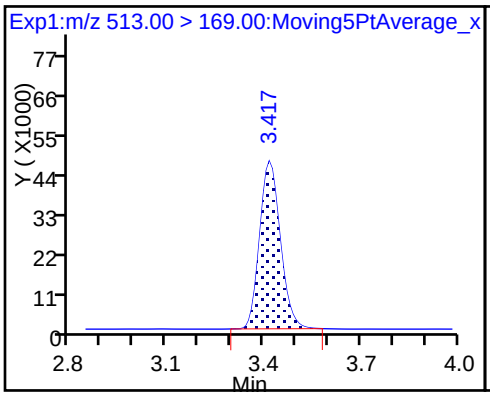
D 26 M2-8:2FTS



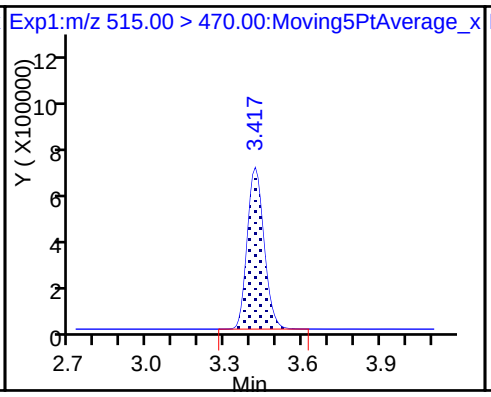
24 Perfluorodecanoic acid



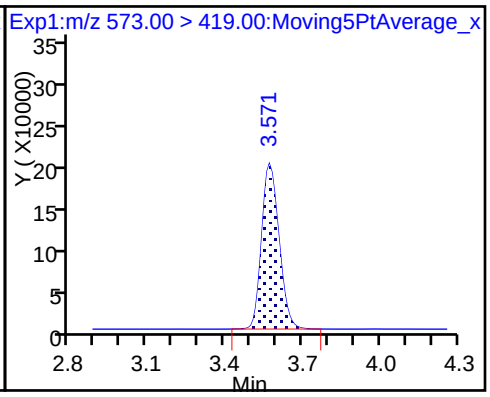
24 Perfluorodecanoic acid



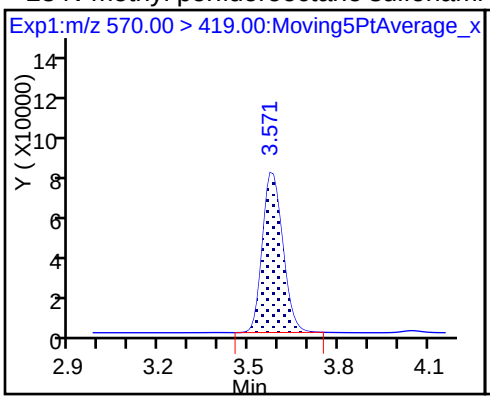
D 23 13C2 PFDA



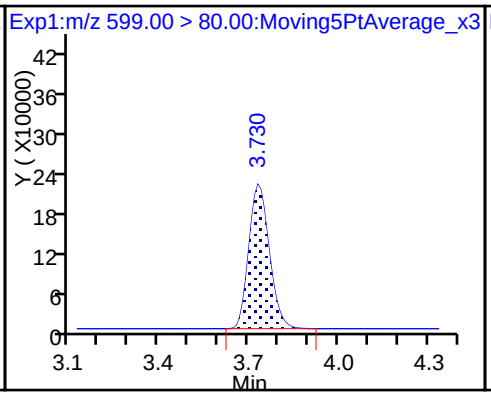
D 27 d3-NMeFOSAA



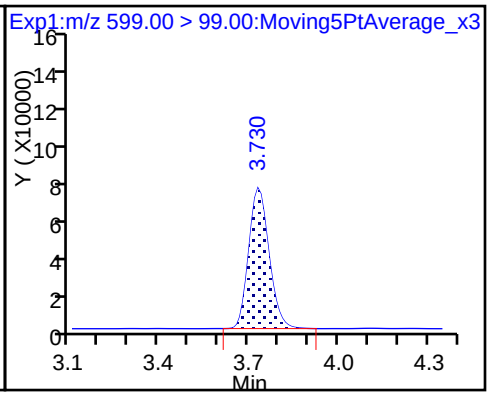
28 N-methyl perfluorooctane sulfonami



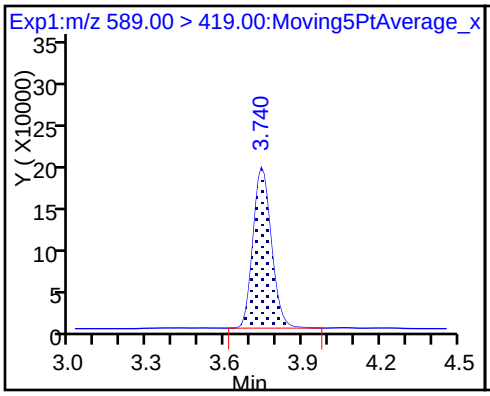
29 Perfluorodecane Sulfonic acid



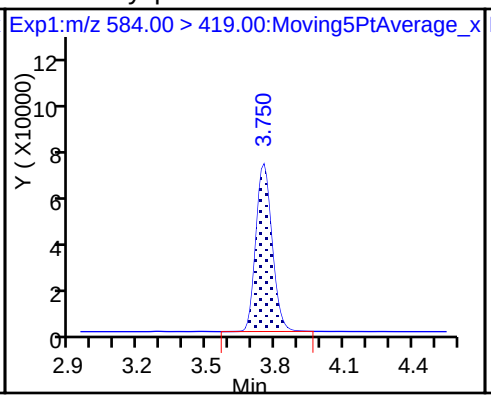
29 Perfluorodecane Sulfonic acid



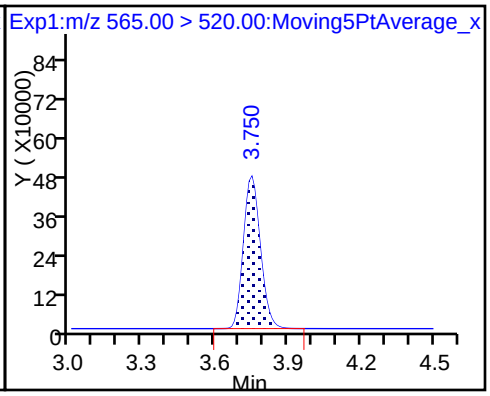
D 32 d5-NEtFOSAA



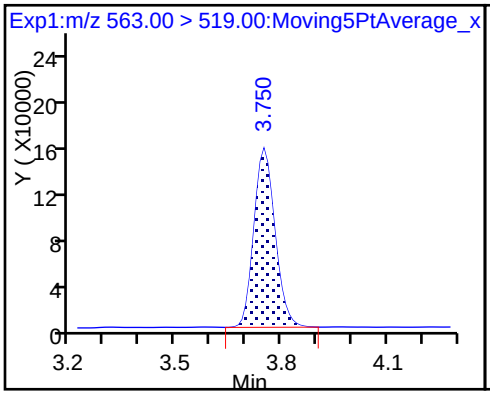
33 N-ethyl perfluorooctane sulfonamid



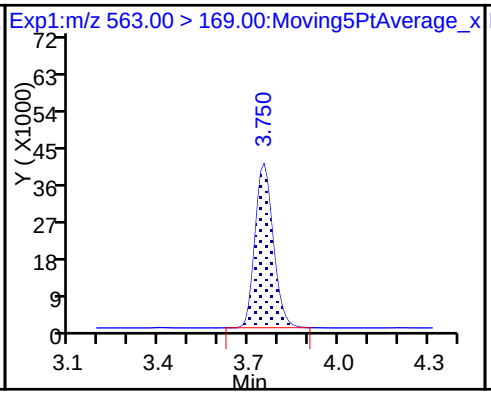
D 30 13C2 PFUnA



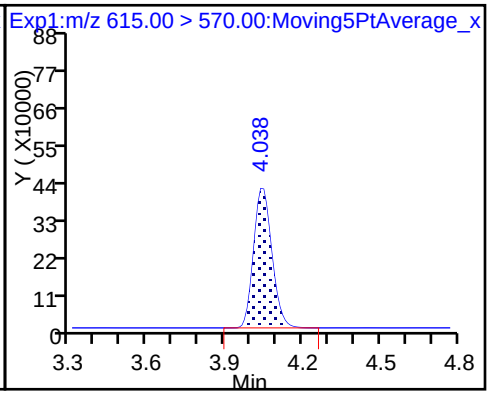
31 Perfluoroundecanoic acid



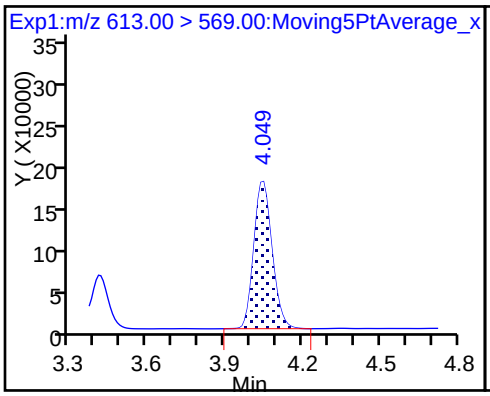
31 Perfluoroundecanoic acid



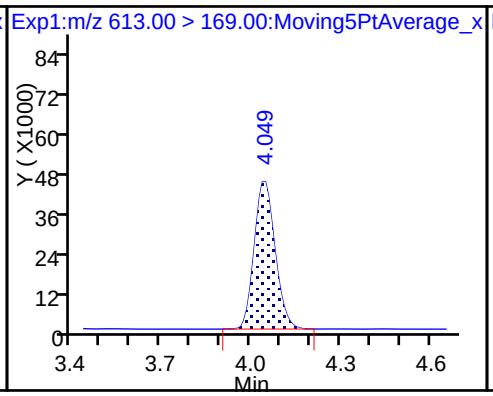
D 36 13C2 PFDoA



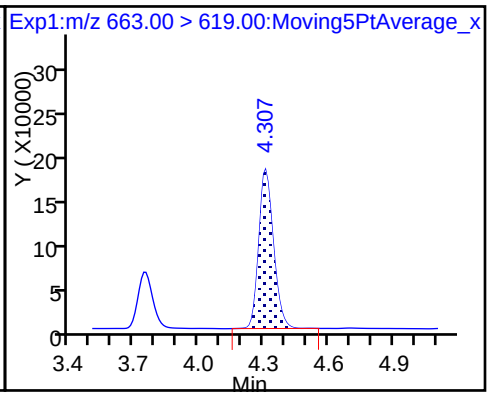
37 Perfluorododecanoic acid



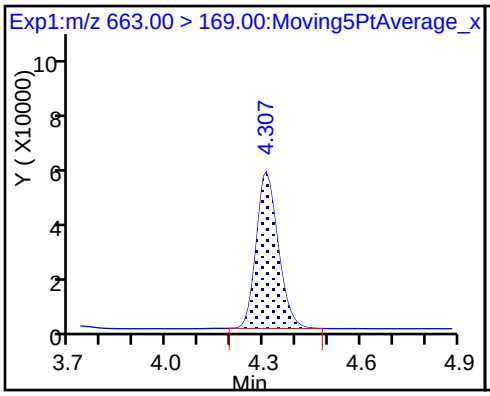
37 Perfluorododecanoic acid



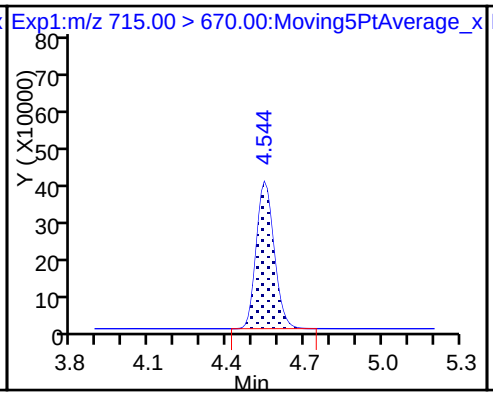
41 Perfluorotridecanoic acid



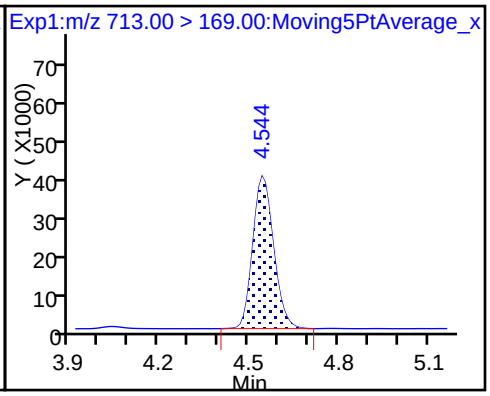
41 Perfluorotridecanoic acid



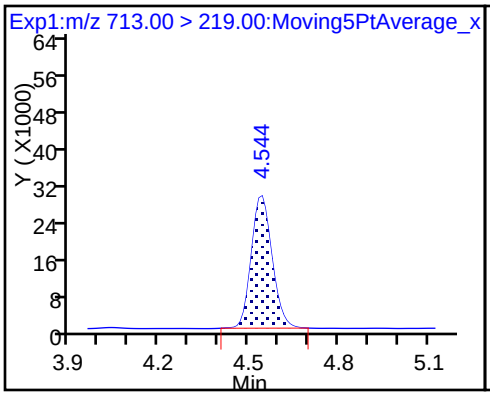
D 43 13C2-PFTeDA



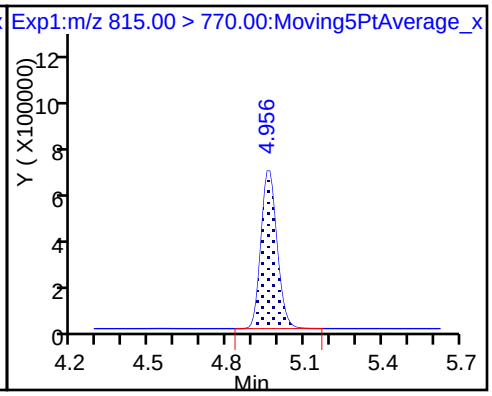
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_006.d
Lims ID: IC L5 Full
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 16-Mar-2018 23:41:00 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:40:34 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:27:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.440	0.001	0.537	5583889	2.50		100	97262	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.440	0.001	1.000	5293287	2.56		102	3727	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	3888024	2.47		98.8	122892	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.698	0.002	1.000	4633188	2.55		102	1776	
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.644	87930	2.26		97.3	430	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.733	0.003	1.005	6966452	2.38		108	3077	
298.90 > 99.00	1.736	1.733	0.003	1.005	2830396		2.46(1.25-3.74)	108	2805	
D 60 M2-4:2FTS										
329.00 > 81.00	1.946	1.942	0.004	0.726	674169	NC			7621	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.946	1.944	0.002	1.000	1435640	2.36		101	52474	
D 7 13C2 PFHxA										
315.00 > 270.00	1.987	1.979	0.008	0.741	4369955	2.49		99.6	129893	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.987	1.982	0.005	1.000	4444832	2.52		101	13990	
313.00 > 119.00	1.987	1.982	0.005	1.000	418029		10.63(5.03-15.10)	101	9309	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	4232279	2.48		99.1	100489	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.311	0.004	1.000	4297988	2.45		98.0	8927	
363.00 > 169.00	2.315	2.311	0.004	1.000	1767362		2.43(1.13-3.40)	98.0	24587	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5260610	2.31		97.6	73562	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	5484826	2.21		97.2	681	
399.00 > 99.00	2.328	2.326	0.002	1.000	1779244		3.08(1.50-4.49)	97.2	678	
D 12 M2-6:2FTS										
429.00 > 81.00	2.657	2.651	0.006	0.991	1016091	2.32		97.8	21630	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.657	2.652	0.005	1.000	1746834	2.45		103	50845	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003	1.000	4098618	2.49		99.4	95002	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.678	0.003	1.000	4544060	2.48		99.3	1326	
413.00 > 169.00	2.681	2.678	0.003	1.000	2512882		1.81(0.84-2.52)	99.3	9876	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.678	0.003		4371024	2.50			78442	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.684	0.005	1.000	5246040	2.49		105	56295	
449.00 > 99.00	2.689	2.684	0.005	1.000	1380173		3.80(1.94-5.82)	105	21498	
D 18 13C4 PFOS										
503.00 > 80.00	3.051	3.050	0.001	1.138	3831418	2.40		101	26391	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.051	3.050	0.001	1.000	4076350	2.35		101	13303	
499.00 > 99.00	3.051	3.050	0.001	1.000	872560		4.67(2.31-6.93)	101	7654	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	3313741	2.51		100	68947	
20 Perfluorononanoic acid										
463.00 > 419.00	3.058	3.052	0.006	1.000	3490132	2.58		103	8593	
463.00 > 169.00	3.058	3.052	0.006	1.000	871364		4.01(1.90-5.69)	103	27131	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.264	5771845	2.50		100	52306	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.388	0.001	1.000	5854030	2.61		104	55097	
D 26 M2-8:2FTS										
529.00 > 81.00	3.407	3.406	0.001	1.271	959683	2.34		97.5	23723	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.407	3.406	0.001	1.000	1262293	2.51		105	40259	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.001	1.275	2792979	2.53		101	45181	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.417	3.416	0.001	1.000	2734556	2.58		103	14321	
513.00 > 169.00	3.417	3.416	0.001	1.000	464662		5.89(2.36-7.09)	103	15026	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.570	0.001	1.332	903252	2.48		99.3	32461	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.571	0.0	1.000	936613	2.49		99.6	10122	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.730	3.729	0.001	1.000	2485881	2.43		101	74404	
599.00 > 99.00	3.730	3.729	0.001	1.000	853763		2.91(1.39-4.16)	101	20150	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.740	3.740	0.0	1.395	874289	2.51		101	1957	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.750	3.746	0.004	1.003	829764	2.42		96.9	24200	
D 30 13C2 PFUnA										
565.00 > 520.00	3.750	3.747	0.003	1.399	2125072	2.46		98.5	88600	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.750	3.750	0.0	1.000	1693687	2.38		95.1	6339	
563.00 > 169.00	3.750	3.750	0.0	1.000	443503		3.82(2.12-6.36)	95.1	34848	
D 36 13C2 PFDoA										
615.00 > 570.00	4.038	4.041	-0.003	1.506	2008069	2.45		98.2	11583	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.038	4.042	-0.004	1.000	2068374	2.52		101	393	
613.00 > 169.00	4.038	4.042	-0.004	1.000	574695		3.60(2.13-6.40)	101	11882	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.304	0.003	1.000	2137089	2.59		103	451	
663.00 > 169.00	4.307	4.304	0.003	1.000	681261		3.14(1.25-3.76)	103	10326	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.545	-0.001	1.695	1881480	2.52		101	16479	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.544	4.545	-0.001	1.000	484453	2.33		93.4	7772	
713.00 > 219.00	4.544	4.545	-0.001	1.000	341862		1.42(0.71-2.13)	93.4	3917	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.956	4.956	0.0	1.849	2832854	2.59		104	11035	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.956	4.960	-0.004	1.000	2577679	NC			239	
813.00 > 169.00	4.956	4.960	-0.004	1.000	464123		5.55(2.86-8.58)		5007	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.316	5.320	-0.004	1.000	2839194	NC			547	
913.00 > 169.00	5.316	5.320	-0.004	1.000	355131		7.99(3.83-11.48)		3172	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:40:35 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_006.d

Injection Date: 16-Mar-2018 23:41:00 Instrument ID: A8_N

Lims ID: IC L5 Full

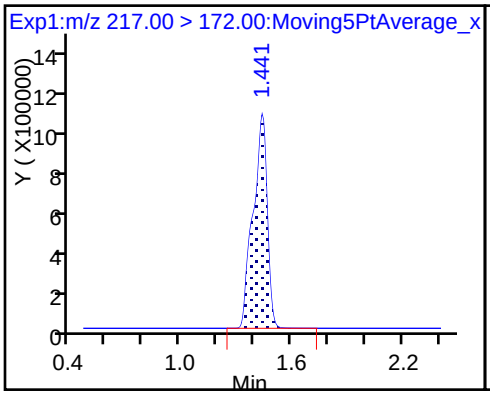
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 6

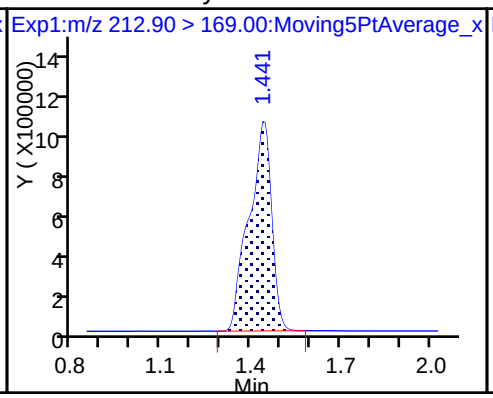
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

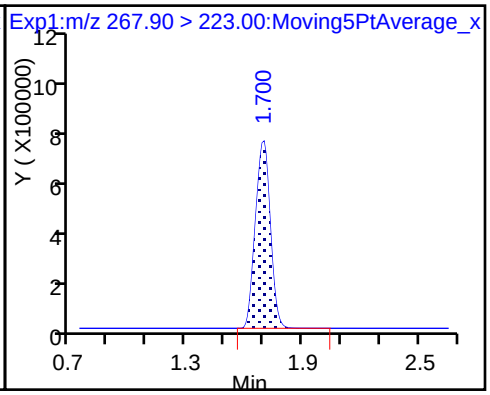
D 1 13C4 PFBA



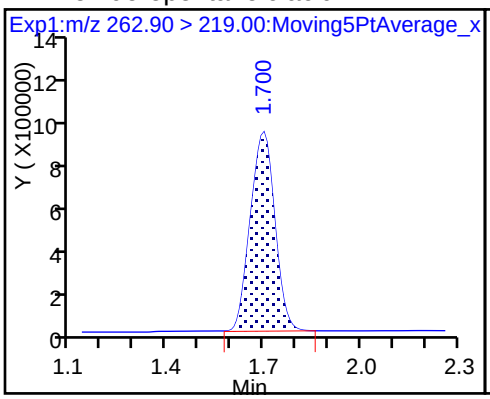
2 Perfluorobutyric acid



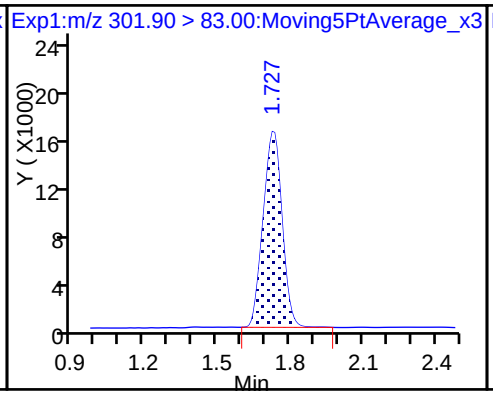
D 3 13C5-PFPeA



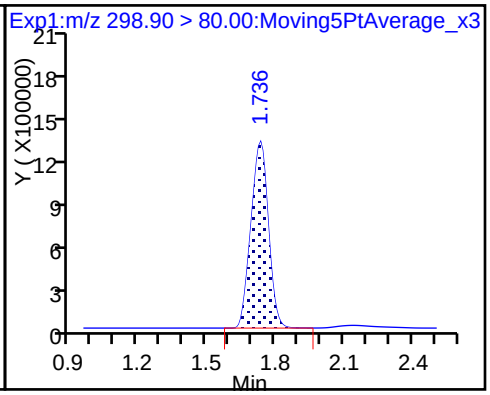
4 Perfluoropentanoic acid



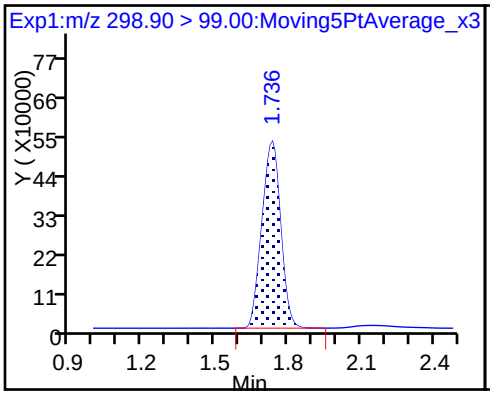
D 47 13C3-PFBS



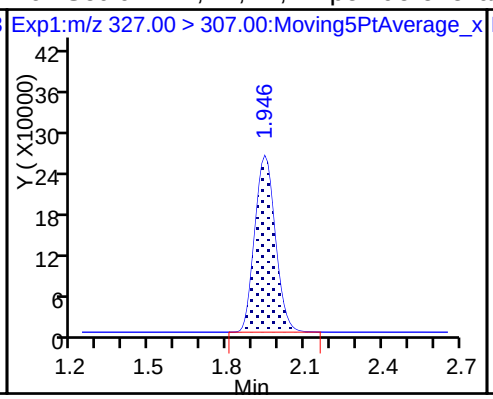
5 Perfluorobutanesulfonic acid



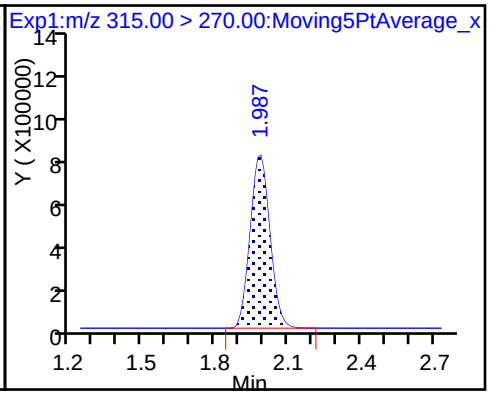
5 Perfluorobutanesulfonic acid



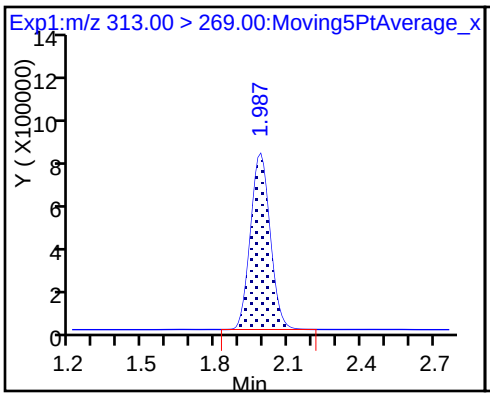
61 Sodium 1H,1H,2H,2H-perfluorohexa



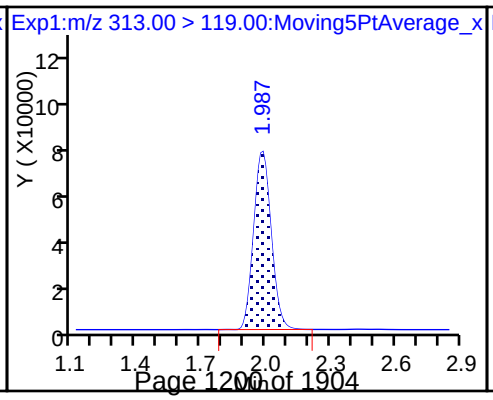
D 7 13C2 PFHxA



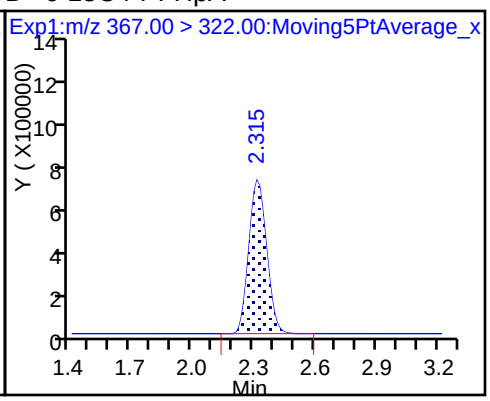
6 Perfluorohexanoic acid



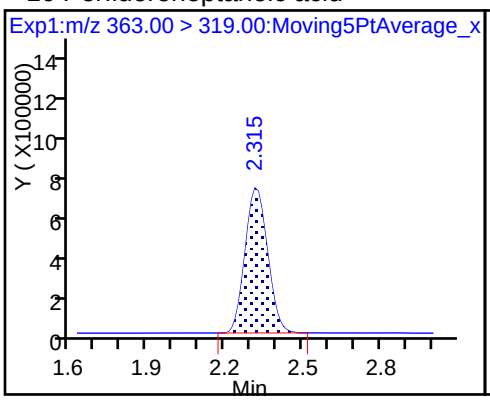
6 Perfluorohexanoic acid



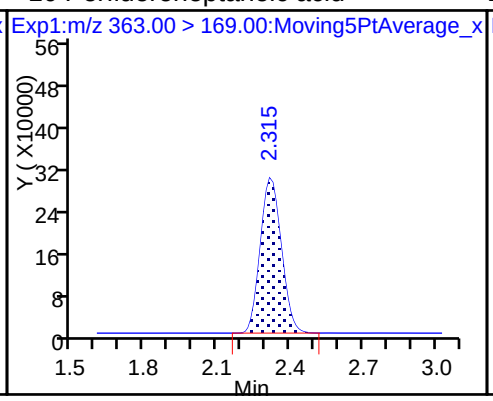
D 9 13C4-PFHpA



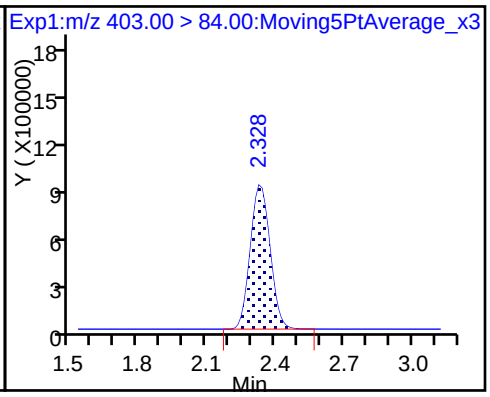
10 Perfluoroheptanoic acid



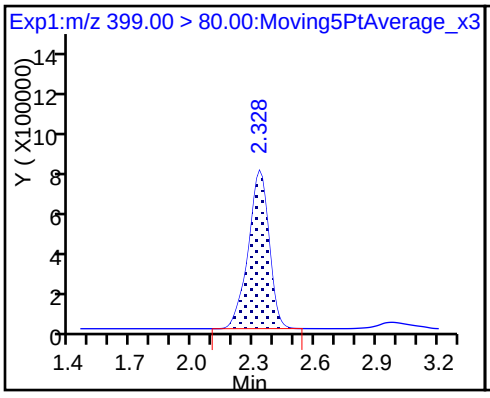
10 Perfluoroheptanoic acid



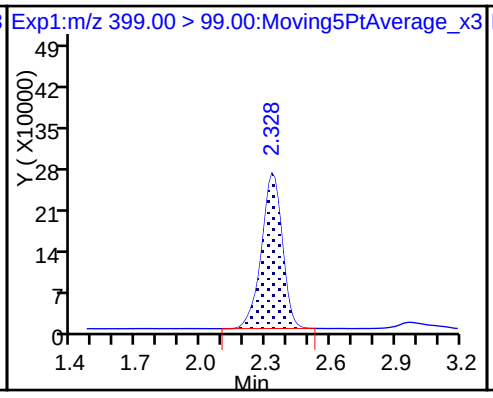
D 11 18O2 PFHxS



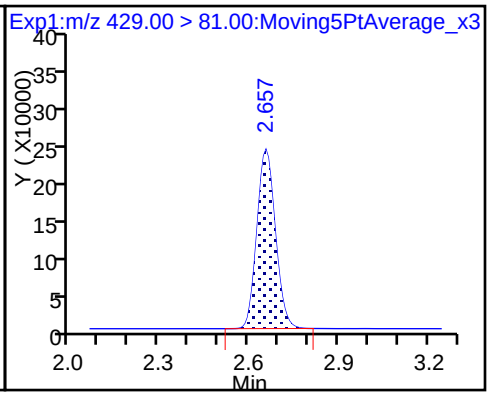
8 Perfluorohexanesulfonic acid



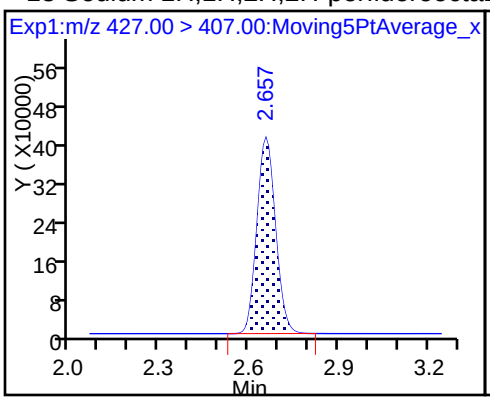
8 Perfluorohexanesulfonic acid



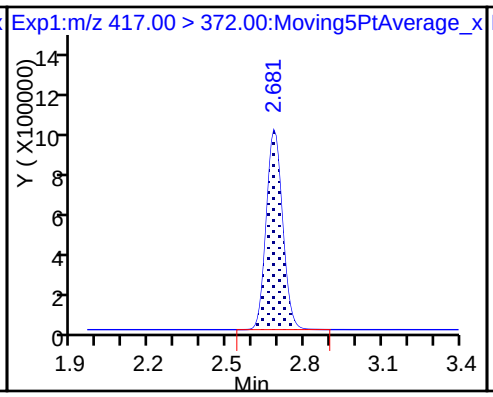
D 12 M2-6:2FTS



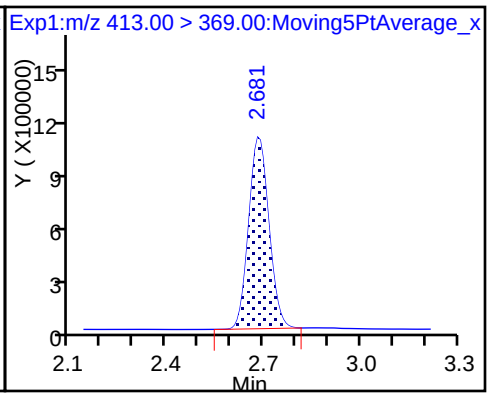
13 Sodium 1H,1H,2H,2H-perfluorooctane



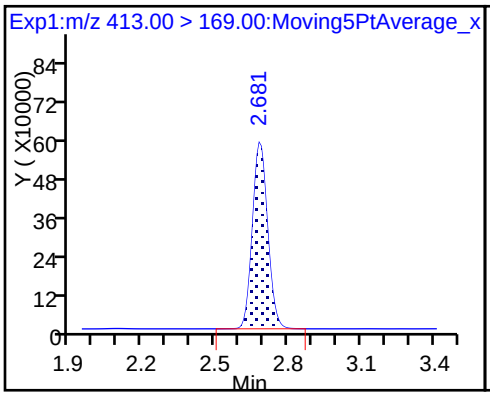
D 14 13C4 PFOA



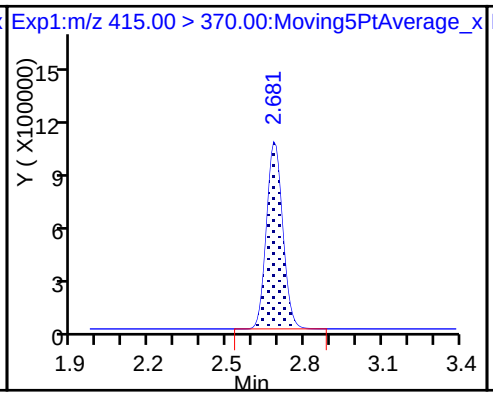
15 Perfluorooctanoic acid



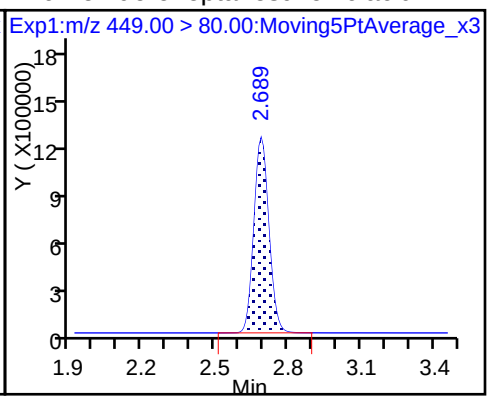
15 Perfluorooctanoic acid



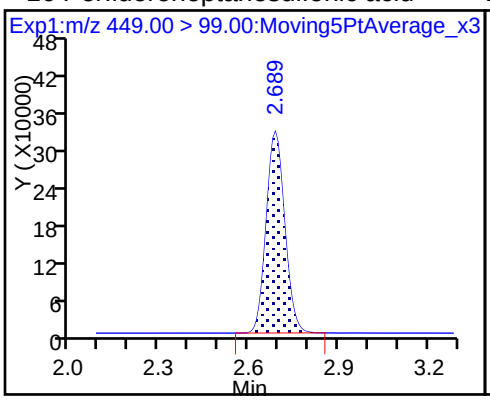
* 62 13C2-PFOA



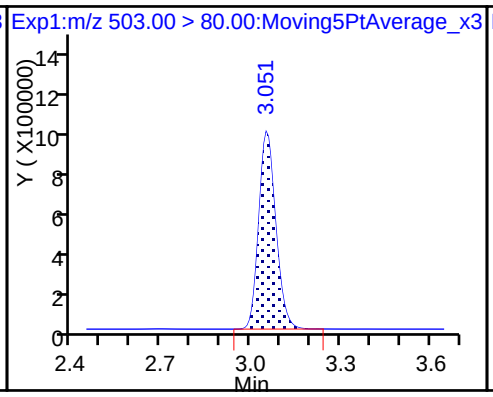
16 Perfluoroheptanesulfonic acid



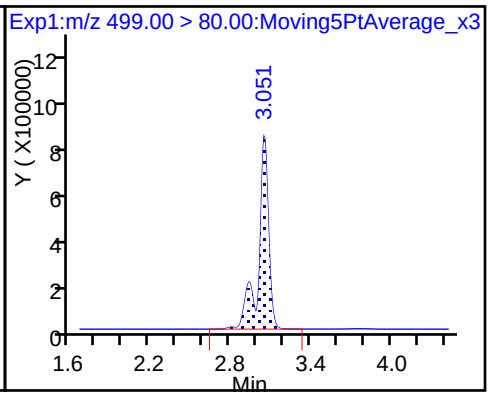
16 Perfluoroheptanesulfonic acid



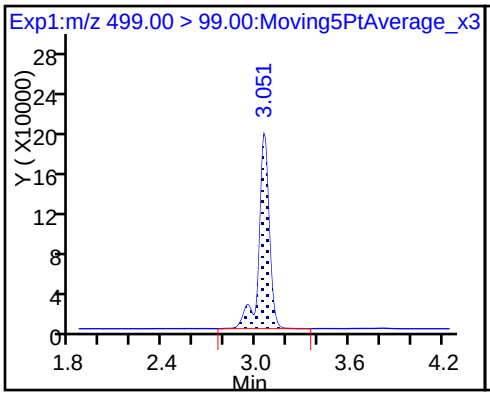
D 18 13C4 PFOS



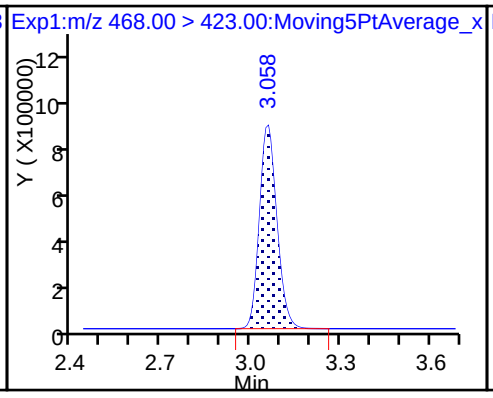
17 Perfluorooctane sulfonic acid



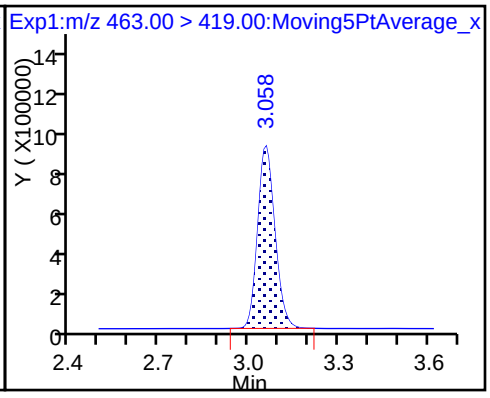
17 Perfluorooctane sulfonic acid



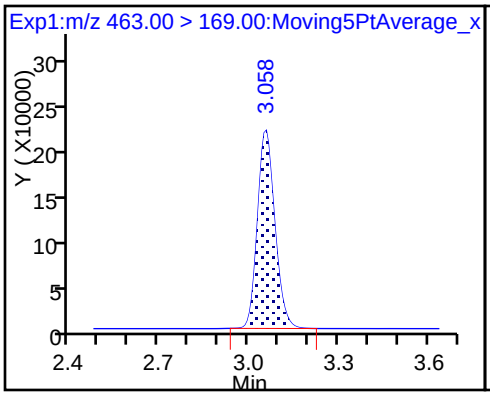
D 19 13C5 PFNA



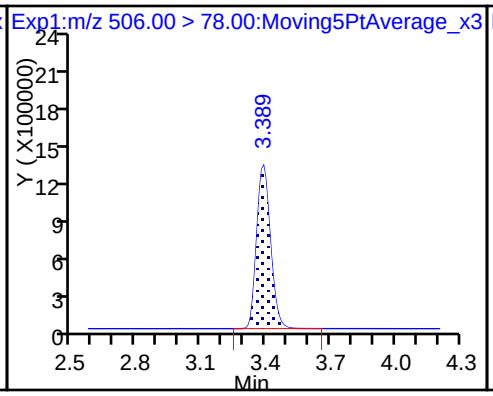
20 Perfluorononanoic acid



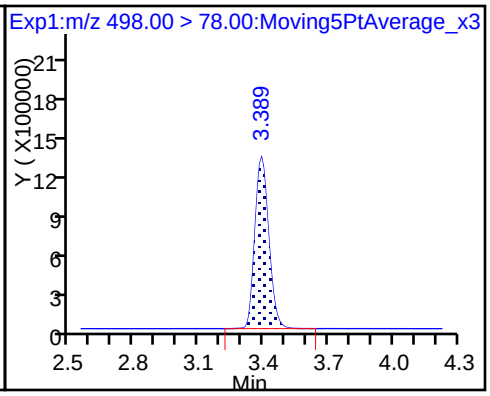
20 Perfluorononanoic acid



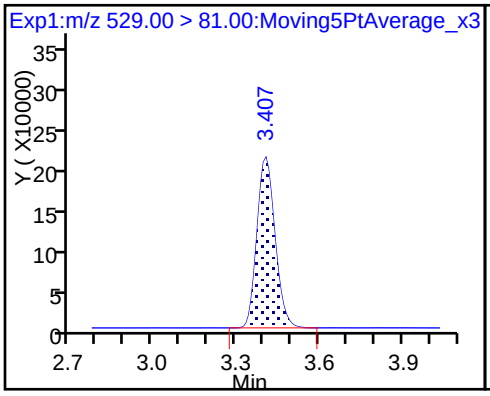
D 21 13C8 FOSA



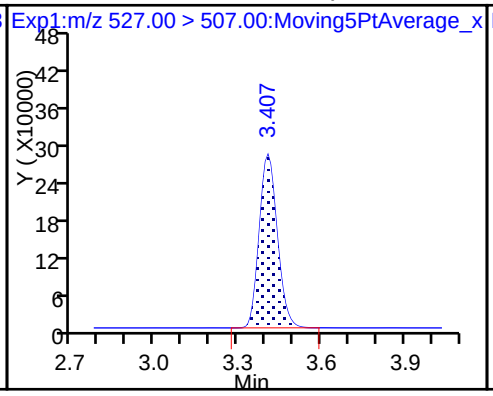
22 Perfluorooctane Sulfonamide



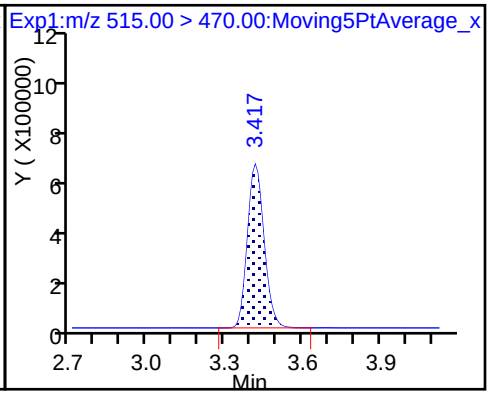
D 26 M2-8:2FTS



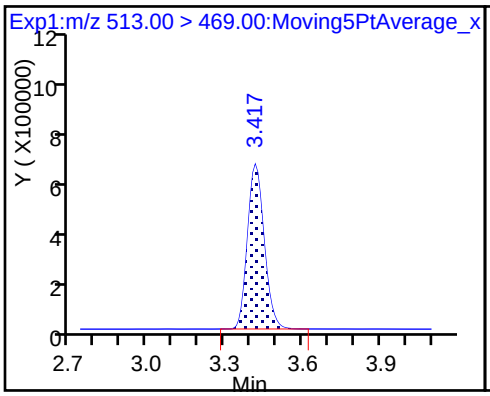
25 Sodium 1H,1H,2H,2H-perfluorodecane



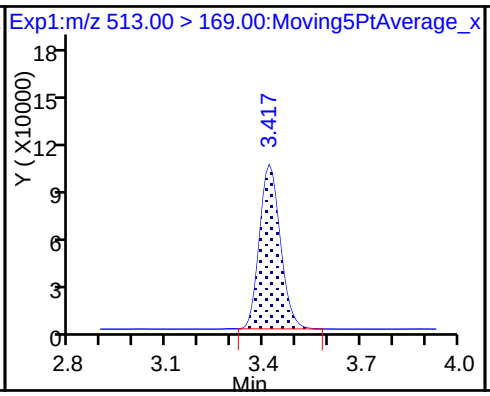
D 23 13C2 PFDA



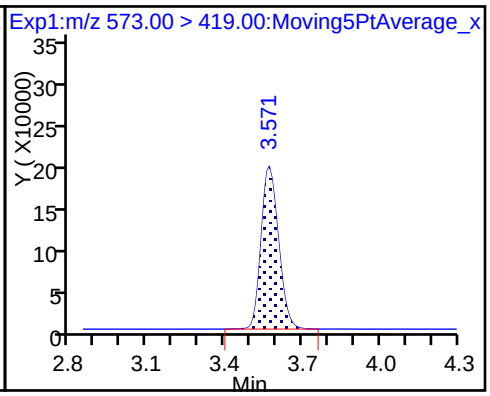
24 Perfluorodecanoic acid



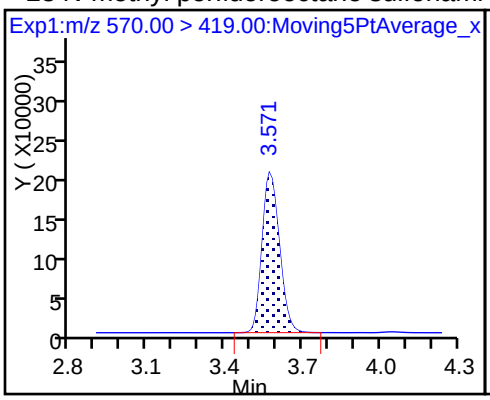
24 Perfluorodecanoic acid



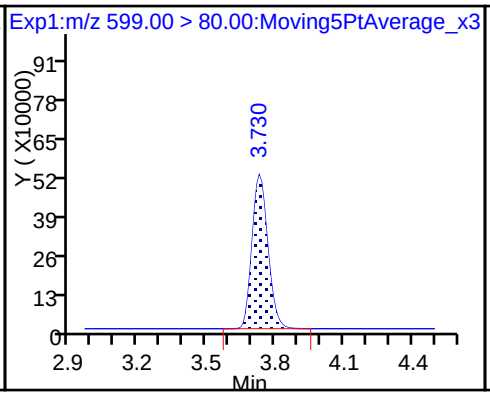
D 27 d3-NMeFOSAA



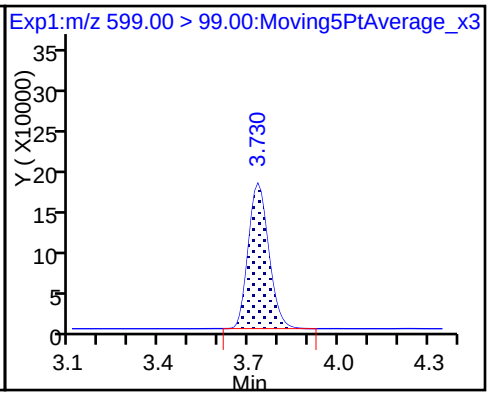
28 N-methyl perfluorooctane sulfonami



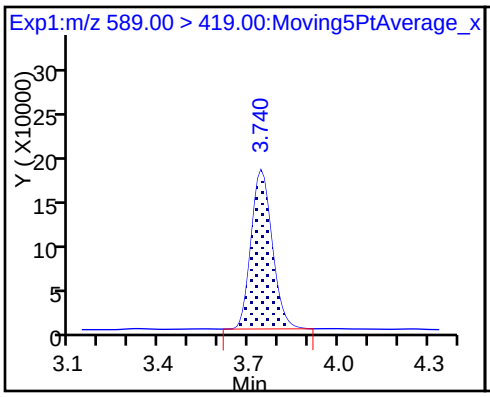
29 Perfluorodecane Sulfonic acid



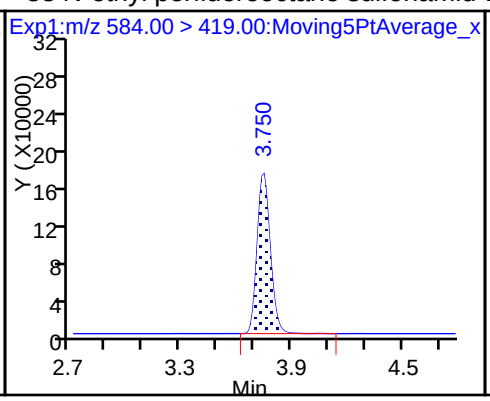
29 Perfluorodecane Sulfonic acid



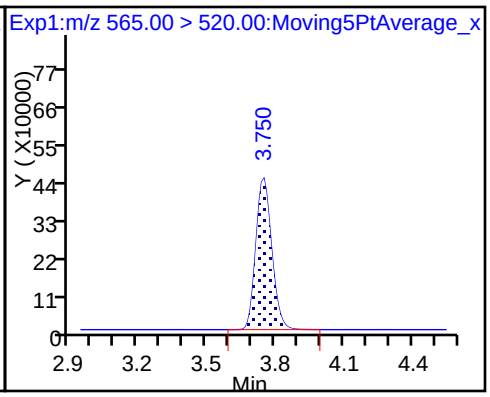
D 32 d5-NEtFOSAA



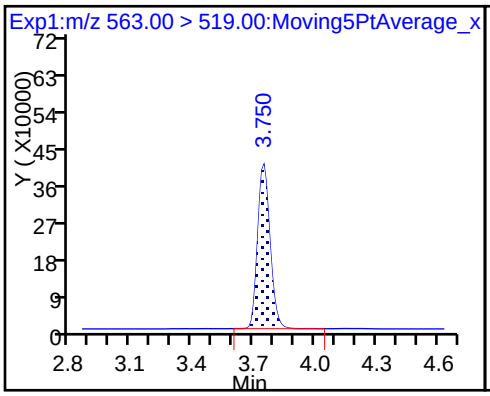
33 N-ethyl perfluorooctane sulfonamid



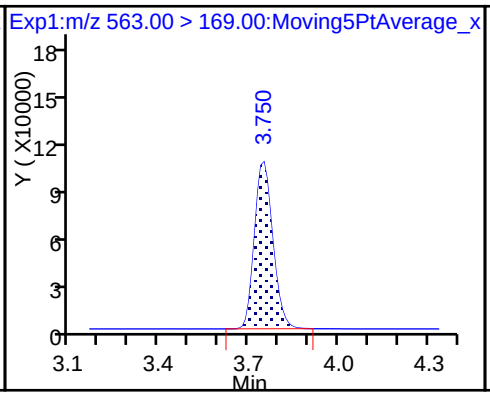
D 30 13C2 PFUnA



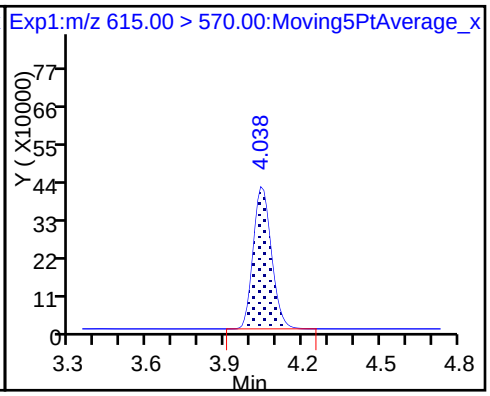
31 Perfluoroundecanoic acid



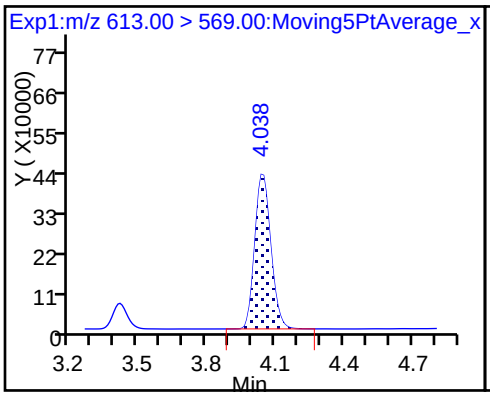
31 Perfluoroundecanoic acid



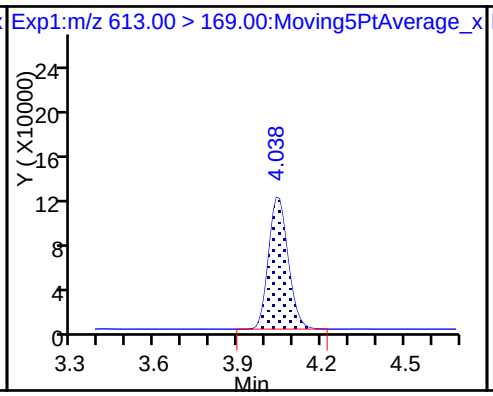
D 36 13C2 PFDoA



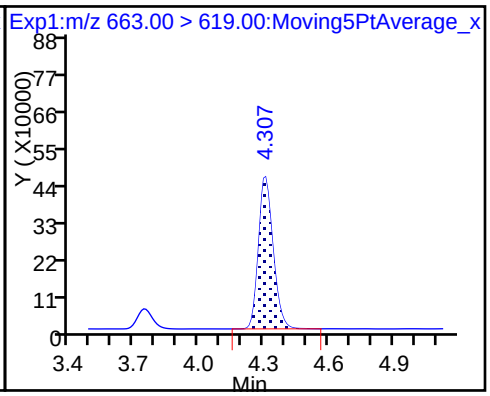
37 Perfluorododecanoic acid



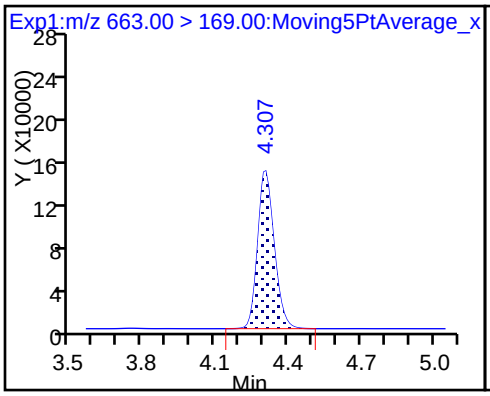
37 Perfluorododecanoic acid



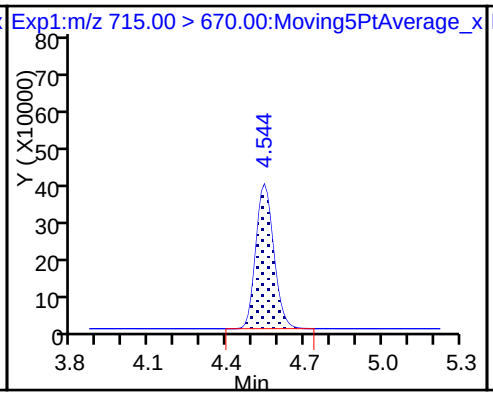
41 Perfluorotridecanoic acid



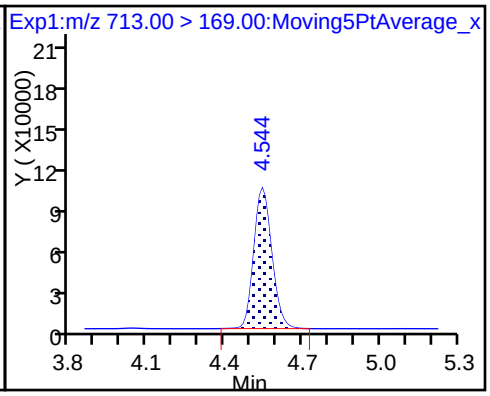
41 Perfluorotridecanoic acid



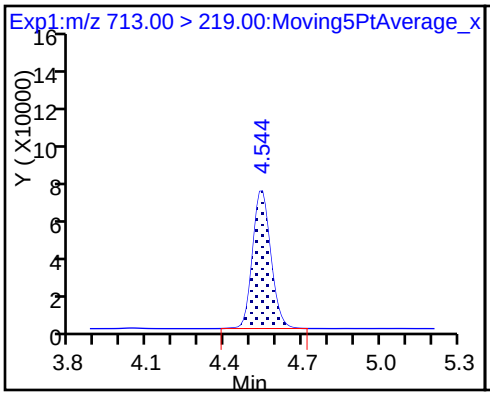
D 43 13C2-PFTeDA



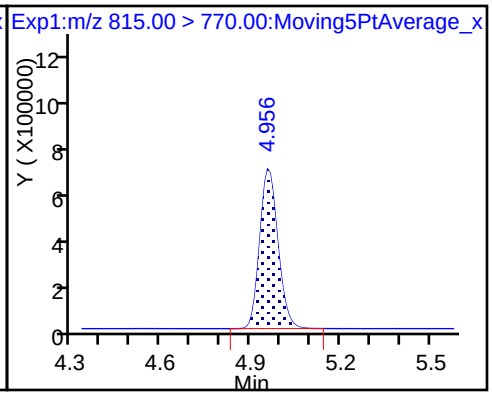
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_007.d
Lims ID: IC L6 Full
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 16-Mar-2018 23:48:48 ALS Bottle#: 15 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:40:36 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:28:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.440	0.001	1.000	10415661	5.14		103	6969	
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.440	0.001	0.537	5463195	2.64		105	103496	
D 3 13C5-PFPeA										
267.90 > 223.00	1.692	1.696	-0.004	0.631	3793612	2.60		104	182073	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.701	1.698	0.003	1.005	8739905	4.93		98.6	3539	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.730	0.006	0.647	87984	2.44		105	391	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.733	0.003	1.000	13581651	4.64		105	5968	
298.90 > 99.00	1.736	1.733	0.003	1.000	5754978		2.36(1.25-3.74)	105	5892	
D 60 M2-4:2FTS										
329.00 > 81.00	1.946	1.942	0.004	0.726	606545	NC			7956	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.946	1.944	0.002	1.000	2712672	4.46		95.5	125275	
D 7 13C2 PFHxA										
315.00 > 270.00	1.977	1.979	-0.002	0.737	4208738	2.58		103	125674	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.977	1.982	-0.005	1.000	8603151	5.06		101	27161	
313.00 > 119.00	1.977	1.982	-0.005	1.000	784941		10.96(5.03-15.10)	101	15567	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.311	0.005	1.000	8715974	5.27		105	20309	
363.00 > 169.00	2.316	2.311	0.005	1.000	3434804		2.54(1.13-3.40)	105	52445	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.311	0.005	0.864	3989677	2.52		101	83904	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.326	0.003	1.000	10568253	4.26		93.5	1292	
399.00 > 99.00	2.329	2.326	0.003	1.000	3624727		2.92(1.50-4.49)	93.5	1385	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.326	0.003	0.869	5265275	2.49		105	74528	
D 12 M2-6:2FTS										
429.00 > 81.00	2.649	2.651	-0.002	0.988	1008963	2.49		105	25787	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.649	2.652	-0.003	1.000	3480117	4.92		104	101458	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.678	0.003		4057033	2.50			85493	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.678	0.003	1.000	8824823	5.23		105	4529	
413.00 > 169.00	2.681	2.678	0.003	1.000	4743138		1.86(0.84-2.52)	105	14953	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003	1.000	3782089	2.47		98.8	66618	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.684	0.005	1.000	10200411	4.99		105	90746	
449.00 > 99.00	2.689	2.684	0.005	1.000	2708022		3.77(1.94-5.82)	105	34891	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.051	3.050	0.001	1.000	8142540	4.84		104	22835	
499.00 > 99.00	3.051	3.050	0.001	1.000	1769376		4.60(2.31-6.93)	104	19465	
D 18 13C4 PFOS										
503.00 > 80.00	3.051	3.050	0.001	1.138	3717789	2.51		105	20437	
20 Perfluorononanoic acid										
463.00 > 419.00	3.051	3.052	-0.001	1.000	6868229	5.42		108	15321	
463.00 > 169.00	3.058	3.052	0.006	1.002	1674670		4.10(1.90-5.69)	108	45917	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.052	-0.001	1.138	3108543	2.54		102	54931	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.390	3.388	0.002	1.000	11053457	5.17		103	95702	
D 21 13C8 FOSA										
506.00 > 78.00	3.390	3.388	0.002	1.264	5503896	2.57		103	50171	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.408	3.406	0.002	1.000	2485319	5.11		107	69206	
D 26 M2-8:2FTS										
529.00 > 81.00	3.408	3.406	0.002	1.271	926664	2.43		101	29544	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.417	3.416	0.001	1.000	5163613	5.30		106	23997	
513.00 > 169.00	3.417	3.416	0.001	1.000	953909		5.41(2.36-7.09)	106	30588	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.001	1.274	2569062	2.51		100	38614	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.570	0.001	1.332	863871	2.56		102	31262	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.571	0.0	1.000	1816591	5.05		101	14472	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.728	3.729	-0.001	1.000	4865112	4.90		102	78838	
599.00 > 99.00	3.728	3.729	-0.001	1.000	1681464		2.89(1.39-4.16)	102	44020	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.394	782136	2.42		96.9	1528	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.748	3.746	0.002	1.003	1652592	5.40		108	26349	
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.747	0.001	1.398	2046915	2.56		102	71430	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.748	3.750	-0.002	1.000	3341411	4.87		97.4	10669	
563.00 > 169.00	3.748	3.750	-0.002	1.000	911410		3.67(2.12-6.36)	97.4	73504	
D 36 13C2 PFDoA										
615.00 > 570.00	4.046	4.041	0.005	1.509	2015472	2.65		106	11968	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.046	4.042	0.004	1.000	4174943	5.06		101	931	
613.00 > 169.00	4.046	4.042	0.004	1.000	1007116		4.15(2.13-6.40)	101	25827	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.306	4.304	0.002	1.000	4360483	5.26		105	1014	
663.00 > 169.00	4.306	4.304	0.002	1.000	1390861		3.14(1.25-3.76)	105	22943	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.695	1882383	2.72		109	15198	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.543	4.545	-0.002	1.000	997084	4.80		96.0	13070	
713.00 > 219.00	4.543	4.545	-0.002	1.000	701265		1.42(0.71-2.13)	96.0	8580	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.848	2751498	2.71		109	10851	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.963	4.960	0.003	1.002	5015728	NC			457	
813.00 > 169.00	4.955	4.960	-0.005	1.000	891008		5.63(2.86-8.58)		7241	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.322	5.320	0.002	1.000	5529461	NC			954	
913.00 > 169.00	5.315	5.320	-0.005	0.999	707340		7.82(3.83-11.48)		5678	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL6_00005 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:40:38 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_007.d

Injection Date: 16-Mar-2018 23:48:48 Instrument ID: A8_N

Lims ID: IC L6 Full

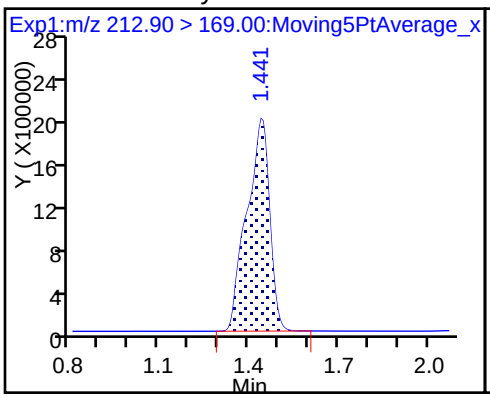
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 7

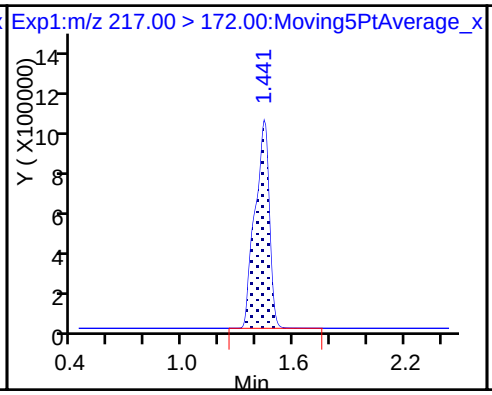
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

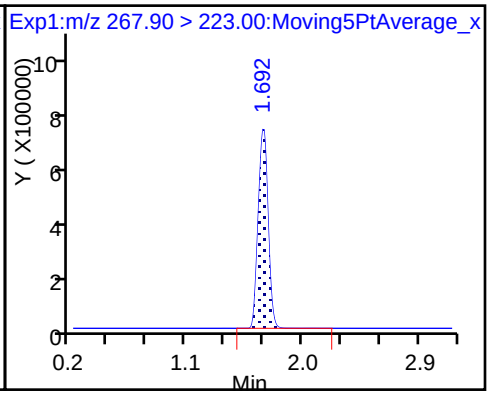
2 Perfluorobutyric acid



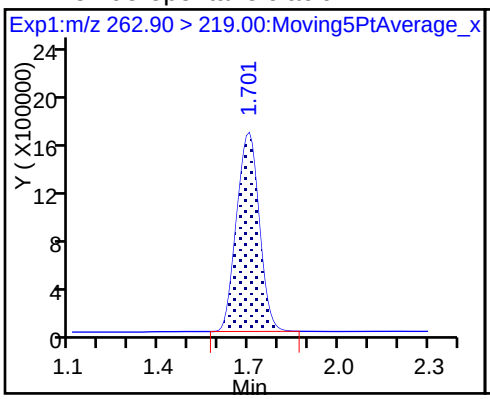
D 1 13C4 PFBA



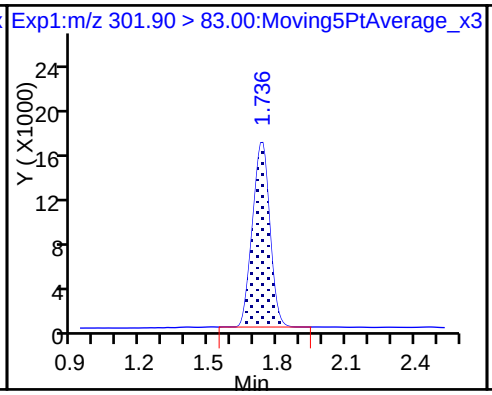
D 3 13C5-PFPeA



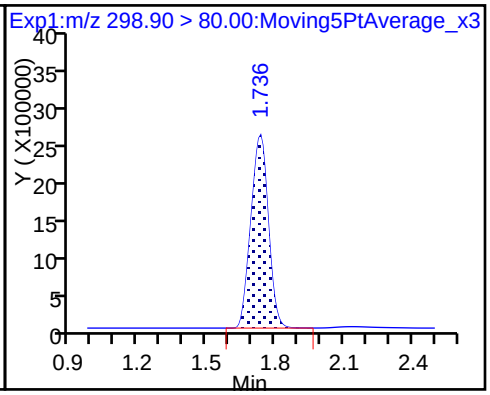
4 Perfluoropentanoic acid



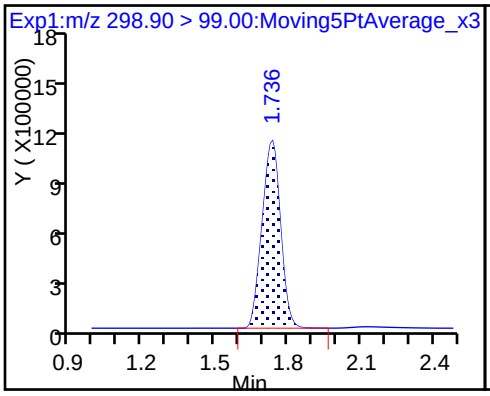
D 47 13C3-PFBS



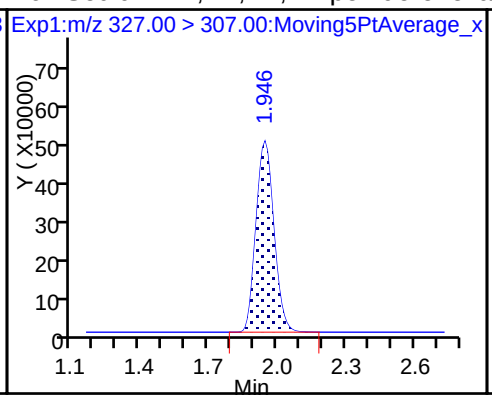
5 Perfluorobutanesulfonic acid



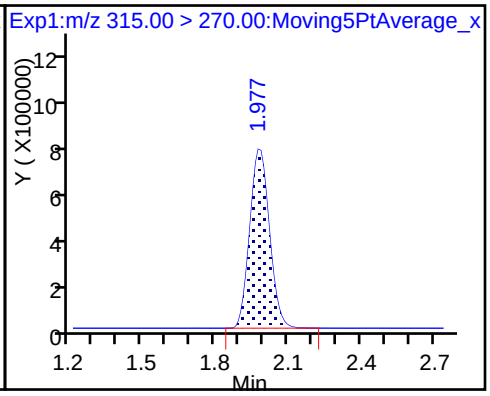
5 Perfluorobutanesulfonic acid



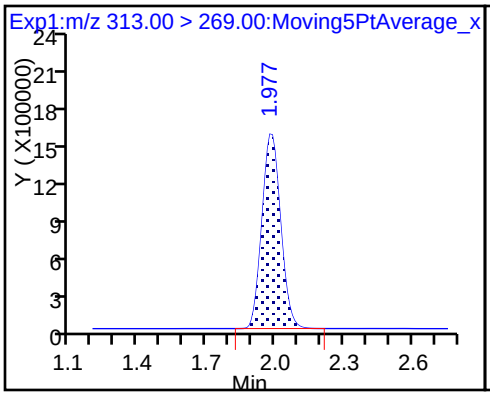
61 Sodium 1H,1H,2H,2H-perfluorohexa



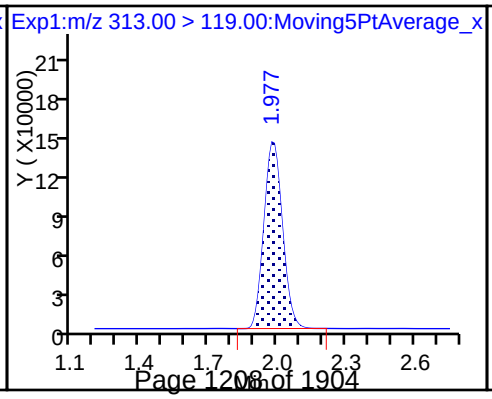
D 7 13C2 PFHxA



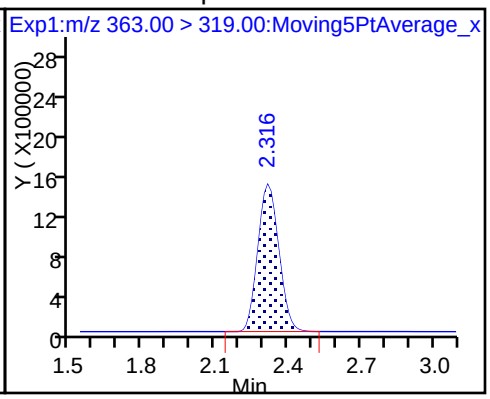
6 Perfluorohexanoic acid



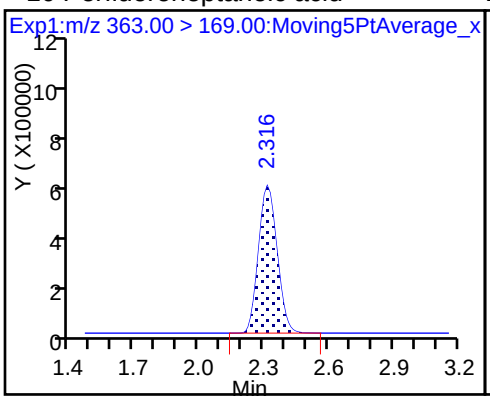
6 Perfluorohexanoic acid



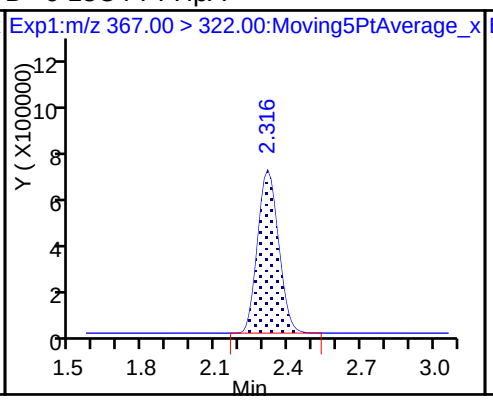
10 Perfluoroheptanoic acid



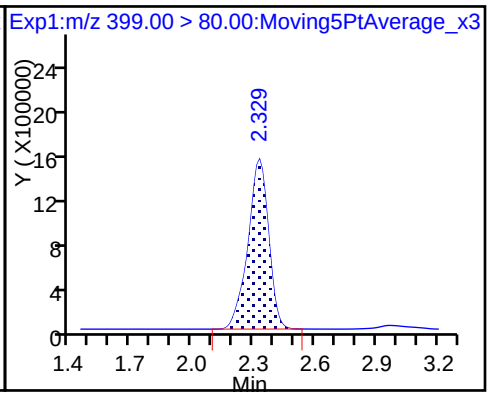
10 Perfluoroheptanoic acid



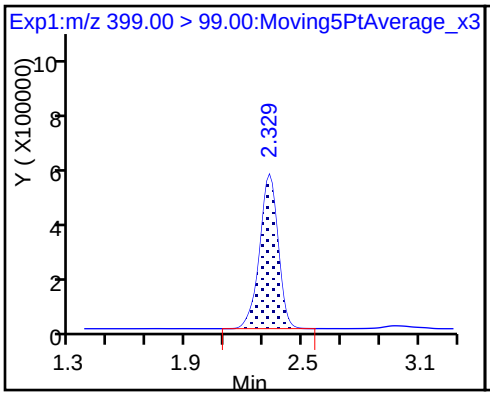
D 9 13C4-PFHpA



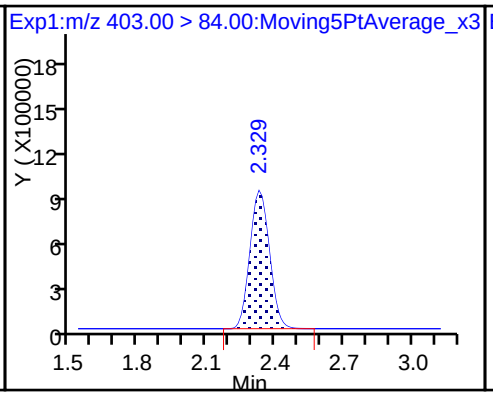
8 Perfluorohexanesulfonic acid



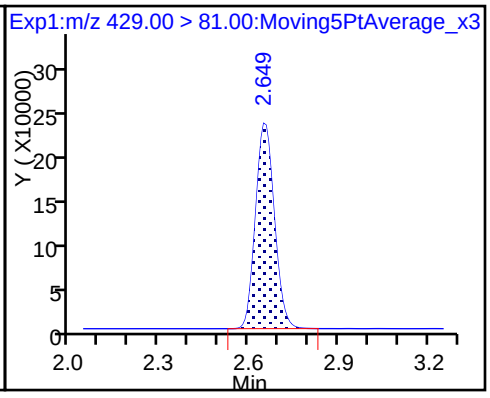
8 Perfluorohexanesulfonic acid



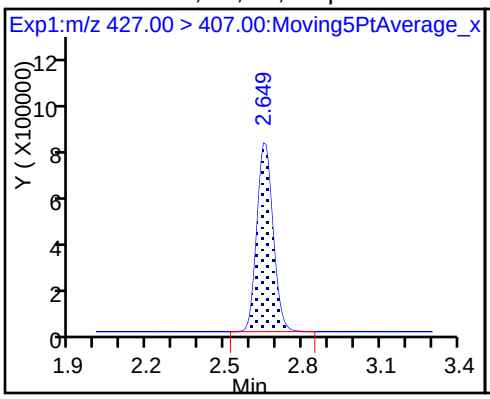
D 11 18O2 PFHxS



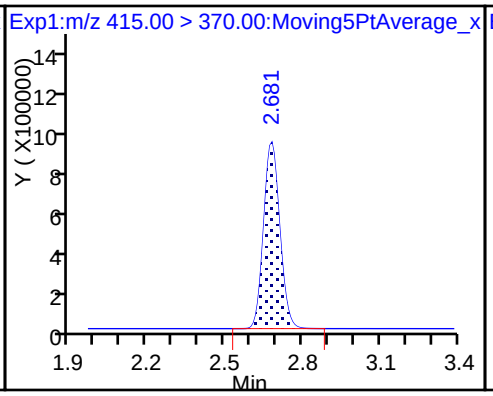
D 12 M2-6:2FTS



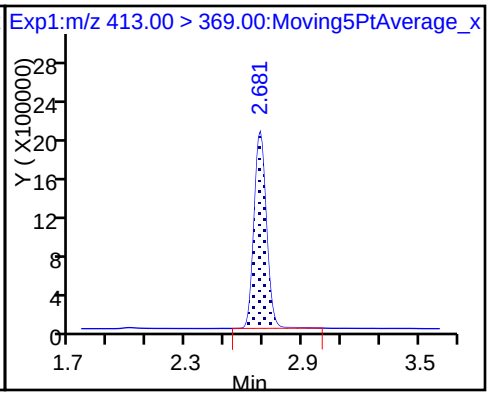
13 Sodium 1H,1H,2H,2H-perfluorooctane



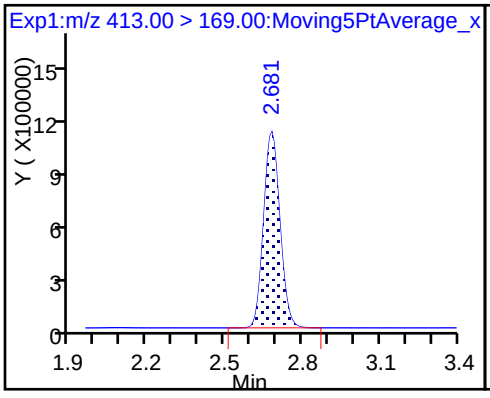
M2 13C2-PFOA



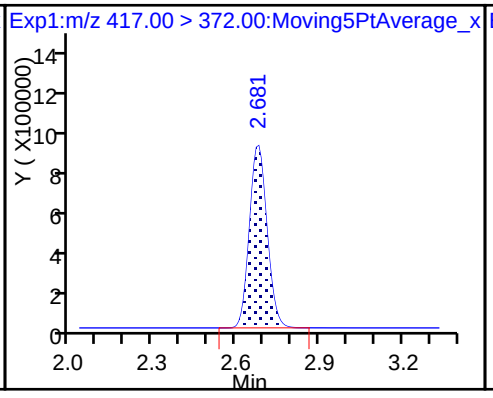
15 Perfluorooctanoic acid



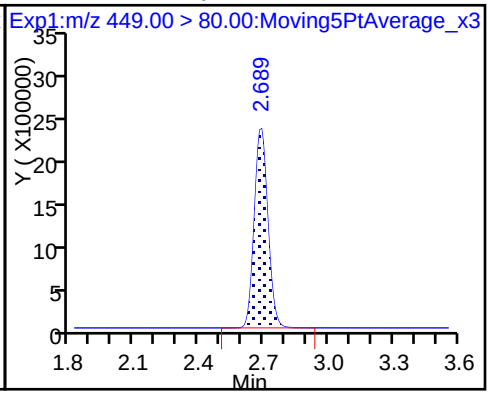
15 Perfluorooctanoic acid



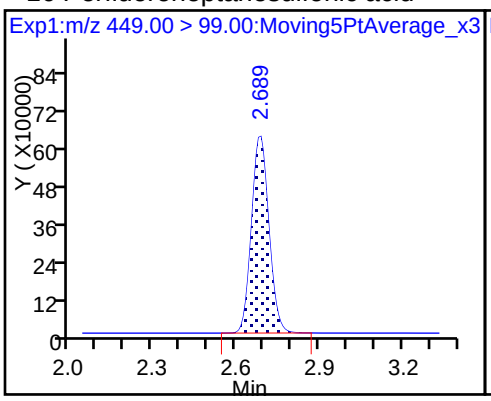
D 14 13C4 PFOA



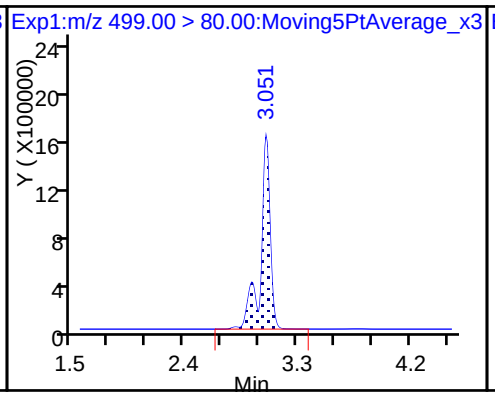
16 Perfluoroheptanesulfonic acid



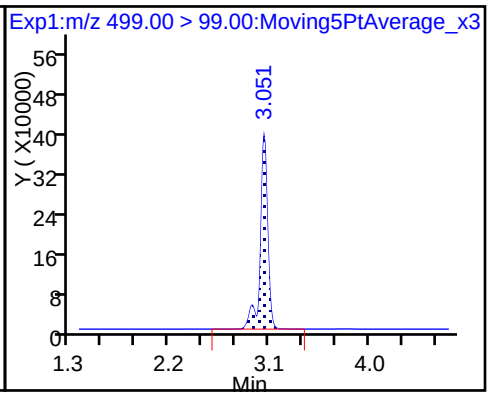
16 Perfluoroheptanesulfonic acid



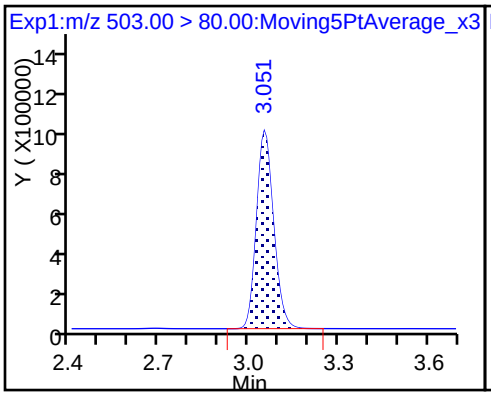
17 Perfluorooctane sulfonic acid



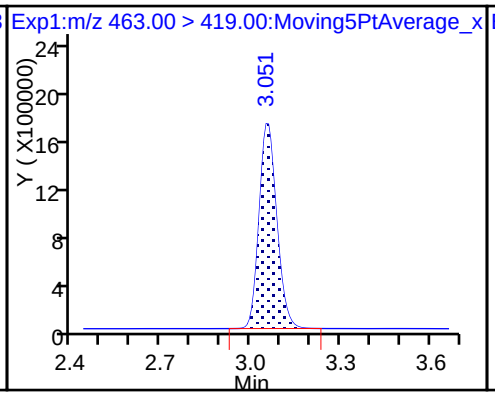
17 Perfluorooctane sulfonic acid



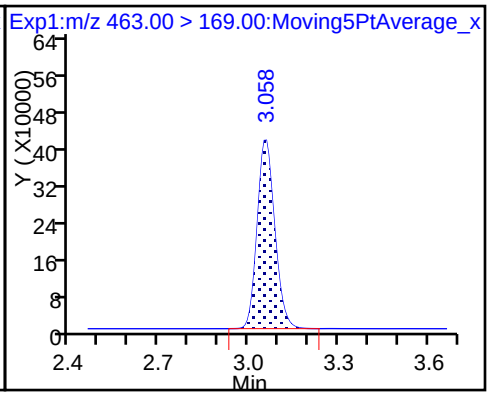
D 18 13C4 PFOS



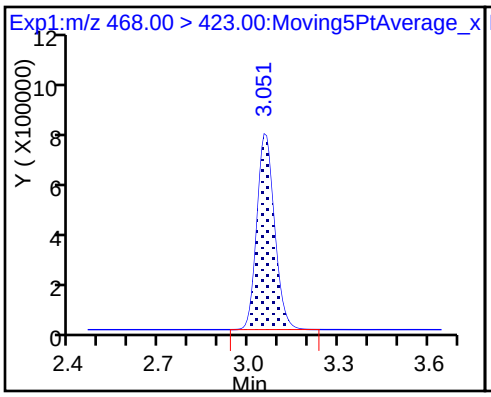
20 Perfluorononanoic acid



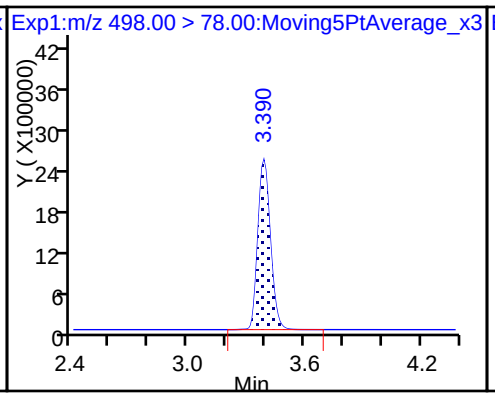
20 Perfluorononanoic acid



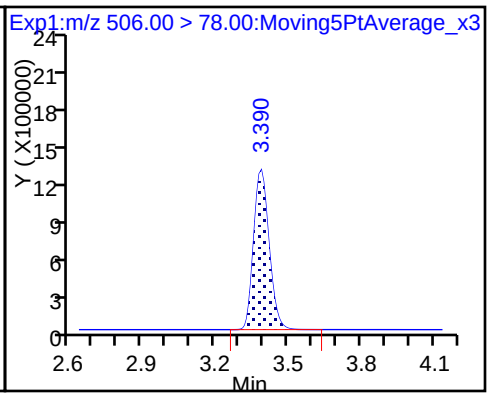
D 19 13C5 PFNA



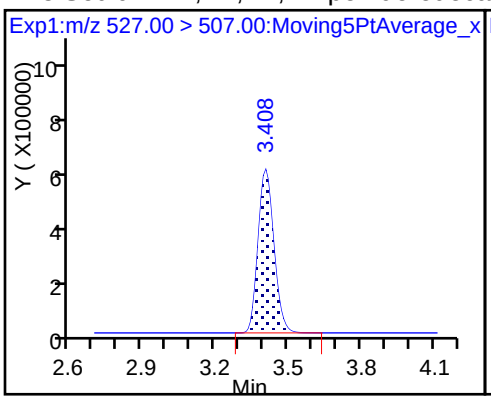
22 Perfluorooctane Sulfonamide



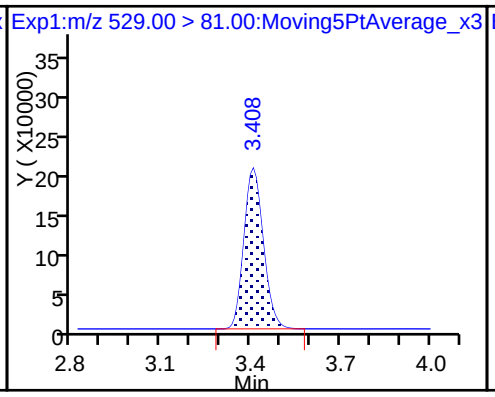
D 21 13C8 FOSA



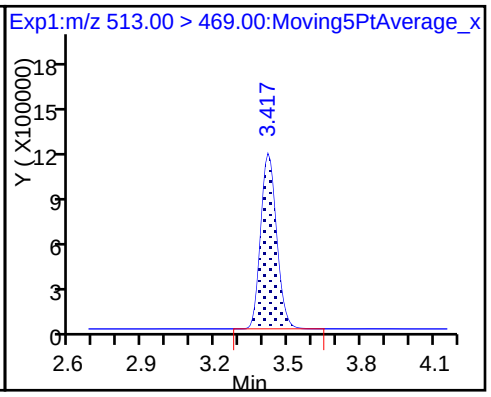
25 Sodium 1H,1H,2H,2H-perfluorodecane



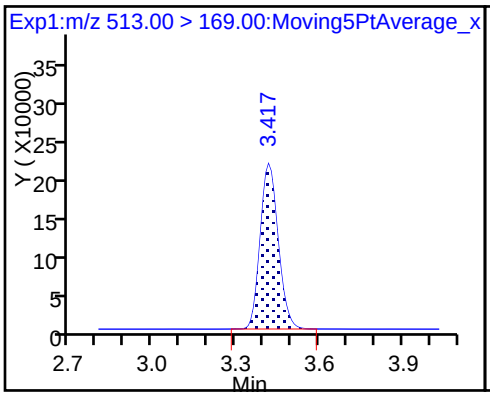
D 26 M2-8:2FTS



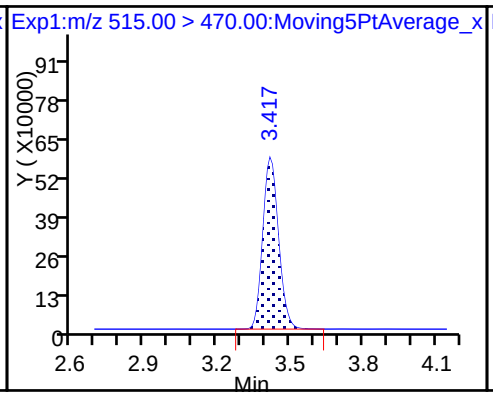
24 Perfluorodecanoic acid



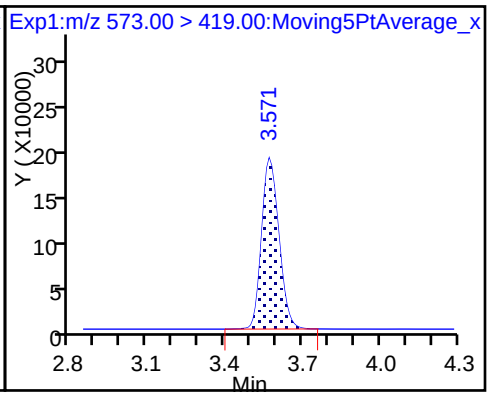
24 Perfluorodecanoic acid



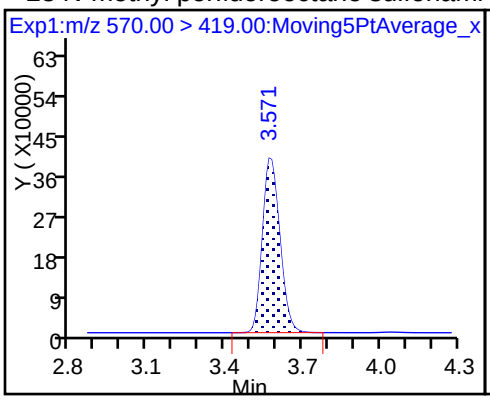
D 23 13C2 PFDA



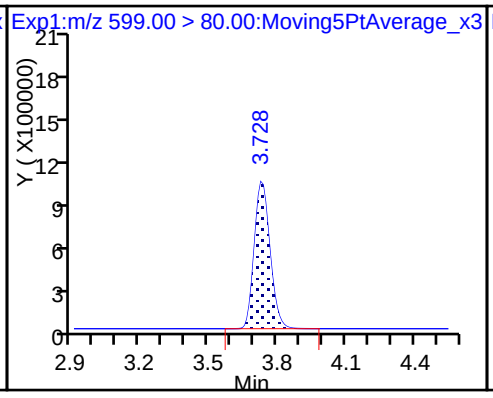
D 27 d3-NMeFOSAA



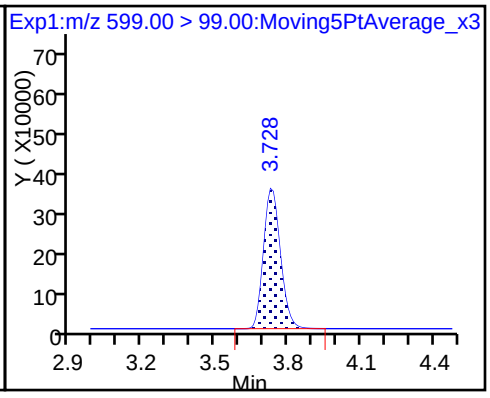
28 N-methyl perfluorooctane sulfonami



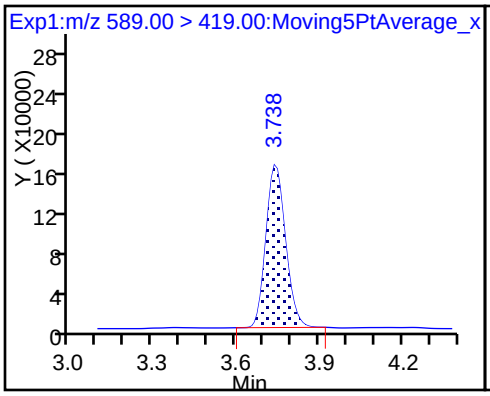
29 Perfluorodecane Sulfonic acid



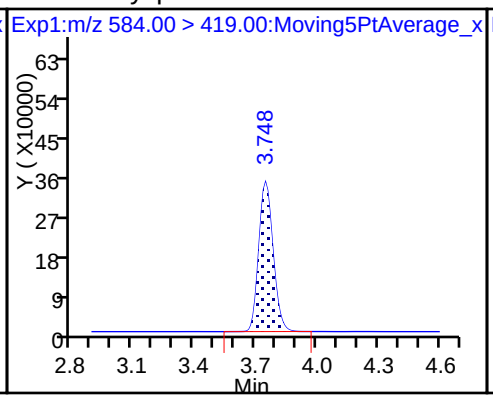
29 Perfluorodecane Sulfonic acid



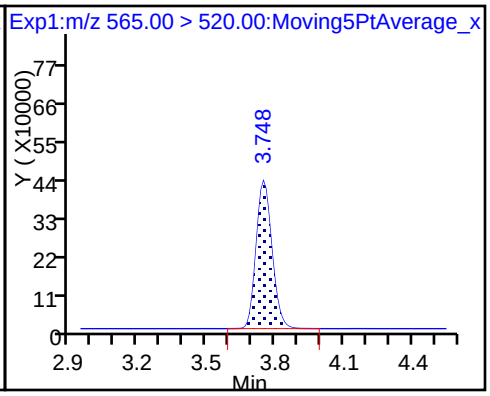
D 32 d5-NEtFOSAA



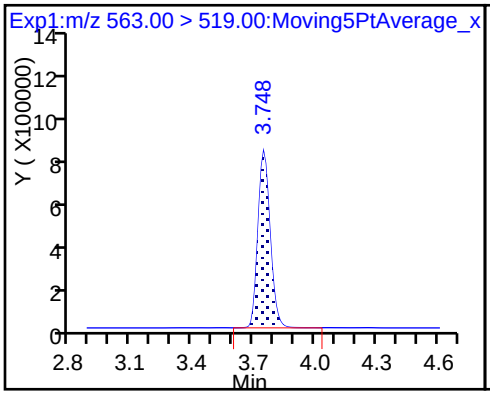
33 N-ethyl perfluorooctane sulfonamid



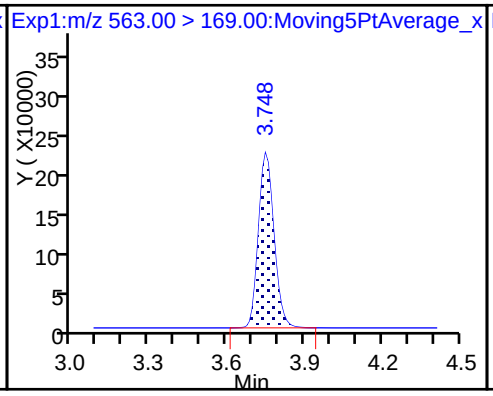
D 30 13C2 PFUnA



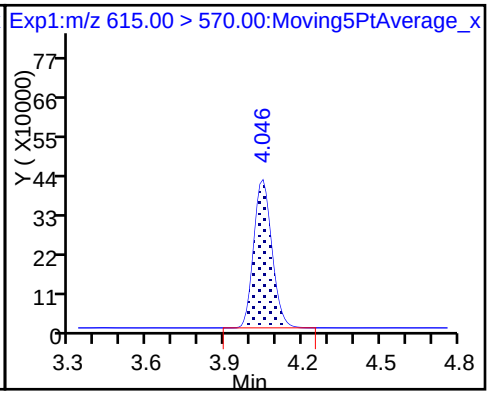
31 Perfluoroundecanoic acid



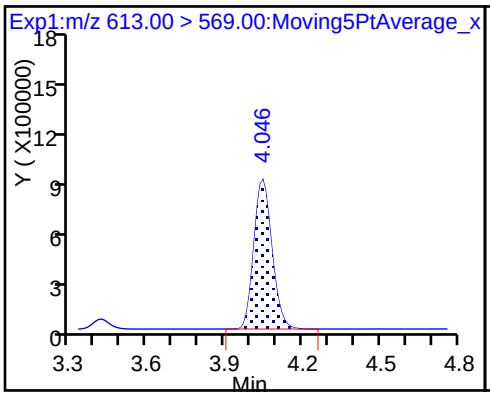
31 Perfluoroundecanoic acid



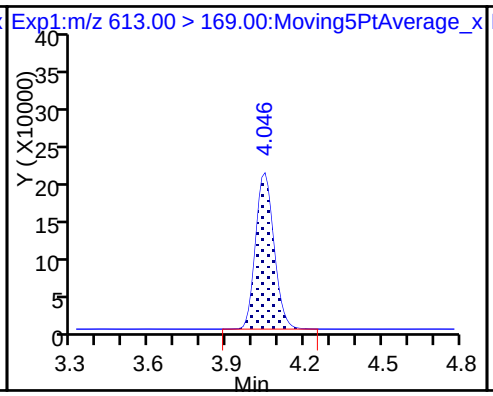
D 36 13C2 PFDoA



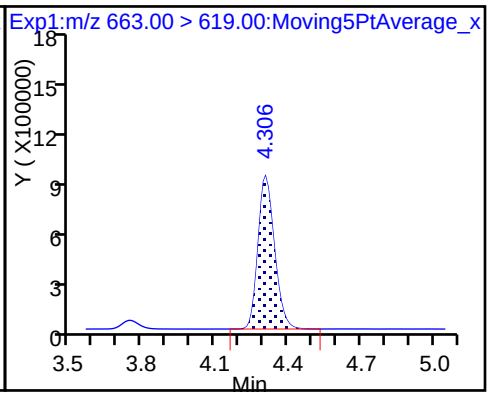
37 Perfluorododecanoic acid



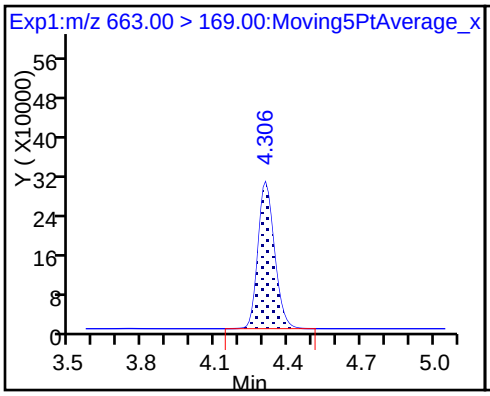
37 Perfluorododecanoic acid



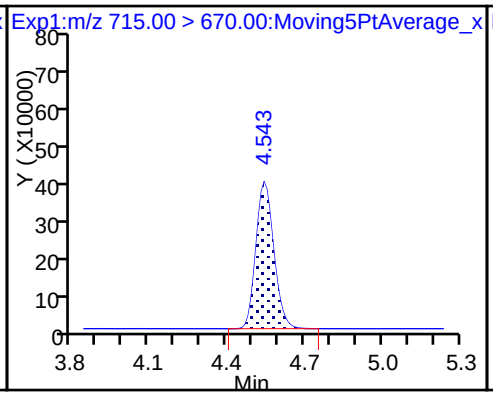
41 Perfluorotridecanoic acid



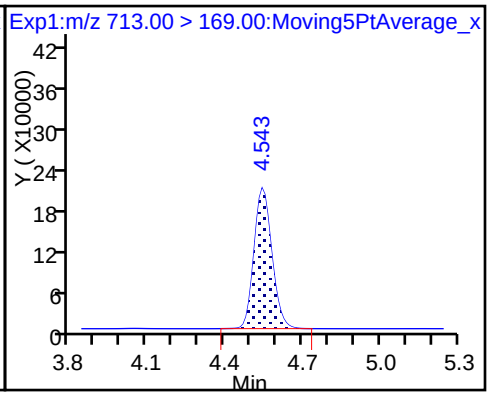
41 Perfluorotridecanoic acid



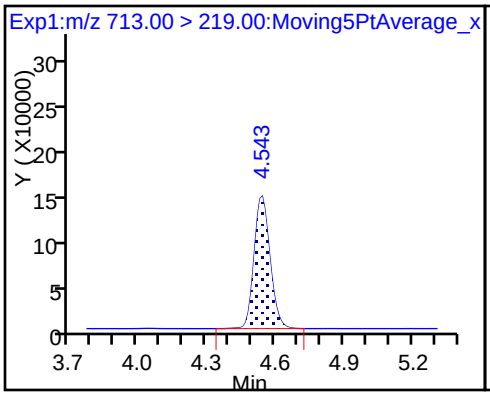
D 43 13C2-PFTeDA



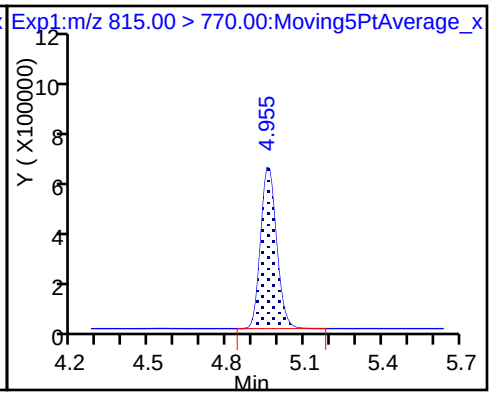
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d
Lims ID: IC L7 Full
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 16-Mar-2018 23:56:35 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L7-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:40:39 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:28:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.440	0.001	0.537	5232633	2.69		108	82309	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.440	0.001	1.000	19640198	10.1		101	12323	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	3539835	2.58		103	134420	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.698	0.002	1.000	16422736	9.93		99.3	6981	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.730	0.006	0.647	90294	2.66		115	493	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.733	0.003	1.000	24136015	8.03		90.9	10324	
298.90 > 99.00	1.736	1.733	0.003	1.000	10904597		2.21(1.25-3.74)	90.9	11290	
D 60 M2-4:2FTS										
329.00 > 81.00	1.946	1.942	0.004	0.726	556890	NC			5405	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.946	1.944	0.002	1.000	5338400	8.55		91.6	141725	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.737	3855910	2.52		101	136520	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.987	1.982	0.005	1.005	15868989	10.2		102	57308	
313.00 > 119.00	1.987	1.982	0.005	1.005	1454246		10.91(5.03-15.10)	102	37142	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	3792427	2.55		102	79264	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.311	0.004	1.000	15371232	9.78		97.8	34467	
363.00 > 169.00	2.315	2.311	0.004	1.000	6374993		2.41(1.13-3.40)	97.8	76069	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5044040	2.54		107	56616	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	20699070	8.70		95.6	2537	
399.00 > 99.00	2.328	2.326	0.002	1.000	7211194		2.87(1.50-4.49)	95.6	2748	
D 12 M2-6:2FTS										
429.00 > 81.00	2.657	2.651	0.006	0.991	915248	2.40		101	23462	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.657	2.652	0.005	1.000	6406487	9.99		105	124176	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003	1.000	3630259	2.52		101	75171	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.678	0.003	1.000	16238419	10.0		100	9944	
413.00 > 169.00	2.681	2.678	0.003	1.000	8853138		1.83(0.84-2.52)	100	22165	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.678	0.003		3812028	2.50			66649	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.684	0.005	1.000	18413921	9.14		96.0	110339	
449.00 > 99.00	2.689	2.684	0.005	1.000	5292149		3.48(1.94-5.82)	96.0	61394	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.050	0.008	1.141	3664287	2.64		110	13294	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.058	3.050	0.008	1.000	15616435	9.41		101	43524	
499.00 > 99.00	3.058	3.050	0.008	1.000	3487558		4.48(2.31-6.93)	101	28558	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	2932926	2.55		102	55102	
20 Perfluorononanoic acid										
463.00 > 419.00	3.058	3.052	0.006	1.000	11976618	10.0		100	25729	
463.00 > 169.00	3.058	3.052	0.006	1.000	3098902		3.86(1.90-5.69)	100	63947	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.264	5287574	2.63		105	52245	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.388	0.001	1.000	19424864	9.45		94.5	152749	
D 26 M2-8:2FTS										
529.00 > 81.00	3.408	3.406	0.002	1.271	851096	2.38		99.2	18761	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.408	3.406	0.002	1.000	4059707	9.09		94.8	88539	
D 23 13C2 PFDA										
515.00 > 470.00	3.426	3.416	0.010	1.278	2368082	2.46		98.6	32884	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.426	3.416	0.010	1.000	9249996	10.3		103	52454	
513.00 > 169.00	3.426	3.416	0.010	1.000	1762214		5.25(2.36-7.09)	103	39146	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.579	3.570	0.009	1.335	881475	2.78		111	31541	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.579	3.571	0.008	1.000	3769629	10.3		103	31554	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.738	3.729	0.009	1.000	9484295	9.69		101	141067	
599.00 > 99.00	3.738	3.729	0.009	1.000	3276453		2.89(1.39-4.16)	101	62459	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.748	3.740	0.008	1.398	796299	2.62		105	1800	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.748	3.746	0.002	1.000	3048852	9.78		97.8	124025	
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.747	0.001	1.398	1892487	2.51		101	55785	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.750	0.008	1.003	6182513	9.75		97.5	20684	
563.00 > 169.00	3.748	3.750	-0.002	1.000	1594060		3.88(2.12-6.36)	97.5	47801	
D 36 13C2 PFDoA										
615.00 > 570.00	4.047	4.041	0.006	1.509	1937420	2.72		109	11175	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.047	4.042	0.005	1.000	8183198	10.3		103	1805	
613.00 > 169.00	4.047	4.042	0.005	1.000	2137875		3.83(2.13-6.40)	103	36830	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.304	0.003	1.000	8318181	10.4		104	1942	
663.00 > 169.00	4.307	4.304	0.003	1.000	2521670		3.30(1.25-3.76)	104	26552	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.554	4.545	0.009	1.699	1825202	2.80		112	11851	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.554	4.545	0.009	1.000	1864512	9.26		92.6	22768	
713.00 > 219.00	4.543	4.545	-0.002	0.998	1299349		1.43(0.71-2.13)	92.6	12775	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.964	4.956	0.008	1.852	2496909	2.62		105	9297	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	4.960	0.004	1.000	9782635	NC			843	
813.00 > 169.00	4.964	4.960	0.004	1.000	1695189		5.77(2.86-8.58)		12082	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.322	5.320	0.002	1.000	9786600	NC			1689	
913.00 > 169.00	5.322	5.320	0.002	1.000	1244402		7.86(3.83-11.48)		7790	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL7_00004 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:40:40 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Injection Date: 16-Mar-2018 23:56:35 Instrument ID: A8_N

Lims ID: IC L7 Full

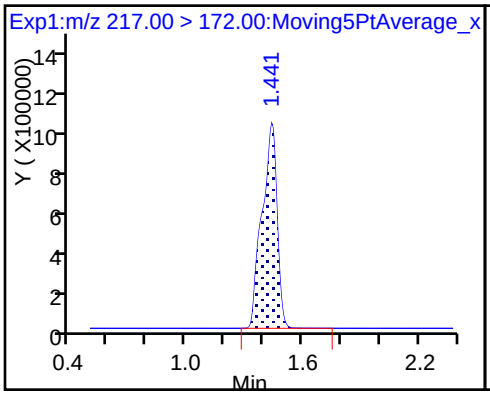
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8

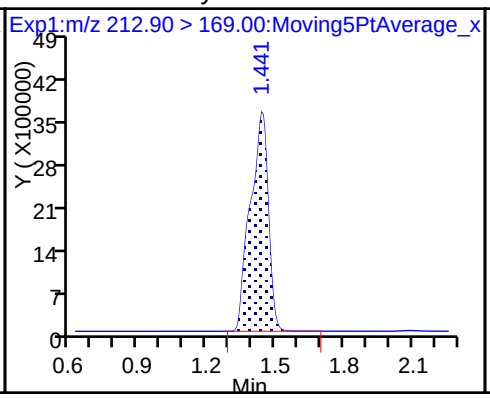
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

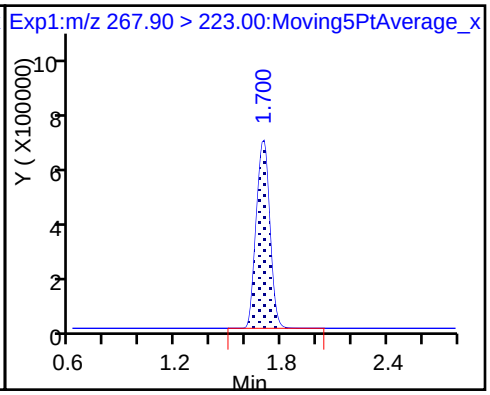
D 1 13C4 PFBA



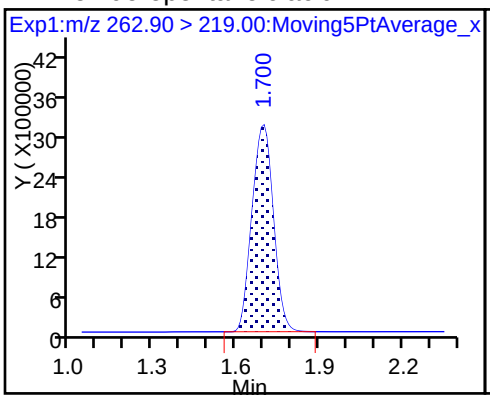
2 Perfluorobutyric acid



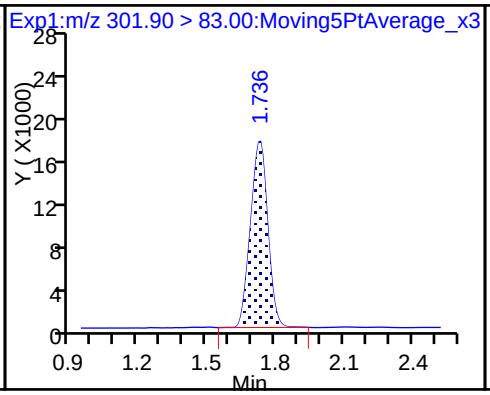
D 3 13C5-PFPeA



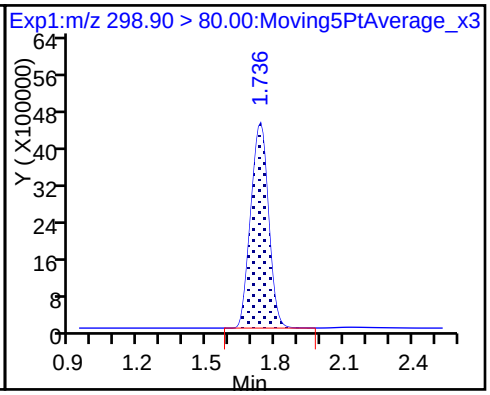
4 Perfluoropentanoic acid



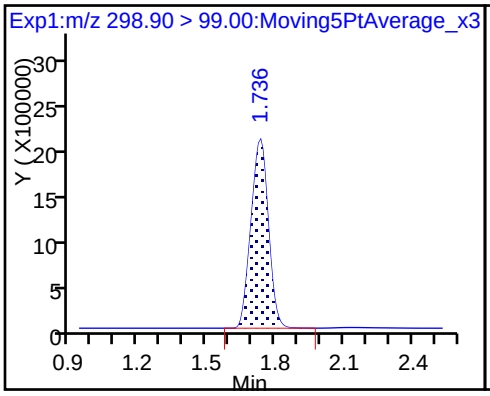
D 47 13C3-PFBS



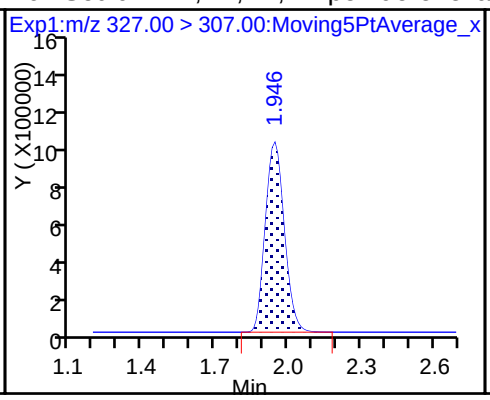
5 Perfluorobutanesulfonic acid



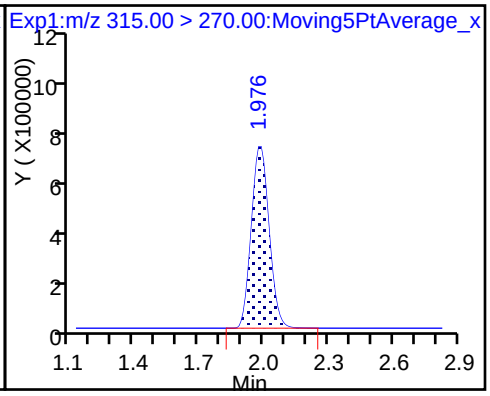
5 Perfluorobutanesulfonic acid



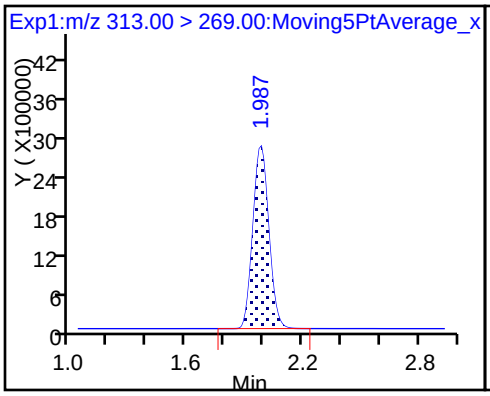
61 Sodium 1H,1H,2H,2H-perfluorohexa



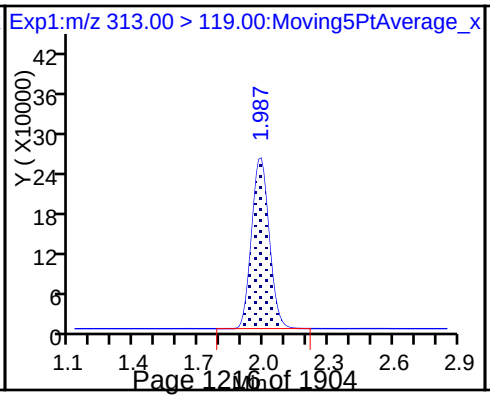
D 7 13C2 PFHxA



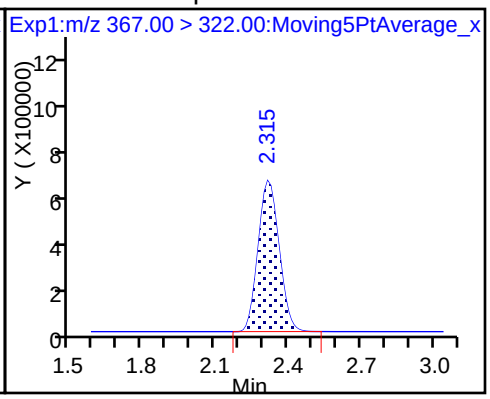
6 Perfluorohexanoic acid



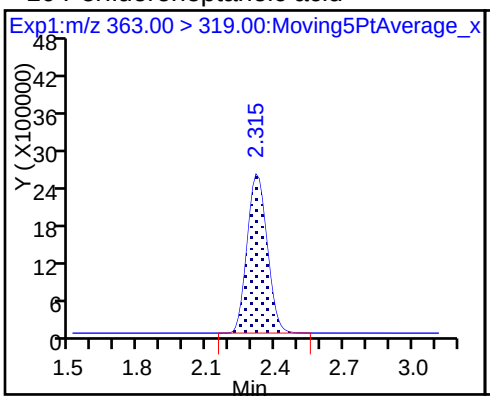
6 Perfluorohexanoic acid



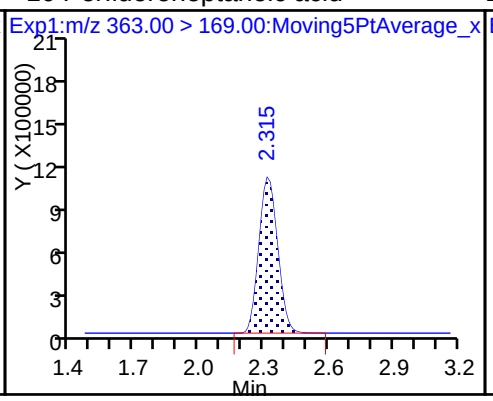
D 9 13C4-PFHpA



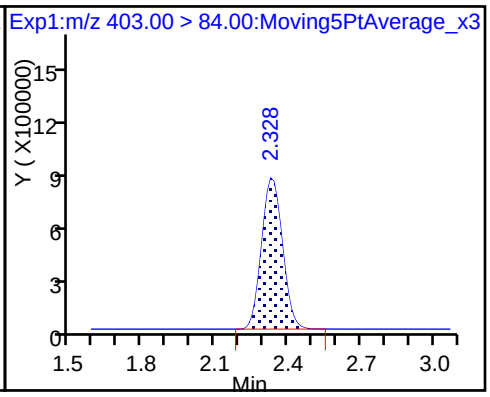
10 Perfluoroheptanoic acid



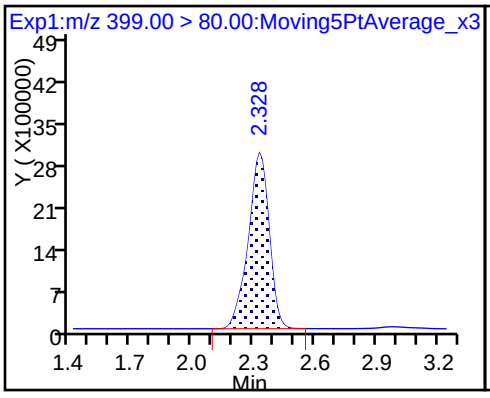
10 Perfluoroheptanoic acid



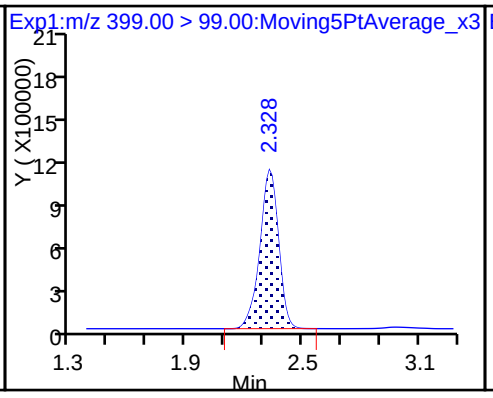
D 11 18O2 PFHxS



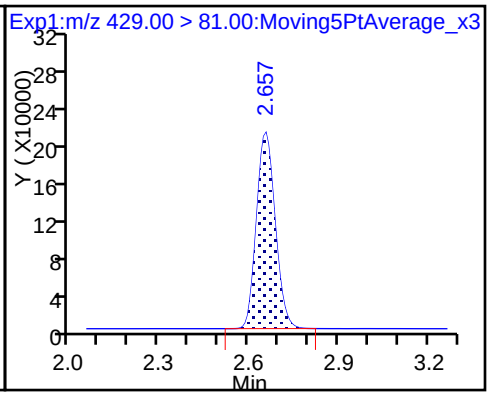
8 Perfluorohexanesulfonic acid



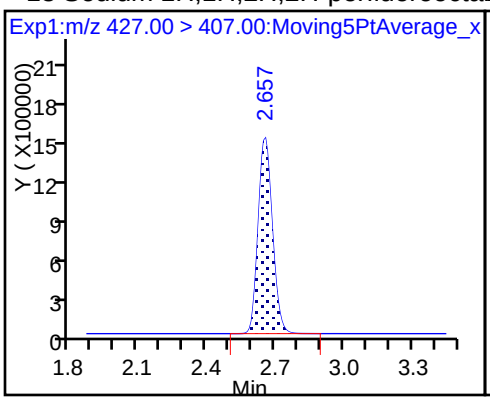
8 Perfluorohexanesulfonic acid



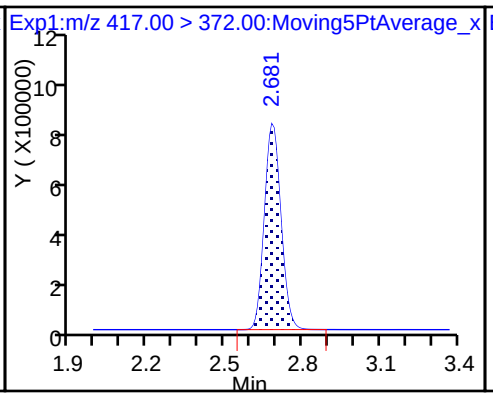
D 12 M2-6:2FTS



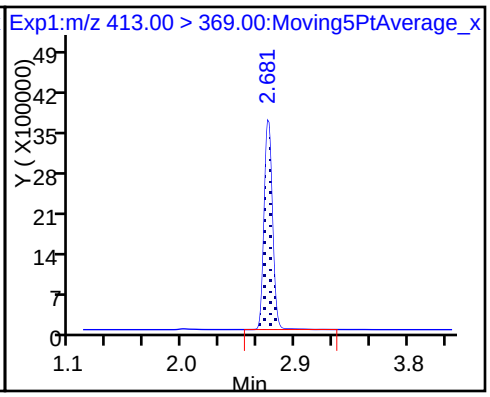
13 Sodium 1H,1H,2H,2H-perfluorooctane



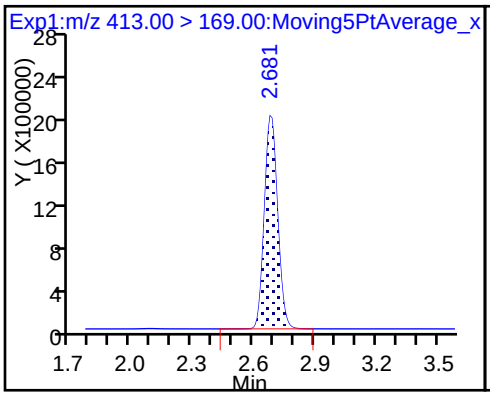
D 14 13C4 PFOA



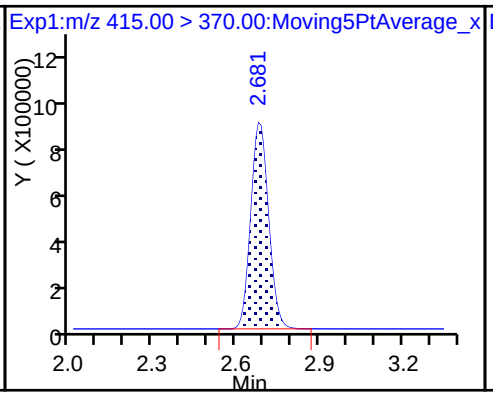
15 Perfluorooctanoic acid



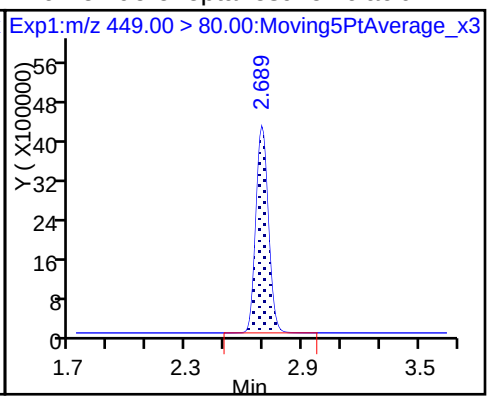
15 Perfluorooctanoic acid



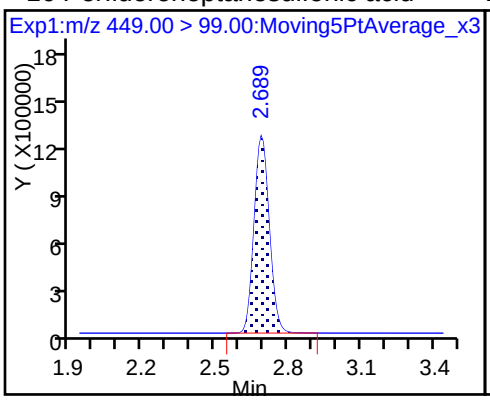
* 62 13C2-PFOA



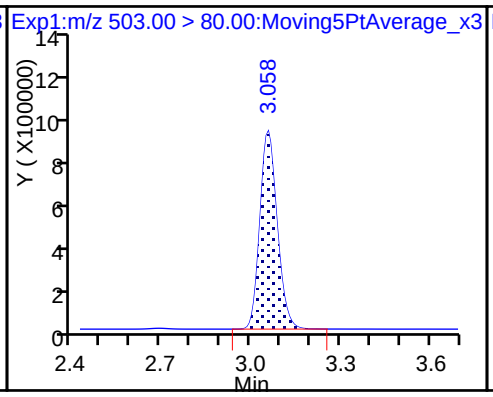
16 Perfluoroheptanesulfonic acid



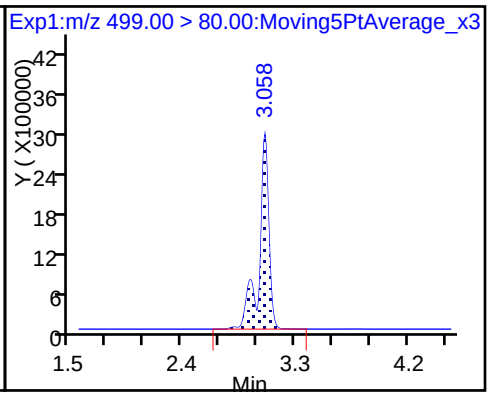
16 Perfluoroheptanesulfonic acid



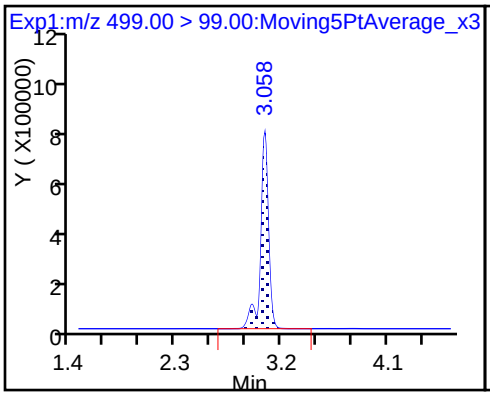
D 18 13C4 PFOS



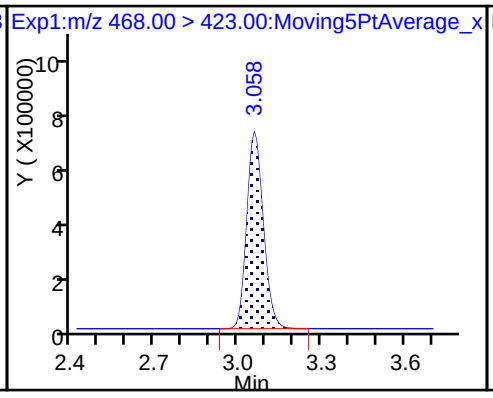
17 Perfluorooctane sulfonic acid



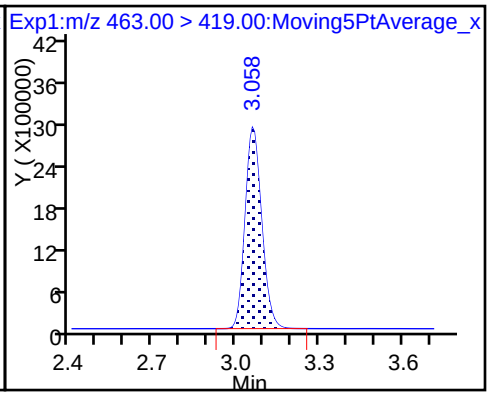
17 Perfluorooctane sulfonic acid



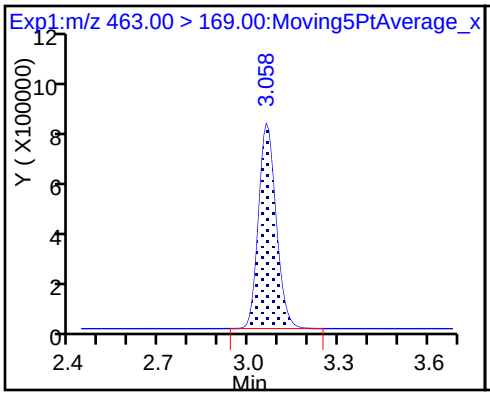
D 19 13C5 PFNA



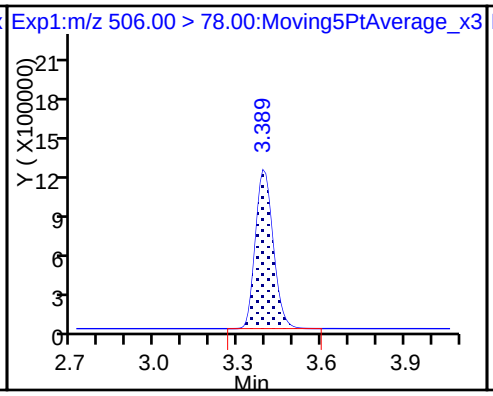
20 Perfluorononanoic acid



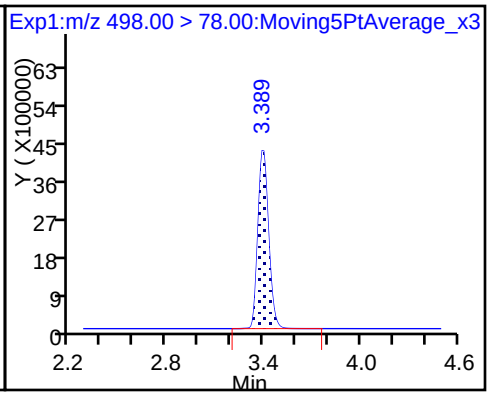
20 Perfluorononanoic acid



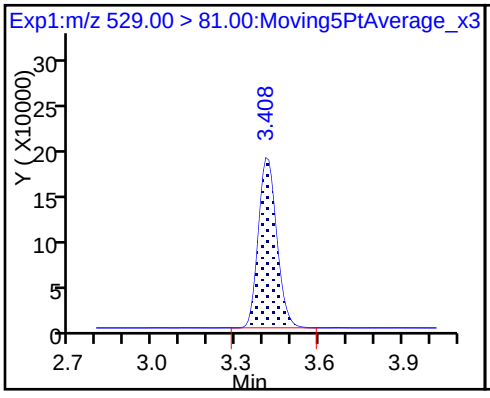
D 21 13C8 FOSA



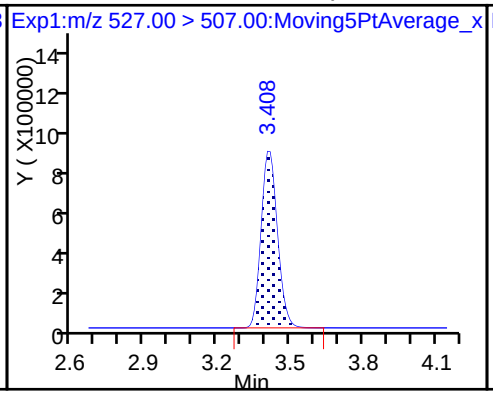
22 Perfluorooctane Sulfonamide



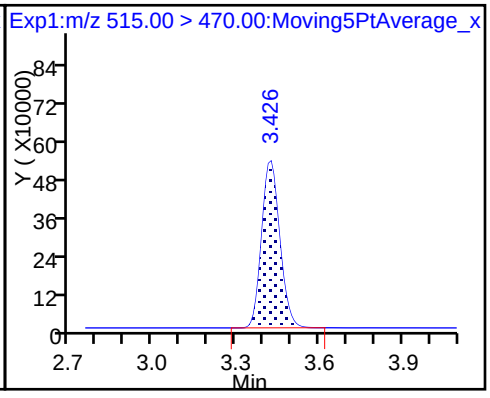
D 26 M2-8:2FTS



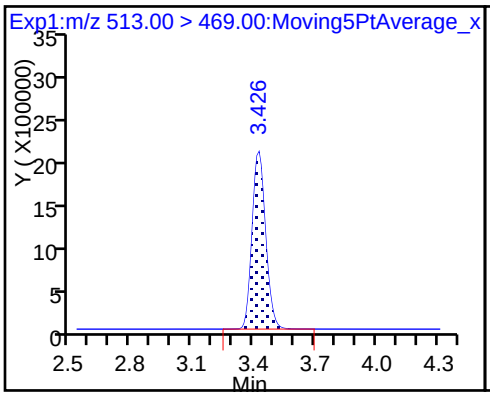
25 Sodium 1H,1H,2H,2H-perfluorodecane



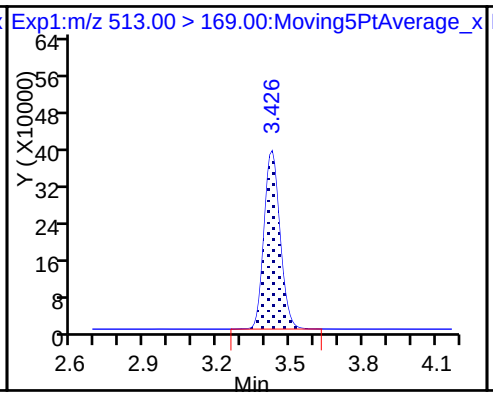
D 23 13C2 PFDA



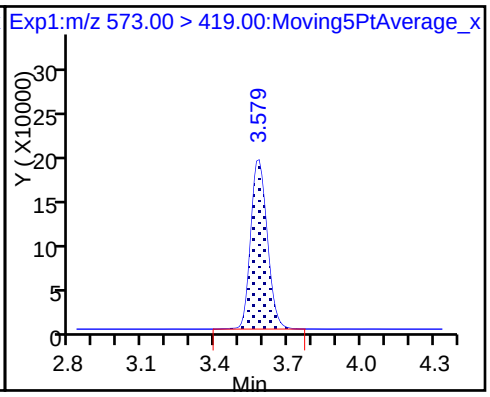
24 Perfluorodecanoic acid



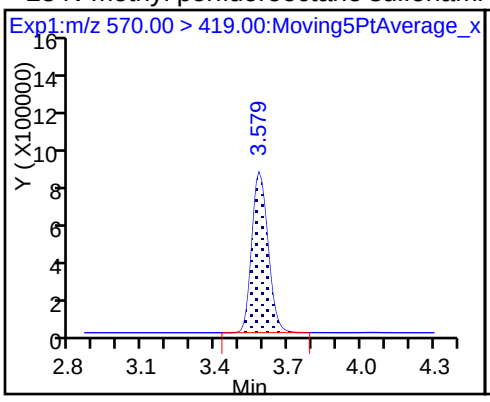
24 Perfluorodecanoic acid



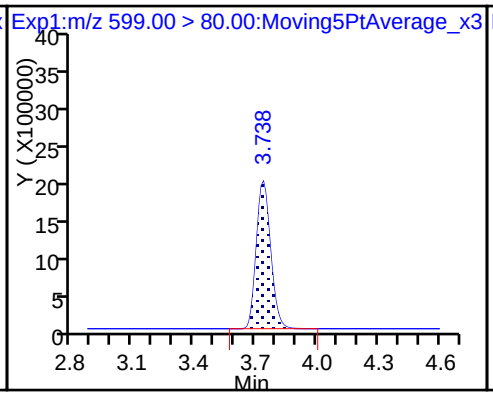
D 27 d3-NMeFOSAA



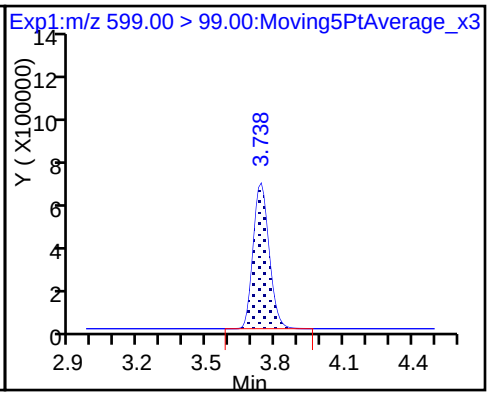
28 N-methyl perfluorooctane sulfonami



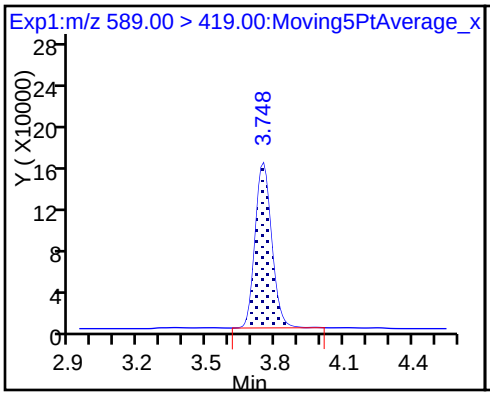
29 Perfluorodecane Sulfonic acid



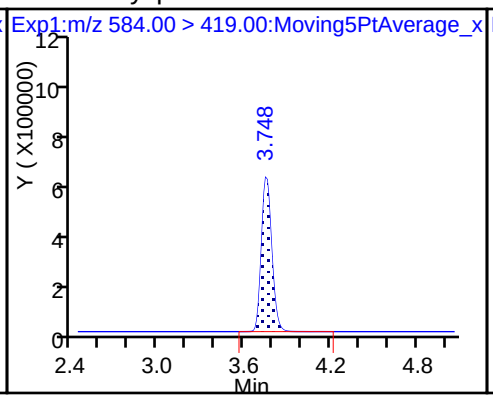
29 Perfluorodecane Sulfonic acid



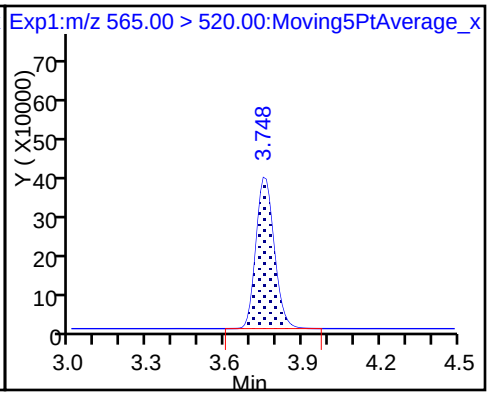
D 32 d5-NEtFOSAA



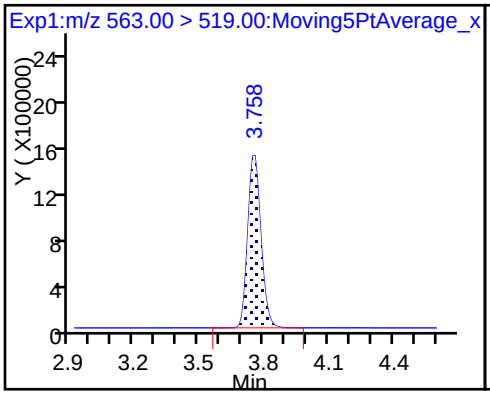
33 N-ethyl perfluorooctane sulfonamid



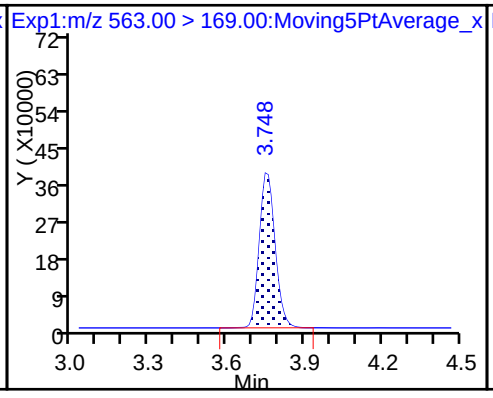
D 30 13C2 PFUnA



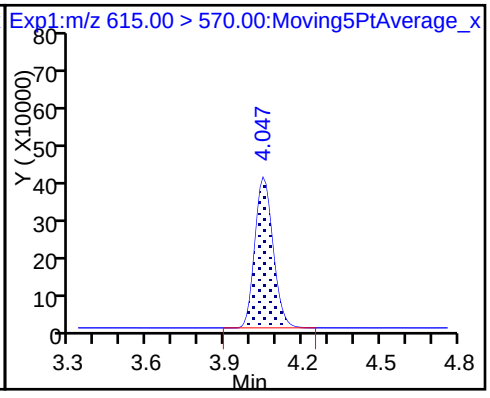
31 Perfluoroundecanoic acid



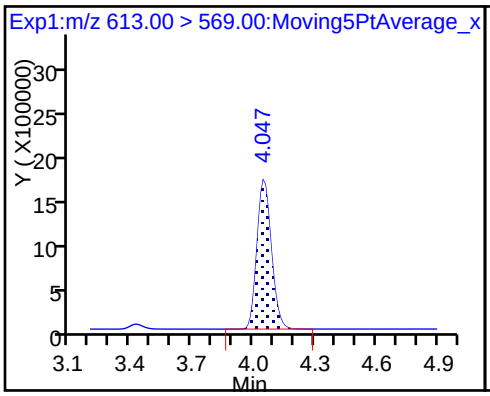
31 Perfluoroundecanoic acid



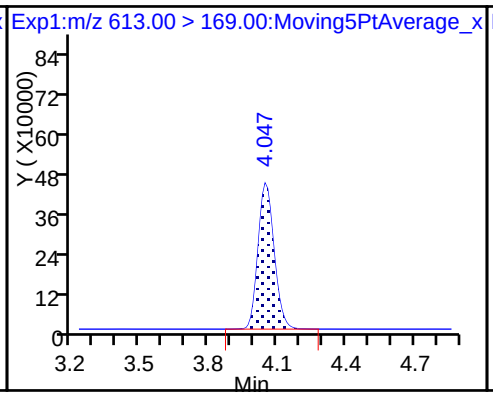
D 36 13C2 PFDoA



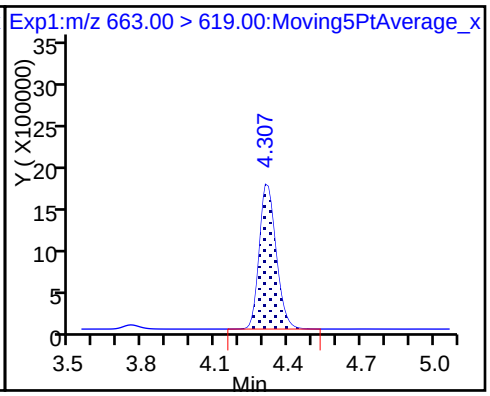
37 Perfluorododecanoic acid



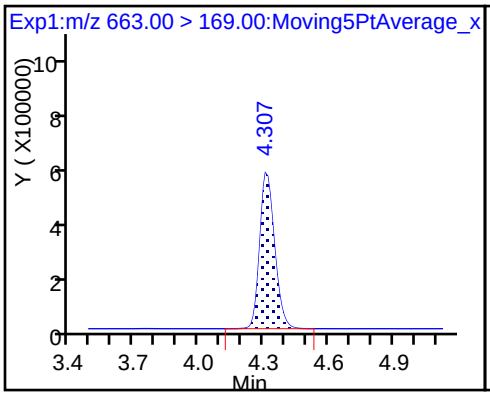
37 Perfluorododecanoic acid



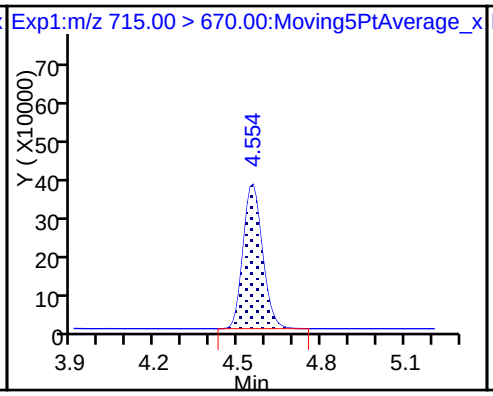
41 Perfluorotridecanoic acid



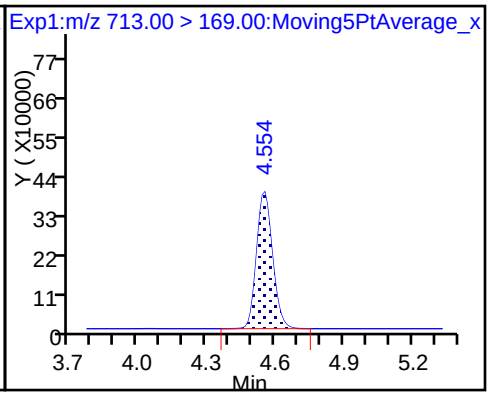
41 Perfluorotridecanoic acid



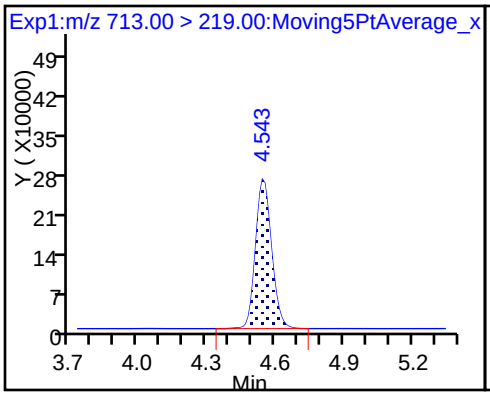
D 43 13C2-PFTeDA



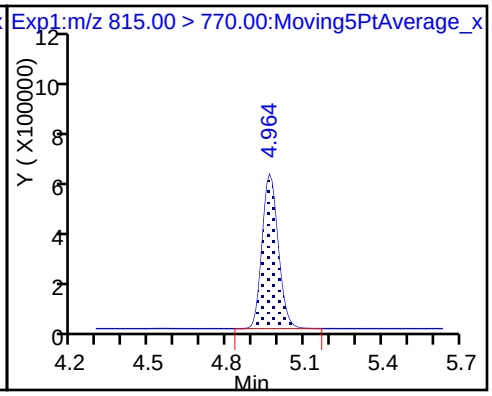
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 214176

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 18:24 Calibration End Date: 03/21/2018 19:11 Calibration ID: 38242

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214176/2	2018.03.21LLICALAX_002.d
Level 2	IC 320-214176/3	2018.03.21LLICALAX_003.d
Level 3	IC 320-214176/4	2018.03.21LLICALAX_004.d
Level 4	IC 320-214176/5	2018.03.21LLICALAX_005.d
Level 5	IC 320-214176/6	2018.03.21LLICALAX_006.d
Level 6	IC 320-214176/7	2018.03.21LLICALAX_007.d
Level 7	IC 320-214176/8	2018.03.21LLICALAX_008.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 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9770 0.9654	0.9782 0.9163	0.9137	0.9039	0.9410	AveID		0.9422				3.4		20.0			
Perfluoropentanoic acid (PFPeA)	1.0398 1.1898	1.1118 1.1431	1.1414	1.1024	1.1643	AveID		1.1275				4.3		20.0			
Perfluorobutanesulfonic acid (PFBS)	77.286 78.553	78.814 75.366	76.480	76.225	81.199	AveID		77.703				2.5		20.0			
4:2 FTS	16.804 16.788	16.170 15.667	16.310	15.390	15.941	AveID		16.153				3.3		20.0			
Perfluorohexanoic acid (PFHxA)	1.0196 1.0524	1.0518 1.0118	1.0085	0.9645	1.0478	AveID		1.0223				3.1		20.0			
Perfluoroheptanoic acid (PFHpA)	0.9689 1.0612	1.0927 1.0383	0.9816	0.9771	1.1215	AveID		1.0345				5.9		20.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3404 1.1223	1.1639 1.0409	1.0385	1.0319	1.0535	AveID		1.1130				10.1		20.0			
6:2FTS	1.5576 1.7957	1.8911 1.7717	1.7412	1.6933	1.7547	AveID		1.7436				5.9		20.0			
Perfluorooctanoic acid (PFOA)	1.2278 1.1265	1.2535 1.0919	1.0964	1.0565	1.0550	AveID		1.1297				7.1		20.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3002 1.3237	1.2934 1.2343	1.2772	1.2479	1.2922	AveID		1.2813				2.4		20.0			
Perfluorooctanesulfonic acid (PFOS)	1.1788 1.1274	1.0854 1.1317	1.0974	1.0467	1.1303	AveID		1.1139				3.8		20.0			
Perfluorononanoic acid (PFNA)	0.9610 1.0030	0.9765 1.0457	0.9865	0.9543	1.0556	AveID		0.9975				4.0		20.0			
Perfluorooctane Sulfonamide (PFOSA)	1.0217 1.0333	0.9663 0.9452	0.9546	0.9908	0.9888	AveID		0.9858				3.4		20.0			
8:2FTS	1.3252 1.2619	1.1418 1.3311	1.2543	1.2466	1.3731	AveID		1.2763				5.9		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 214176

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 18:24 Calibration End Date: 03/21/2018 19:11 Calibration ID: 38242

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 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	1.0098 1.0266	0.8873 0.9840	1.0025	0.9567	1.0497	AveID		0.9881				5.4		20.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.8624 1.0715	0.9123 1.0518	1.0465	0.9523	1.1088	AveID		1.0008				9.2		20.0			
Perfluorodecanesulfonic acid (PFDS)	0.6016 0.7415	0.6694 0.7211	0.6530	0.6412	0.7322	AveID		0.6800				7.8		20.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.9224 0.9962	0.8646 0.9417	0.9112	0.8903	1.0134	AveID		0.9342				5.8		20.0			
Perfluoroundecanoic acid (PFUnA)	0.9695 0.8449	0.8967 0.9028	0.7661	0.8243	0.8309	AveID		0.8622				7.7		20.0			
Perfluorododecanoic acid (PFDoA)	1.0503 1.1100	1.0998 1.0309	1.0210	0.9776	1.0349	AveID		1.0464				4.4		20.0			
Perfluorotridecanoic Acid (PFTriA)	1.0242 1.2189	1.0806 1.0484	1.0979	1.1164	1.1188	AveID		1.1007				5.7		20.0			
Perfluorotetradecanoic acid (PFTeA)	0.2400 0.2554	0.2594 0.2499	0.2475	0.2303	0.2521	AveID		0.2478				4.0		20.0			
13C4 PFBA	1.2518 1.2929	1.2583 1.3406	1.2790	1.2572	1.1820	Ave		1.2660				3.8		20.0			
13C5-PFPeA	0.8327 0.8439	0.8366 0.8891	0.8605	0.8349	0.7813	Ave		0.8399				3.9		20.0			
13C3-PFBS	0.0186 0.0196	0.0192 0.0199	0.0198	0.0192	0.0180	Ave		0.0192				3.4		20.0			
13C2 PFHxA	0.9295 0.9198	0.9713 0.9356	0.9418	0.9249	0.8788	Ave		0.9288				3.0		20.0			
13C4-PFHpA	0.9506 0.9047	0.8936 0.9073	0.9677	0.9239	0.8667	Ave		0.9164				3.7		20.0			
18O2 PFHxS	1.1127 1.0890	1.1664 1.1449	1.1850	1.1305	1.0840	Ave		1.1303				3.4		20.0			
M2-6:2FTS	0.1884 0.1805	0.1973 0.1957	0.1922	0.1932	0.1826	Ave		0.1900				3.4		20.0			
13C4 PFOA	0.9424 0.9146	0.9504 0.9162	0.9605	0.9718	0.9058	Ave		0.9374				2.7		20.0			
13C4 PFOS	0.8084 0.8115	0.8346 0.8334	0.8459	0.8297	0.7939	Ave		0.8225				2.2		20.0			
13C5 PFNA	0.8159 0.8363	0.8387 0.8194	0.8535	0.8423	0.7801	Ave		0.8266				2.9		20.0			
13C8 FOSA	1.0958 1.1026	1.0947 1.0892	1.1838	1.1159	1.0823	Ave		1.1092				3.1		20.0			
M2-8:2FTS	0.2677 0.2568	0.2739 0.2387	0.2803	0.2476	0.2307	Ave		0.2565				7.2		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 214176

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 18:24 Calibration End Date: 03/21/2018 19:11 Calibration ID: 38242

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 4	LVL 5		B	M1	M2								
13C2 PFDA	0.7397 0.7226	0.7599 0.7138	0.7506	0.7132	0.6715	Ave		0.7245				4.1		20.0			
d3-NMeFOSAA	0.3775 0.3991	0.3624 0.3991	0.4007	0.3777	0.3530	Ave		0.3814				5.0		20.0			
d5-NEtFOSAA	0.4563 0.4090	0.4567 0.4048	0.4709	0.4518	0.3919	Ave		0.4345				7.2		20.0			
13C2 PFUnA	0.6503 0.6562	0.6561 0.6125	0.7132	0.6358	0.6130	Ave		0.6482				5.3		20.0			
13C2 PFDoA	0.7369 0.7139	0.7087 0.7752	0.7608	0.7433	0.7097	Ave		0.7355				3.6		20.0			
13C2-PFTeDA	0.9180 0.8827	0.8229 0.9495	0.9129	0.9482	0.8540	Ave		0.8983				5.3		20.0			
13C2-PFHxDA	1.4911 1.5654	1.2829 1.5109	1.5999	1.5088	1.3493	Ave		1.4726				7.8		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 214176

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 18:24 Calibration End Date: 03/21/2018 19:11 Calibration ID: 38242

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214176/2	2018.03.21LLICALAX_002.d
Level 2	IC 320-214176/3	2018.03.21LLICALAX_003.d
Level 3	IC 320-214176/4	2018.03.21LLICALAX_004.d
Level 4	IC 320-214176/5	2018.03.21LLICALAX_005.d
Level 5	IC 320-214176/6	2018.03.21LLICALAX_006.d
Level 6	IC 320-214176/7	2018.03.21LLICALAX_007.d
Level 7	IC 320-214176/8	2018.03.21LLICALAX_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	64128 12506996	131334 22360079	612393	2414180	5823834	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	45401 10061856	99242 18500324	514727	1955236	4762694	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	66644 13614957	142407 24100878	700112	2745542	6781882	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	15310 3074271	30869 5293270	157752	585674	1406742	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	49694 9699799	109004 17232401	497709	1895160	4820853	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	48297 9620973	104181 17149506	497784	1917800	5088526	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	71171 11144344	131804 19742275	586824	2255246	5440694	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2FTS		AveID	14587 3079977	37735 5982174	166250	658727	1590173	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	60671 10325028	127108 18212815	551855	2181038	5003450	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	52467 10247281	109652 17826274	539007	2094073	5113485	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	46371 8507880	89694 15932478	451427	1712110	4360129	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	41117 8405623	87380 15598692	441188	1707633	4311504	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (PFOSA)		AveID	58708 11417156	112857 18741888	592188	2348890	5602803	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2FTS		AveID	17824 3110907	31966 5541846	176483	628171	1588740	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	39168 7434177	71937 12786299	394276	1449524	3690292	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 214176

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 18:24 Calibration End Date: 03/21/2018 19:11 Calibration ID: 38242

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	17070 4285891	35274 7642171	219720	764025	2049489	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	24583 5812987	57466 10545265	279040	1089522	2934010	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	22073 4082815	42131 6938724	224858	854457	2079318	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	33058 5555779	62776 10065814	286311	1113457	2666750	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	40586 7940975	83165 14548343	407079	1543700	3845398	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	39576 8719608	81708 14795343	437729	1762916	4156865	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	11552 2258774	22776 4319552	118401	463840	1127193	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PFOA	Ave	6564034 6477851	6712910 6100844	6702182	6677108	6188661	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5-PFPeA	13PFOA	Ave	4366350 4228437	4463093 4046135	4509425	4434133	4090438	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PFOA	Ave	90718 91170	95045 84106	96305	94733	87868	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PFOA	Ave	4874041 4608558	5181558 4257747	4935175	4912134	4600880	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PFOA	Ave	4984623 4533044	4767222 4129064	5071076	4906862	4537445	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PFOA	Ave	5519750 5161589	5886251 4928998	5874354	5679886	5368855	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PFOA	Ave	938472 859398	999800 845912	956838	974611	908164	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PFOA	Ave	4941609 4582778	5069957 4169807	5033130	5161114	4742395	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PFOA	Ave	4052357 3887079	4256604 3625826	4237867	4212796	3973858	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PFOA	Ave	4278627 4190429	4474026 3729104	4472333	4473666	4084349	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PFOA	Ave	5746202 5524474	5839734 4957065	6203337	5926892	5666432	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PFOA	Ave	1345013 1232595	1399775 1040808	1407067	1259787	1157021	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PFOA	Ave	3878963 3620699	4053733 3248595	3933118	3787833	3515629	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PFOA	Ave	1979468 1999896	1933236 1816501	2099631	2005802	1848322	2.50 2.50	2.50 2.50	2.50	2.50	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 214176

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 18:24 Calibration End Date: 03/21/2018 19:11 Calibration ID: 38242

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d5-NEtFOSAA	13PF OA	Ave	2392883 2049207	2436559 1842170	2467789	2399407	2051910	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	3409956 3287781	3500228 2787354	3737470	3376806	3209638	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	3864207 3576857	3780852 3528118	3986883	3947765	3715622	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	4813878 4422729	4389855 4321269	4783571	5036200	4471429	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	7818840 7843306	6843963 6875940	8384119	8013194	7064103	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 214176

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 18:24 Calibration End Date: 03/21/2018 19:11 Calibration ID: 38242

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214176/2	2018.03.21LLICALAX_002.d
Level 2	IC 320-214176/3	2018.03.21LLICALAX_003.d
Level 3	IC 320-214176/4	2018.03.21LLICALAX_004.d
Level 4	IC 320-214176/5	2018.03.21LLICALAX_005.d
Level 5	IC 320-214176/6	2018.03.21LLICALAX_006.d
Level 6	IC 320-214176/7	2018.03.21LLICALAX_007.d
Level 7	IC 320-214176/8	2018.03.21LLICALAX_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	3.7 -2.8	3.8	-3.0	-4.1	-0.1	2.5	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	-7.8 1.4	-1.4	1.2	-2.2	3.3	5.5	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	-0.5 -3.0	1.4	-1.6	-1.9	4.5	1.1	30 30	30	30	30	30	30
4:2 FTS	4.0 -3.0	0.1	1.0	-4.7	-1.3	3.9	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	-0.3 -1.0	2.9	-1.4	-5.7	2.5	2.9	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-6.3 0.4	5.6	-5.1	-5.5	8.4	2.6	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	20.4 -6.5	4.6	-6.7	-7.3	-5.4	0.8	30 30	30	30	30	30	30
6:2FTS	-10.7 1.6	8.5	-0.1	-2.9	0.6	3.0	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	8.7 -3.3	11.0	-2.9	-6.5	-6.6	-0.3	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	1.5 -3.7	0.9	-0.3	-2.6	0.9	3.3	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	5.8 1.6	-2.6	-1.5	-6.0	1.5	1.2	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-3.7 4.8	-2.1	-1.1	-4.3	5.8	0.5	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (PFOSA)	3.6 -4.1	-2.0	-3.2	0.5	0.3	4.8	30 30	30	30	30	30	30
8:2FTS	3.8 4.3	-10.5	-1.7	-2.3	7.6	-1.1	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	2.2 -0.4	-10.2	1.5	-3.2	6.2	3.9	30 30	30	30	30	30	30

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 214176

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/21/2018 18:24 Calibration End Date: 03/21/2018 19:11 Calibration ID: 38242

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	-13.8 5.1	-8.8	4.6	-4.8	10.8	7.1	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	-11.5 6.0	-1.6	-4.0	-5.7	7.7	9.0	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	-1.3 0.8	-7.5	-2.5	-4.7	8.5	6.6	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	12.4 4.7	4.0	-11.1	-4.4	-3.6	-2.0	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	0.4 -1.5	5.1	-2.4	-6.6	-1.1	6.1	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	-7.0 -4.8	-1.8	-0.3	1.4	1.6	10.7	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	-3.2 0.9	4.7	-0.1	-7.1	1.7	3.1	30 30	30	30	30	30	30

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_002.d
Lims ID: IC L1 Full
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 21-Mar-2018 18:24:14 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:42:19 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 21-Mar-2018 19:00:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.447	1.447	0.0	0.536	6564034	2.47		98.9	83431	
2 Perfluorobutyric acid										
212.90 > 169.00	1.447	1.449	-0.002	1.000	64128	0.0259		104	24.7	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.710	-0.001	0.634	4366350	2.48		99.1	93154	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.710	-0.001	1.000	45401	0.0231		92.2	23.4	
D 47 13C3-PFBS										
301.90 > 83.00	1.745	1.743	0.002	0.647	90718	2.26		97.0	614	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.745	1.745	0.0	1.000	66644	0.0220		99.5	376	
298.90 > 99.00	1.745	1.745	0.0	1.000	28118		2.37(1.25-3.74)	99.5	171	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.959	-0.003	0.725	643318	NC			7775	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.966	1.962	0.004	1.000	15310	0.0243		104	941	
D 7 13C2 PFHxA										
315.00 > 270.00	1.998	1.998	0.0	0.741	4874041	2.50		100	145438	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.998	1.998	0.0	1.000	49694	0.0249		99.7	127	
313.00 > 119.00	1.998	1.998	0.0	1.000	4724		10.52(5.03-15.10)	99.7	94.1	
D 9 13C4-PFHpA										
367.00 > 322.00	2.341	2.333	0.008	0.868	4984623	2.59		104	93288	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.335	0.006	1.000	48297	0.0234		93.7	96.7	
363.00 > 169.00	2.341	2.335	0.006	1.000	20477		2.36(1.13-3.40)	93.7	268	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.354	2.346	0.008	1.000	71171	0.0274		120	609	
399.00 > 99.00	2.354	2.346	0.008	1.000	22990		3.10(1.50-4.49)	120	94.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.348	0.006	0.873	5519750	2.33		98.4	62536	
D 12 M2-6:2FTS										
429.00 > 81.00	2.673	2.672	0.001	0.991	938472	2.36		99.2	21899	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.673	2.672	0.001	1.000	14587	0.0212		89.3	1143	
D 14 13C4 PFOA										
417.00 > 372.00	2.697	2.695	0.002	1.000	4941609	2.51		101	82002	
* 62 13C2-PFOA										
415.00 > 370.00	2.697	2.695	0.002		5243768	2.50			67801	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.705	2.697	0.008	1.003	60671	0.0272		109	17.7	
413.00 > 169.00	2.697	2.697	0.0	1.000	32946		1.84(0.84-2.52)	109	87.6	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.705	2.703	0.002	1.000	52467	0.0242		101	1533	
449.00 > 99.00	2.705	2.703	0.002	1.000	13197		3.98(1.94-5.82)	101	181	
D 18 13C4 PFOS										
503.00 > 80.00	3.072	3.068	0.004	1.139	4052357	2.35		98.3	50838	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.072	3.070	0.002	1.000	46371	0.0246		106	171	
499.00 > 99.00	3.072	3.070	0.002	1.000	11047		4.20(2.31-6.93)	106	85.3	M
D 19 13C5 PFNA										
468.00 > 423.00	3.072	3.070	0.002	1.139	4278627	2.47		98.7	81507	
20 Perfluorononanoic acid										
463.00 > 419.00	3.072	3.072	0.0	1.000	41117	0.0241		96.3	48.9	
463.00 > 169.00	3.072	3.072	0.0	1.000	9349		4.40(1.90-5.69)	96.3	229	
D 21 13C8 FOSA										
506.00 > 78.00	3.399	3.396	0.003	1.260	5746202	2.47		98.8	46543	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.399	3.397	0.002	1.000	58708	0.0259		104	1350	
D 26 M2-8:2FTS										
529.00 > 81.00	3.426	3.426	0.0	1.270	1345013	2.50		104	42755	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.426	3.426	0.0	1.000	17824	0.0249		104	503	
D 23 13C2 PFDA										
515.00 > 470.00	3.435	3.435	0.0	1.274	3878963	2.55		102	72834	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.435	3.435	0.0	1.000	39168	0.0255		102	160	
513.00 > 169.00	3.435	3.435	0.0	1.000	6534		5.99(2.36-7.09)	102	158	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.590	3.591	-0.001	1.331	1979468	2.47		99.0	38616	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.590	3.594	-0.004	1.000	17070	0.0215		86.2	131	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.748	3.749	-0.001	1.000	24583	0.0213		88.5	853	
599.00 > 99.00	3.748	3.749	-0.001	1.000	8435		2.91(1.39-4.16)	88.5	305	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.758	3.759	-0.001	1.394	2392883	2.63		105	11372	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.769	3.768	0.001	1.000	33058	0.0281		112	146	
563.00 > 169.00	3.769	3.768	0.001	1.000	10108		3.27(2.12-6.36)	112	319	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.769	3.768	0.001	1.003	22073	0.0247		98.7	505	
D 30 13C2 PFUnA										
565.00 > 520.00	3.769	3.768	0.001	1.398	3409956	2.51		100	42217	
D 36 13C2 PFDoA										
615.00 > 570.00	4.068	4.066	0.002	1.508	3864207	2.50		100	26731	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.068	4.068	0.0	1.000	40586	0.0251		100	34.7	
613.00 > 169.00	4.068	4.068	0.0	1.000	8184		4.96(2.13-6.40)	100	145	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.328	4.329	-0.001	1.000	39576	0.0233		93.0	27.3	
663.00 > 169.00	4.328	4.329	-0.001	1.000	13312		2.97(1.25-3.76)	93.0	278	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.575	4.568	0.006	1.696	4813878	2.55		102	33813	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.575	4.571	0.003	1.000	11552	0.0242		96.8	204	
713.00 > 219.00	4.564	4.571	-0.007	0.998	8925		1.29(0.71-2.13)	96.8	192	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.990	4.987	0.003	1.851	7818840	2.53		101	18128	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.990	4.989	0.001	1.000	139895	NC			45.6	
813.00 > 169.00	4.990	4.989	0.001	1.000	24399		5.73(2.86-8.58)		287	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.358	5.354	0.004	1.000	74253	NC			25.7	
913.00 > 169.00	5.351	5.354	-0.003	0.999	8840		8.40(3.83-11.48)		123	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL1_00005 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:42:21 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_002.d

Injection Date: 21-Mar-2018 18:24:14 Instrument ID: A8_N

Lims ID: IC L1 Full

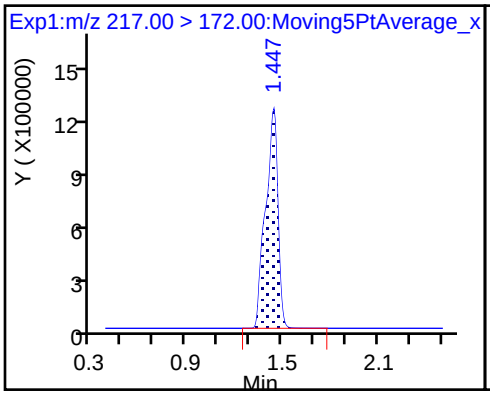
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2

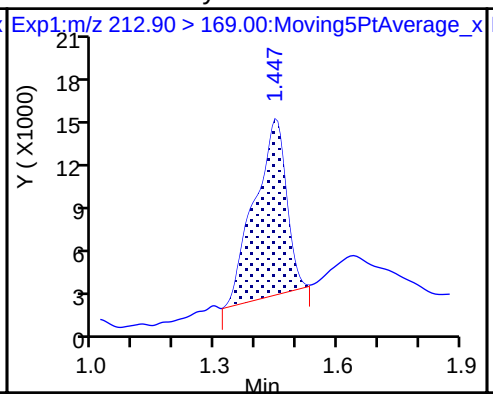
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

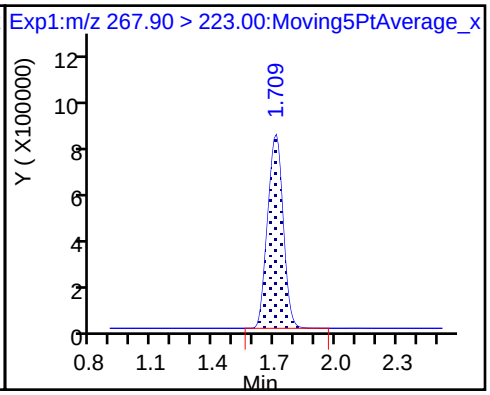
D 1 13C4 PFBA



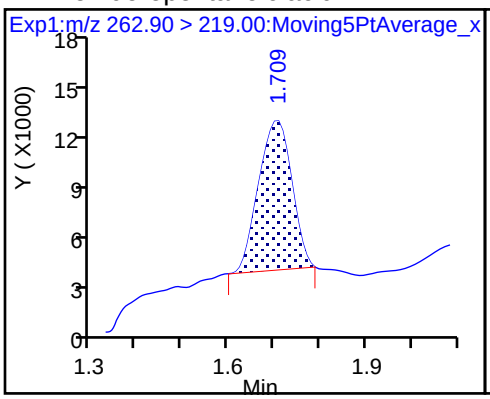
2 Perfluorobutyric acid



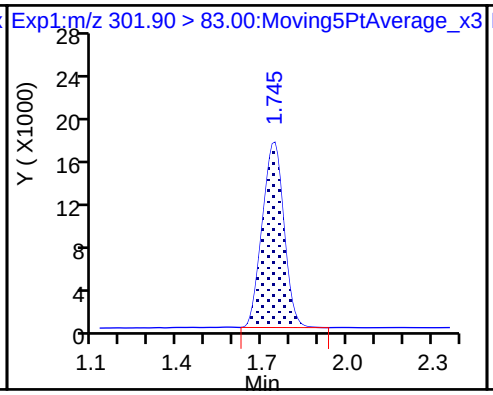
D 3 13C5-PFPeA



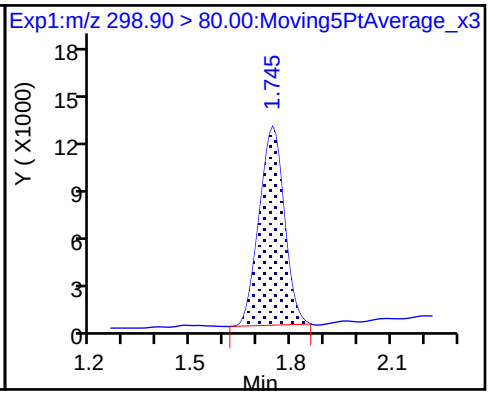
4 Perfluoropentanoic acid



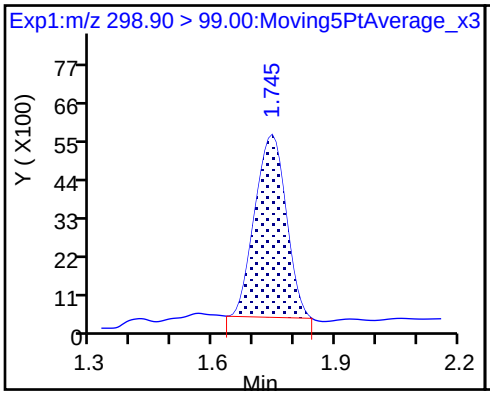
D 47 13C3-PFBS



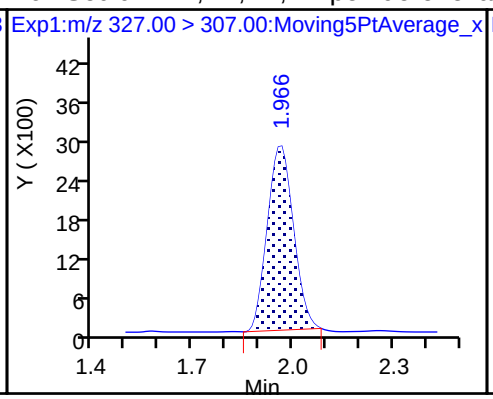
5 Perfluorobutanesulfonic acid



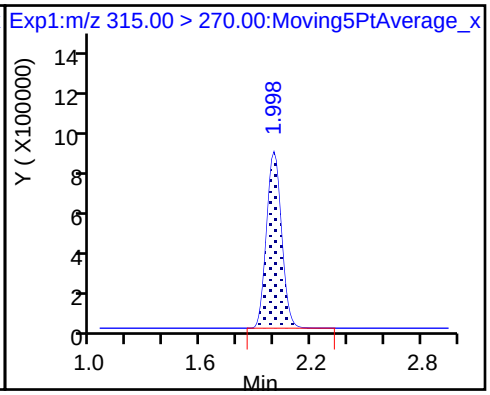
5 Perfluorobutanesulfonic acid



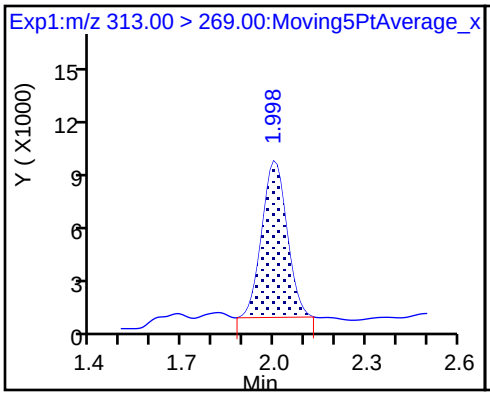
61 Sodium 1H,1H,2H,2H-perfluorohexa



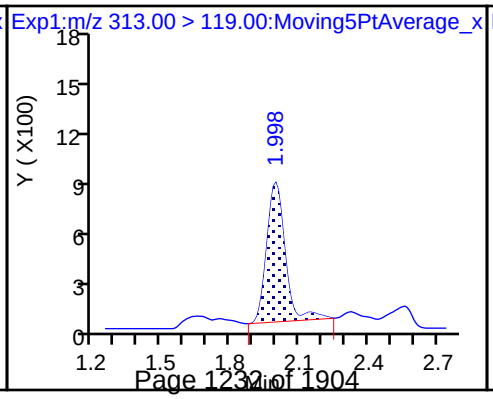
D 7 13C2 PFHxA



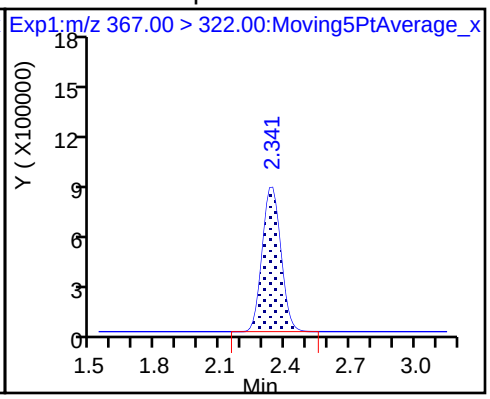
6 Perfluorohexanoic acid



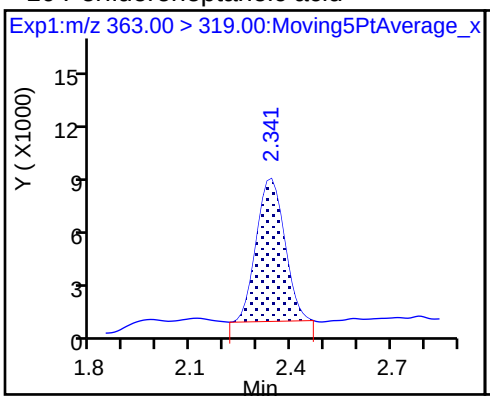
6 Perfluorohexanoic acid



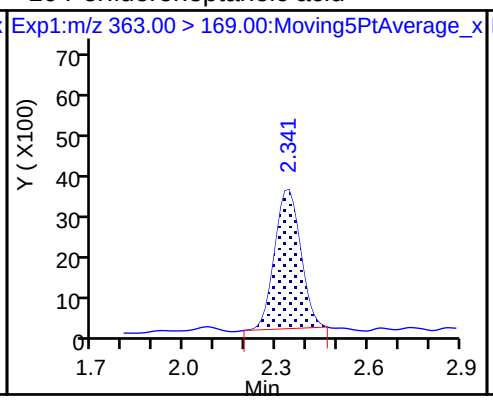
D 9 13C4-PFHpA



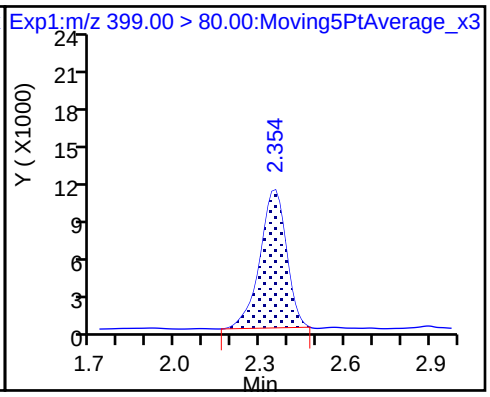
10 Perfluoroheptanoic acid



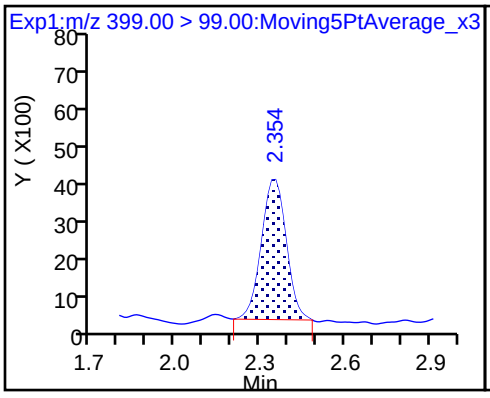
10 Perfluoroheptanoic acid



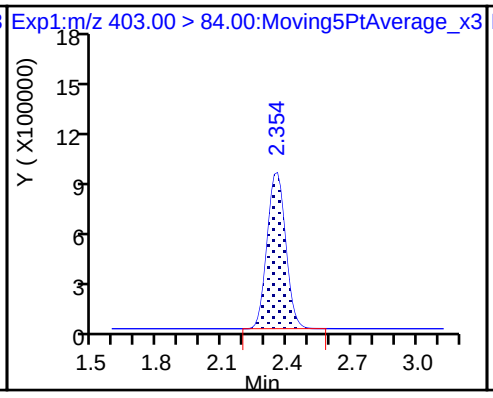
8 Perfluorohexanesulfonic acid



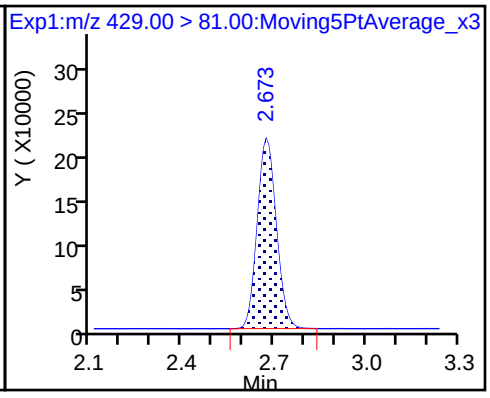
8 Perfluorohexanesulfonic acid



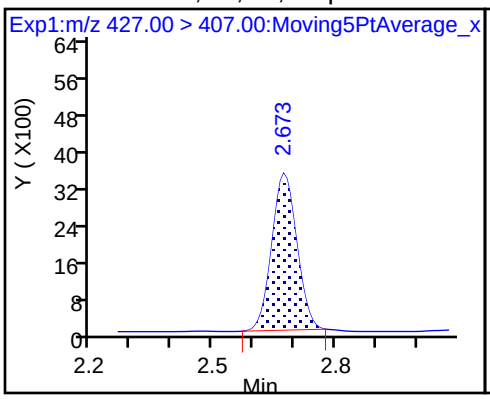
D 11 18O2 PFHxS



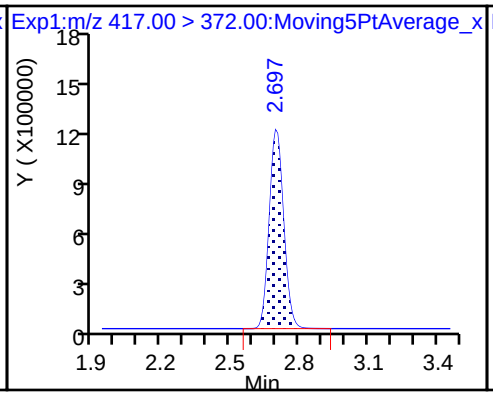
D 12 M2-6:2FTS



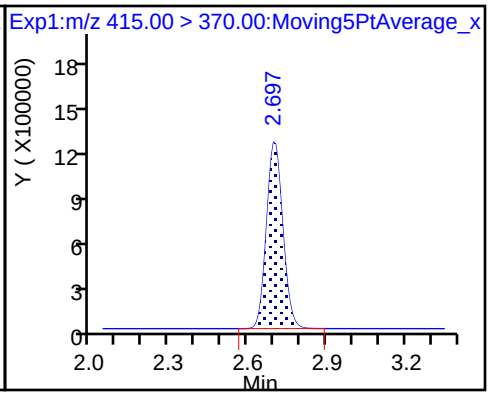
13 Sodium 1H,1H,2H,2H-perfluorooctane



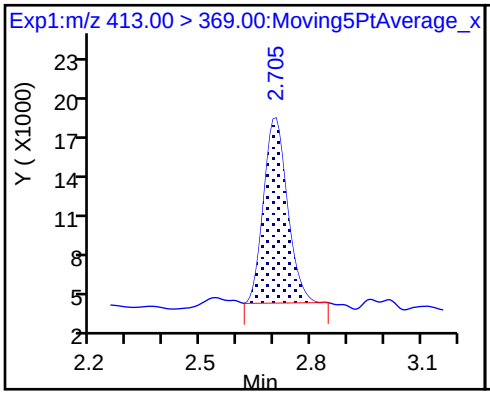
D 14 13C4 PFOA



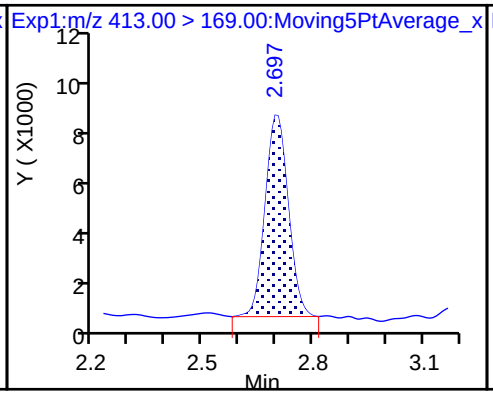
* 62 13C2-PFOA



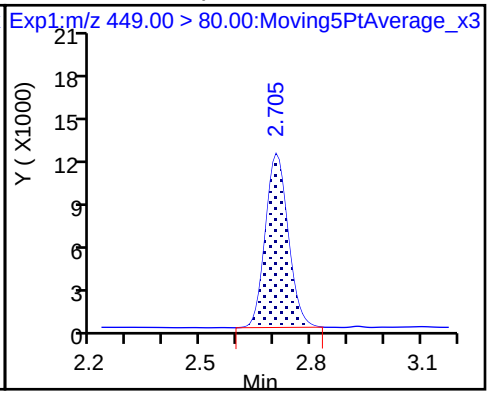
15 Perfluorooctanoic acid



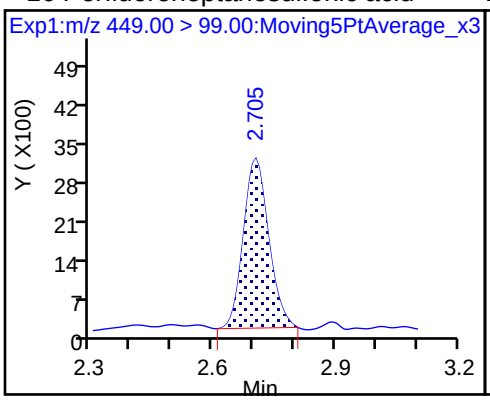
15 Perfluorooctanoic acid



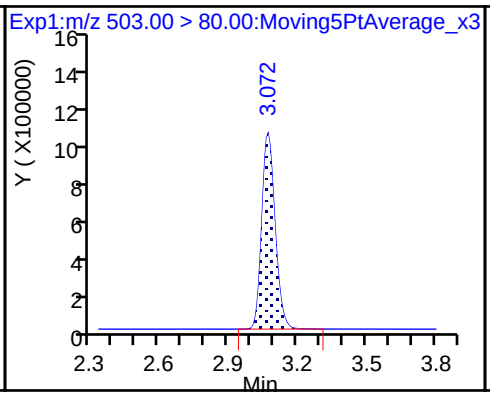
16 Perfluoroheptanesulfonic acid



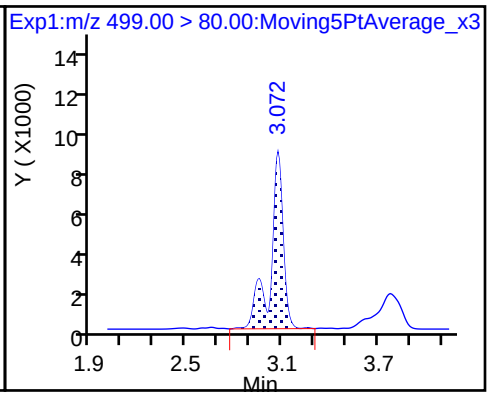
16 Perfluoroheptanesulfonic acid



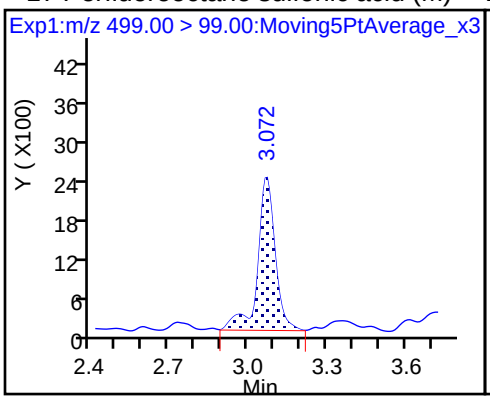
D 18 13C4 PFOS



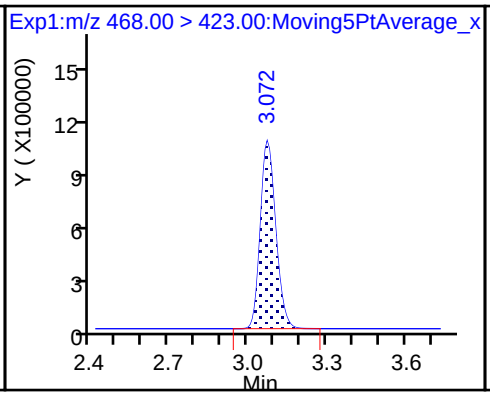
17 Perfluorooctane sulfonic acid



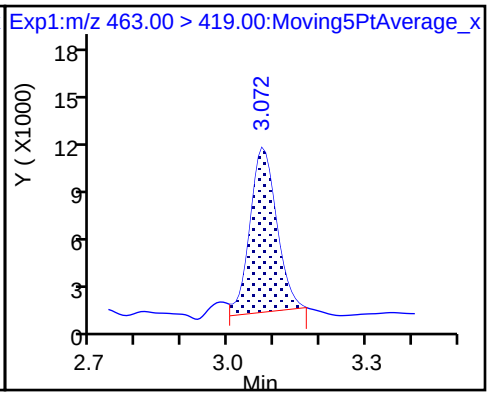
17 Perfluorooctane sulfonic acid (M)



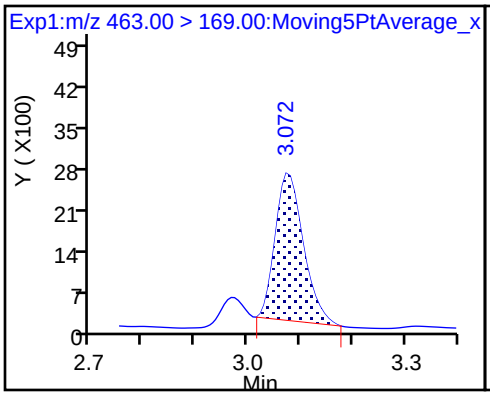
D 19 13C5 PFNA



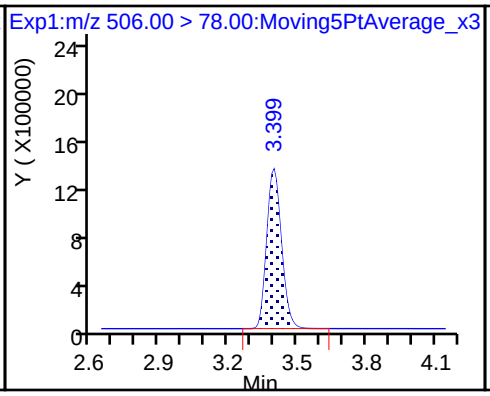
20 Perfluorononanoic acid



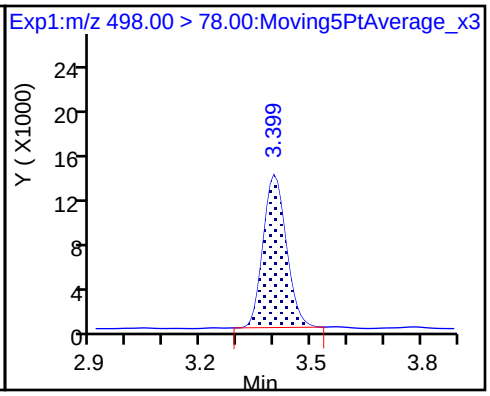
20 Perfluorononanoic acid



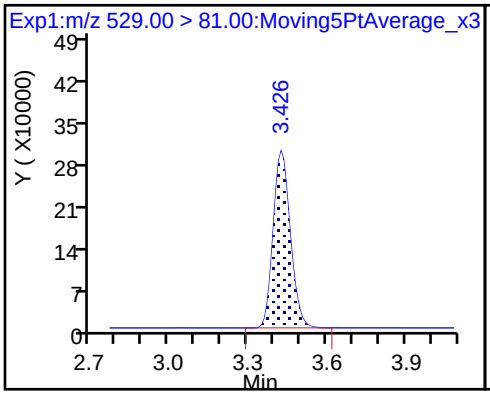
D 21 13C8 FOSA



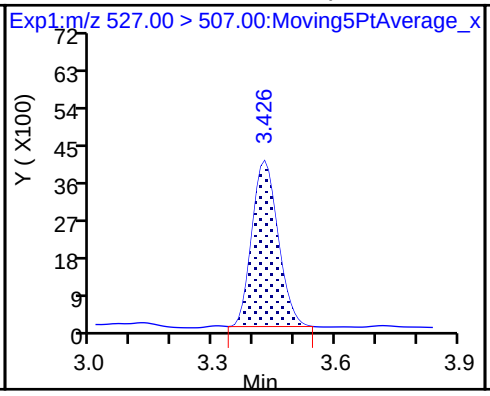
22 Perfluorooctane Sulfonamide



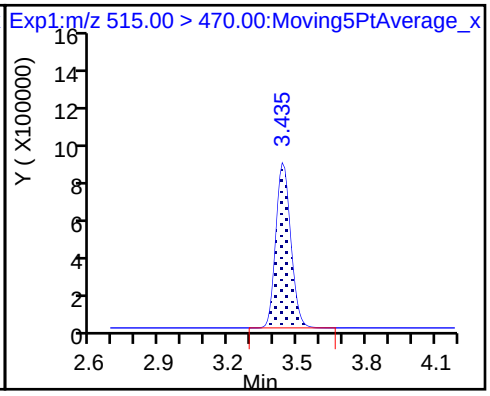
D 26 M2-8:2FTS



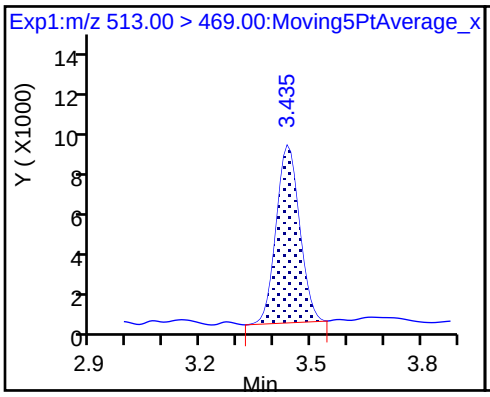
25 Sodium 1H,1H,2H,2H-perfluorodecane



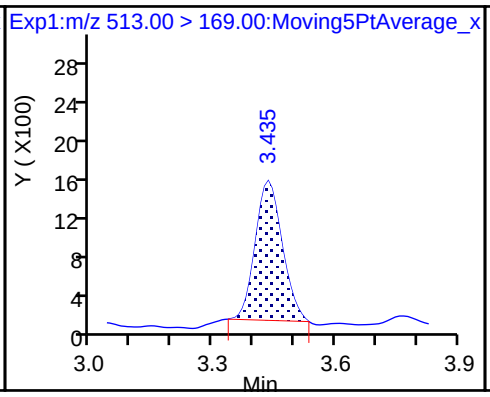
D 23 13C2 PFDA



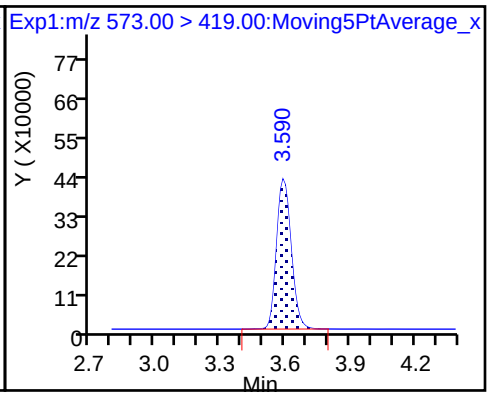
24 Perfluorodecanoic acid



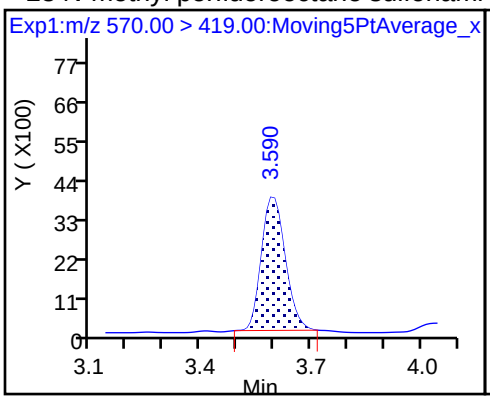
24 Perfluorodecanoic acid



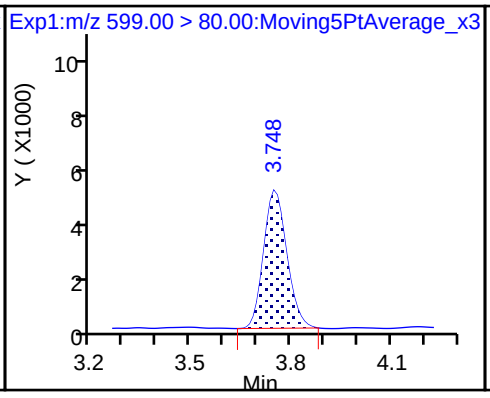
D 27 d3-NMeFOSAA



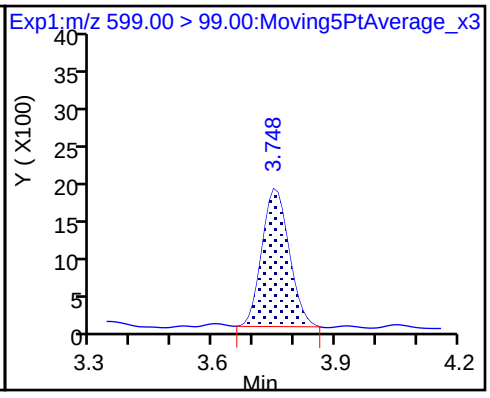
28 N-methyl perfluorooctane sulfonami



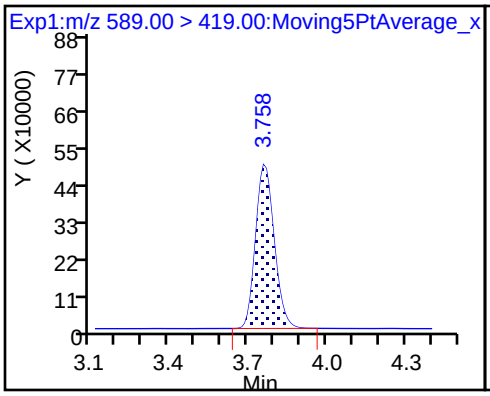
29 Perfluorodecane Sulfonic acid



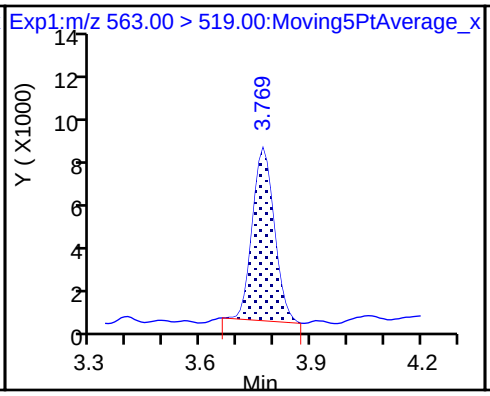
29 Perfluorodecane Sulfonic acid



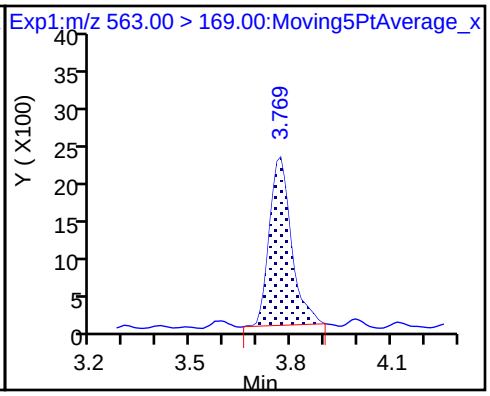
D 32 d5-NEtFOSAA



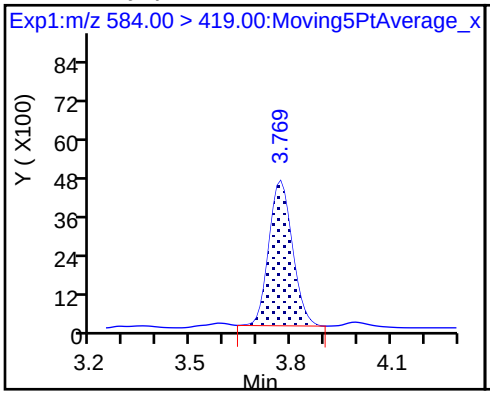
31 Perfluoroundecanoic acid



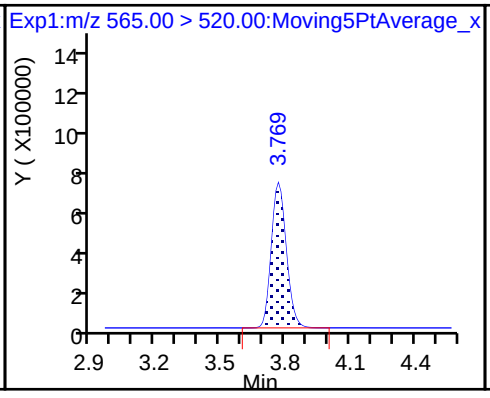
31 Perfluoroundecanoic acid



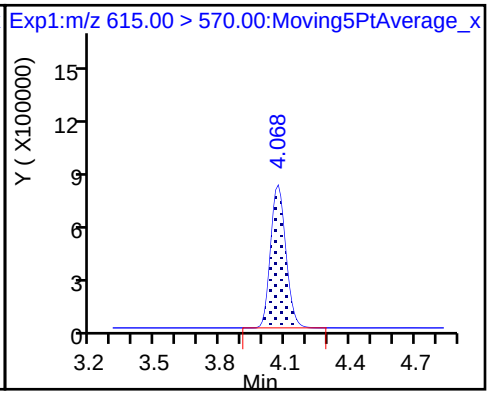
33 N-ethyl perfluorooctane sulfonamid



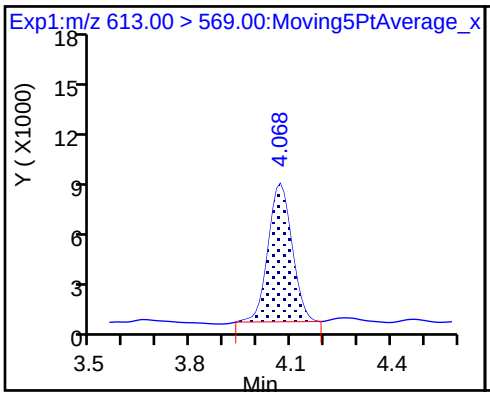
D 30 13C2 PFUnA



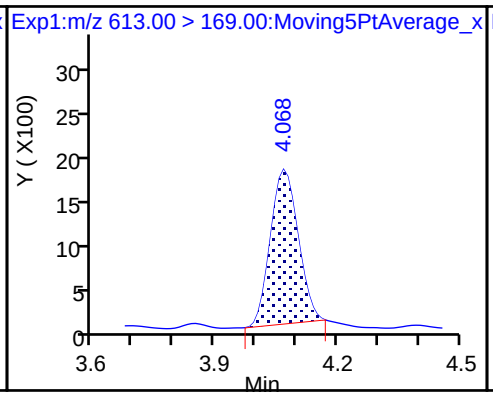
D 36 13C2 PFDoA



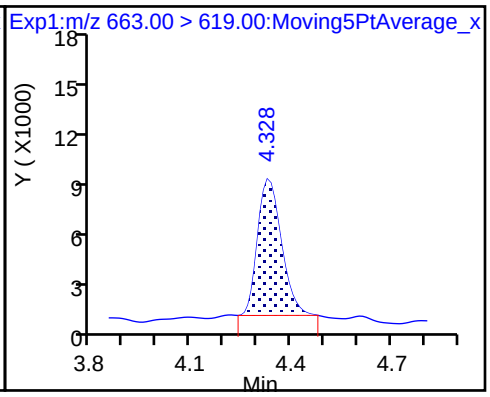
37 Perfluorododecanoic acid



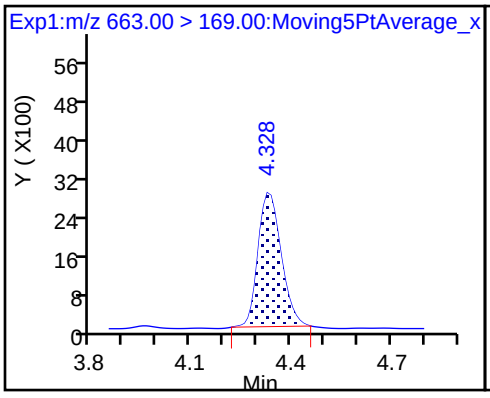
37 Perfluorododecanoic acid



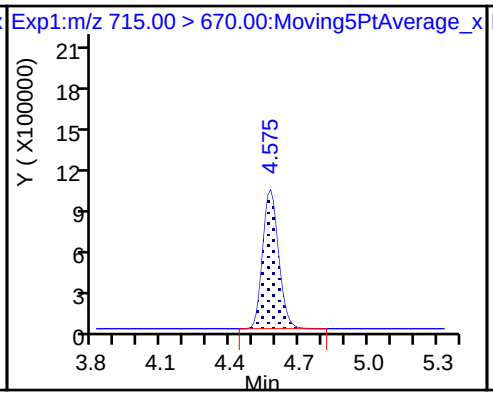
41 Perfluorotridecanoic acid



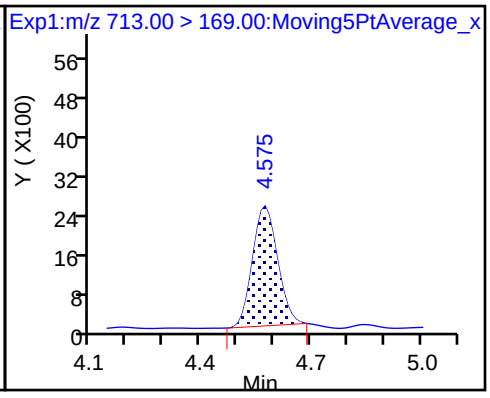
41 Perfluorotridecanoic acid



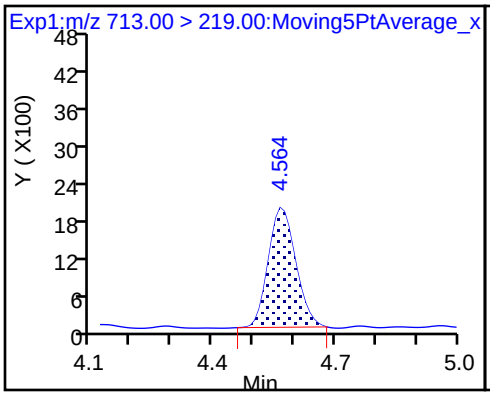
D 43 13C2-PFTeDA



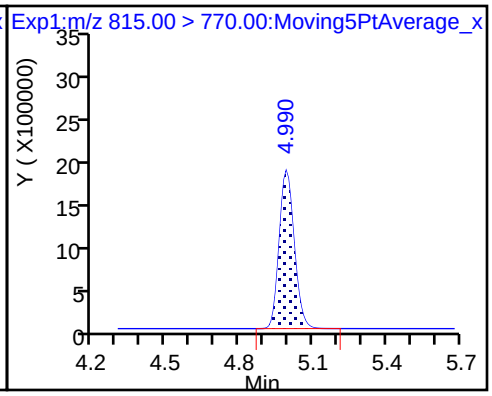
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

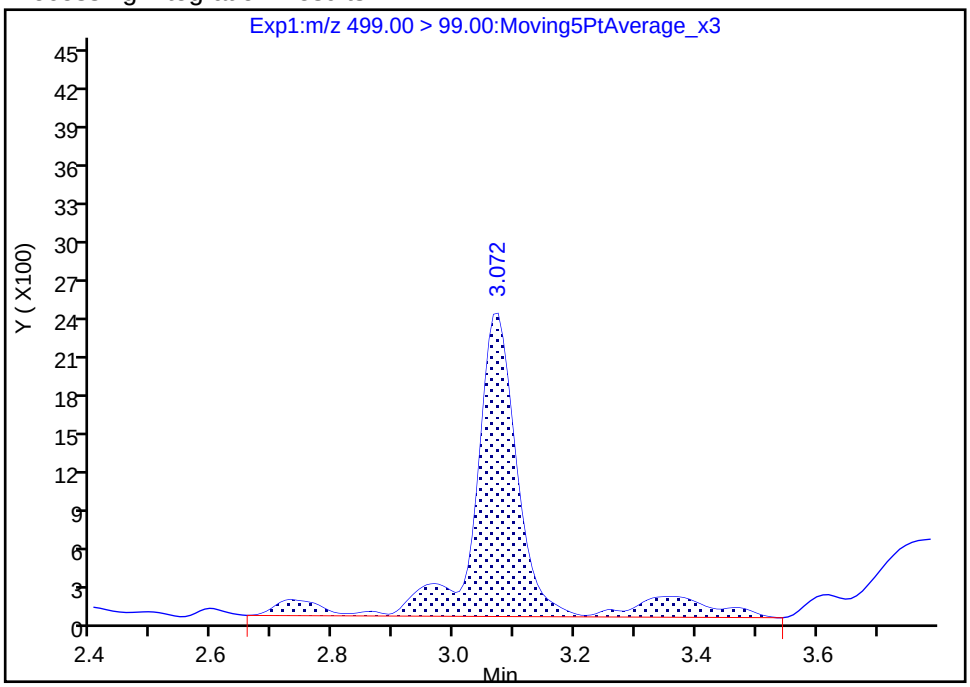
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_002.d
Injection Date: 21-Mar-2018 18:24:14 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

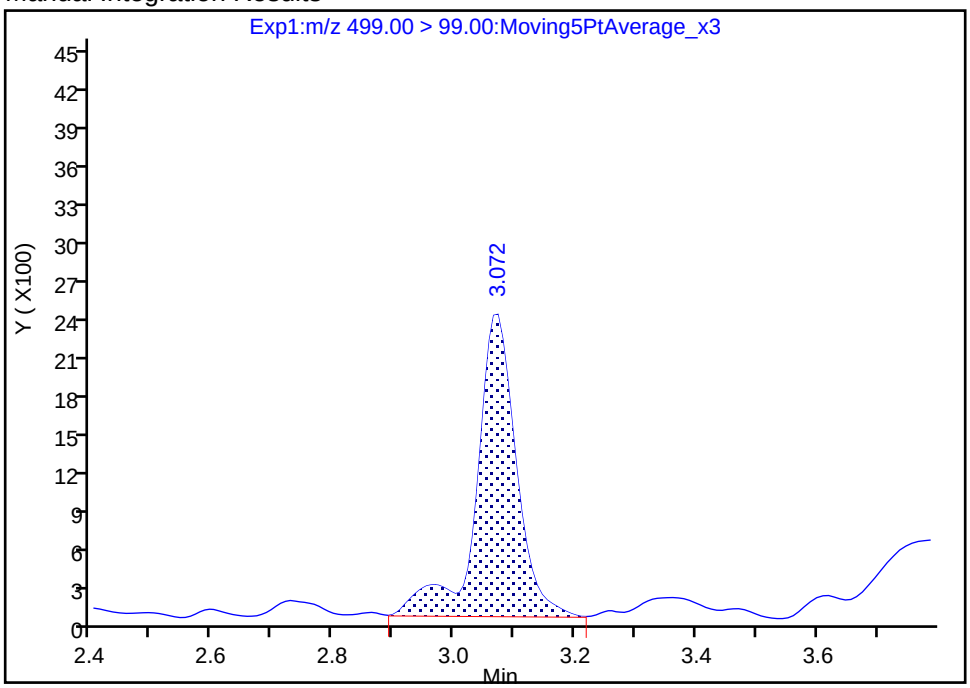
Processing Integration Results

RT: 3.07
Area: 13417
Amount: 0.025454
Amount Units: ng/ml



Manual Integration Results

RT: 3.07
Area: 11047
Amount: 0.024551
Amount Units: ng/ml



Reviewer: phomsophat, 21-Mar-2018 19:22:35
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_003.d
Lims ID: IC L2 Full
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 21-Mar-2018 18:32:06 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:42:24 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 21-Mar-2018 19:01:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.453	1.447	0.006	0.538	6712910	2.48		99.4	74780	
2 Perfluorobutyric acid										
212.90 > 169.00	1.453	1.449	0.004	1.000	131334	0.0519		104	51.1	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.718	1.710	0.008	1.000	99242	0.0493		98.6	52.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.718	1.710	0.008	0.636	4463093	2.49		99.6	170407	
D 47 13C3-PFBS										
301.90 > 83.00	1.745	1.743	0.002	0.646	95045	2.32		99.9	742	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.754	1.745	0.009	1.005	142407	0.0448		101	854	
298.90 > 99.00	1.754	1.745	0.009	1.005	60865		2.34(1.25-3.74)	101	355	
D 60 M2-4:2FTS										
329.00 > 81.00	1.966	1.959	0.007	0.728	697680	NC			9203	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.966	1.962	0.004	1.000	30869	0.0467		100	1890	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.009	1.998	0.011	1.000	109004	0.0514		103	280	
313.00 > 119.00	1.998	1.998	0.0	0.995	10400		10.48(5.03-15.10)	103	241	
D 7 13C2 PFHxA										
315.00 > 270.00	2.009	1.998	0.011	0.743	5181558	2.61		105	132505	
D 9 13C4-PFHpA										
367.00 > 322.00	2.341	2.333	0.008	0.866	4767222	2.44		97.5	90402	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.335	0.006	1.000	104181	0.0528		106	196	
363.00 > 169.00	2.341	2.335	0.006	1.000	41833		2.49(1.13-3.40)	106	451	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.354	2.346	0.008	1.000	131804	0.0476		105	1325	
399.00 > 99.00	2.354	2.346	0.008	1.000	47613		2.77(1.50-4.49)	105	223	
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.348	0.006	0.871	5886251	2.44		103	63857	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.679	2.672	0.007	1.000	37735	0.0514		108	2241	
D 12 M2-6:2FTS										
429.00 > 81.00	2.679	2.672	0.007	0.991	999800	2.47		104	23113	
* 62 13C2-PFOA										
415.00 > 370.00	2.702	2.695	0.007		5334725	2.50			83817	
D 14 13C4 PFOA										
417.00 > 372.00	2.702	2.695	0.007	1.000	5069957	2.53		101	74355	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.702	2.697	0.005	1.000	127108	0.0555		111	40.5	
413.00 > 169.00	2.702	2.697	0.005	1.000	59408		2.14(0.84-2.52)	111	145	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.710	2.703	0.007	1.000	109652	0.0481		101	2629	
449.00 > 99.00	2.710	2.703	0.007	1.000	29467		3.72(1.94-5.82)	101	328	
D 18 13C4 PFOS										
503.00 > 80.00	3.072	3.068	0.004	1.137	4256604	2.43		101	42340	
D 19 13C5 PFNA										
468.00 > 423.00	3.072	3.070	0.002	1.137	4474026	2.54		101	84326	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.072	3.070	0.002	1.000	89694	0.0452		97.4	274	
499.00 > 99.00	3.072	3.070	0.002	1.000	22534		3.98(2.31-6.93)	97.4	162	
20 Perfluorononanoic acid										
463.00 > 419.00	3.080	3.072	0.008	1.003	87380	0.0489		97.9	102	
463.00 > 169.00	3.080	3.072	0.008	1.003	21332		4.10(1.90-5.69)	97.9	528	
D 21 13C8 FOSA										
506.00 > 78.00	3.397	3.396	0.001	1.257	5839734	2.47		98.7	42573	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.397	3.397	0.0	1.000	112857	0.0490		98.0	1944	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.433	3.426	0.007	1.000	31966	0.0429		89.5	895	
D 26 M2-8:2FTS										
529.00 > 81.00	3.433	3.426	0.007	1.270	1399775	2.56		107	26042	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.442	3.435	0.007	1.000	71937	0.0449		89.8	349	
513.00 > 169.00	3.442	3.435	0.007	1.000	15536		4.63(2.36-7.09)	89.8	510	
D 23 13C2 PFDA										
515.00 > 470.00	3.442	3.435	0.007	1.274	4053733	2.62		105	70301	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.599	3.591	0.008	1.332	1933236	2.38		95.0	40929	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.599	3.594	0.005	1.000	35274	0.0456		91.2	272	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.758	3.749	0.009	1.000	57466	0.0475		98.4	1493	
599.00 > 99.00	3.758	3.749	0.009	1.000	18714		3.07(1.39-4.16)	98.4	448	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.768	3.759	0.009	1.394	2436559	2.63		105	12783	
D 30 13C2 PFUnA										
565.00 > 520.00	3.768	3.768	0.0	1.394	3500228	2.53		101	72445	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.768	3.768	0.0	1.000	42131	0.0463		92.5	1086	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.768	3.768	0.0	1.000	62776	0.0520		104	262	
563.00 > 169.00	3.768	3.768	0.0	1.000	16020		3.92(2.12-6.36)	104	775	
D 36 13C2 PFDoA										
615.00 > 570.00	4.073	4.066	0.007	1.507	3780852	2.41		96.4	28974	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.073	4.068	0.005	1.000	83165	0.0526		105	73.8	
613.00 > 169.00	4.073	4.068	0.005	1.000	18963		4.39(2.13-6.40)	105	336	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.335	4.329	0.006	1.000	81708	0.0491		98.2	55.2	
663.00 > 169.00	4.335	4.329	0.006	1.000	28392		2.88(1.25-3.76)	98.2	490	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.571	4.568	0.002	1.691	4389855	2.29		91.6	28506	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.581	4.571	0.010	1.002	22776	0.0523		105	394	
713.00 > 219.00	4.571	4.571	-0.001	1.000	16546		1.38(0.71-2.13)	105	443	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.995	4.987	0.008	1.848	6843963	2.18		87.1	16591	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.995	4.989	0.006	1.000	185745	NC			64.9	
813.00 > 169.00	4.995	4.989	0.006	1.000	27597		6.73(2.86-8.58)		326	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.361	5.354	0.007	1.000	129317	NC			50.9	
913.00 > 169.00	5.361	5.354	0.007	1.000	15542		8.32(3.83-11.48)		221	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL2_00004 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:42:27 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_003.d

Injection Date: 21-Mar-2018 18:32:06 Instrument ID: A8_N

Lims ID: IC L2 Full

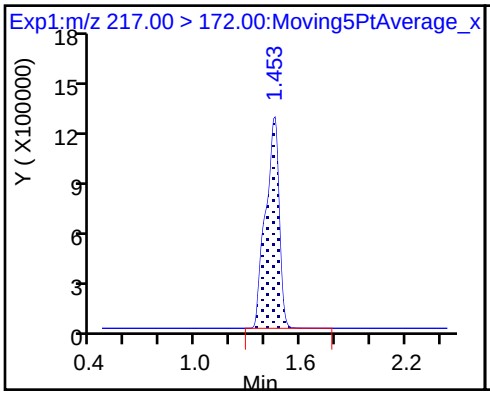
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3

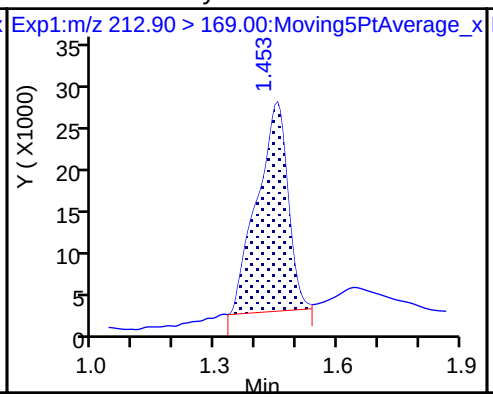
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

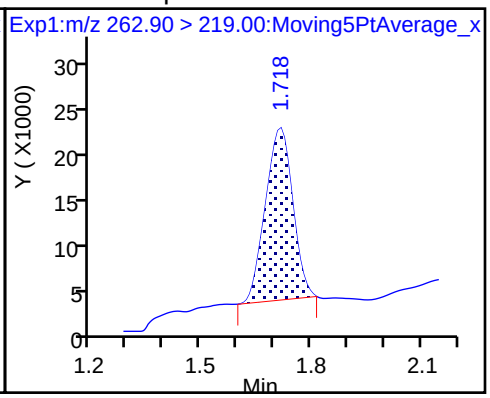
D 1 13C4 PFBA



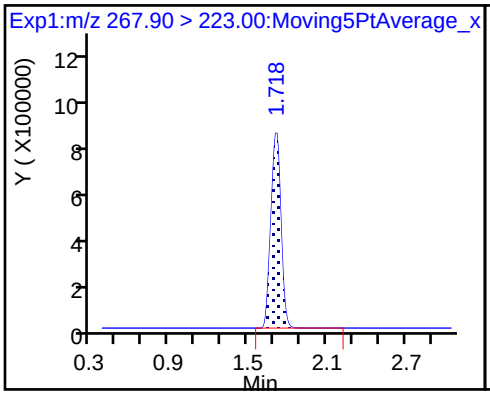
2 Perfluorobutyric acid



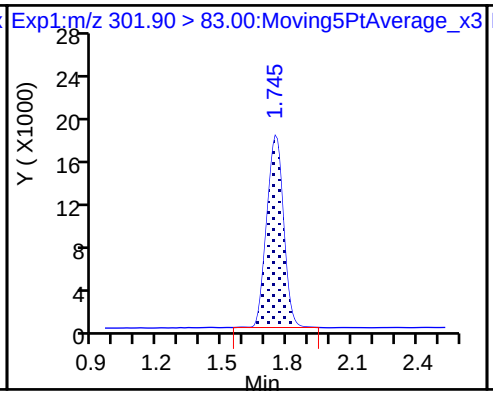
4 Perfluoropentanoic acid



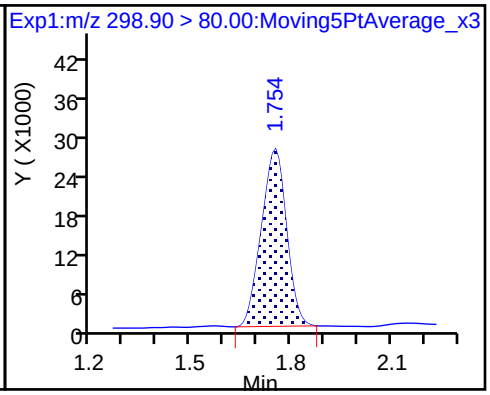
D 3 13C5-PFPeA



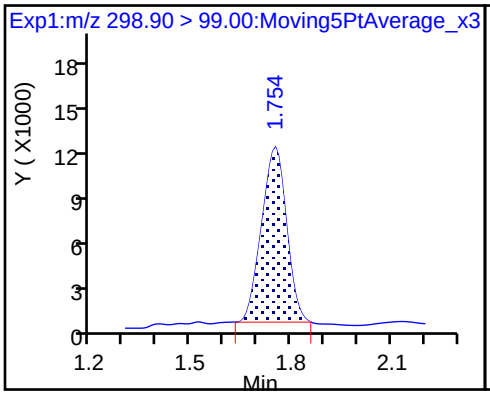
D 47 13C3-PFBS



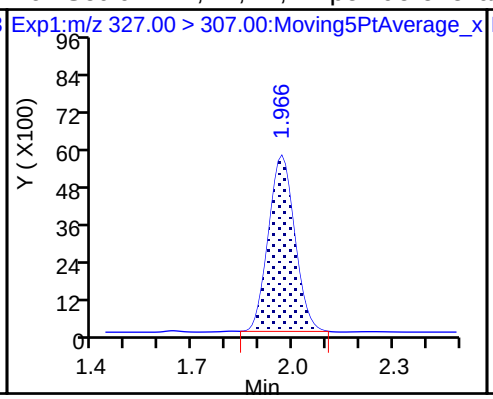
5 Perfluorobutanesulfonic acid



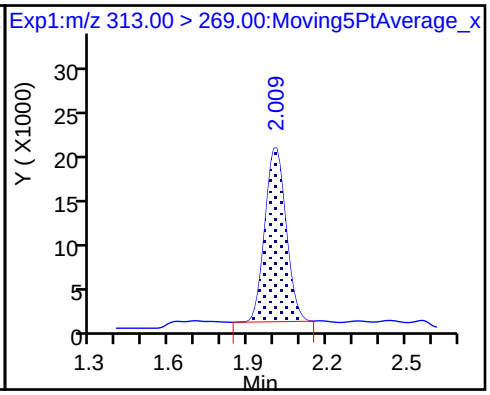
5 Perfluorobutanesulfonic acid



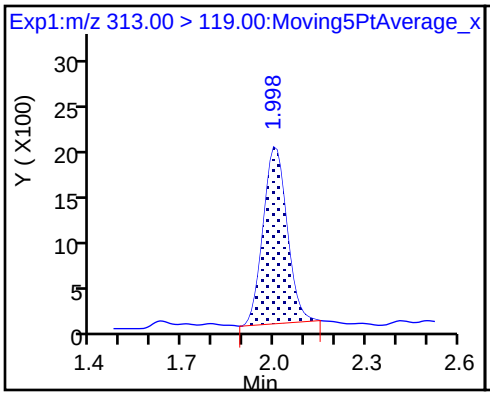
61 Sodium 1H,1H,2H,2H-perfluorohexane



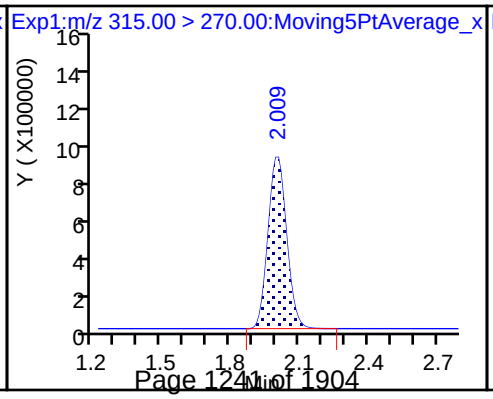
6 Perfluorohexanoic acid



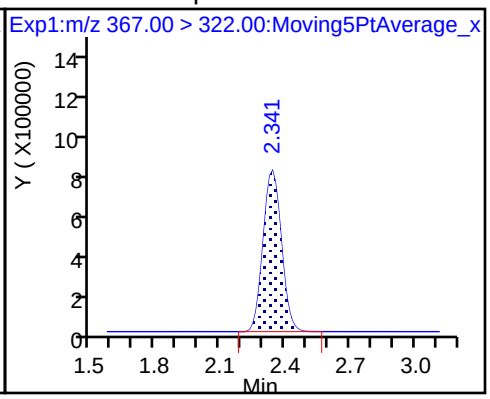
6 Perfluorohexanoic acid



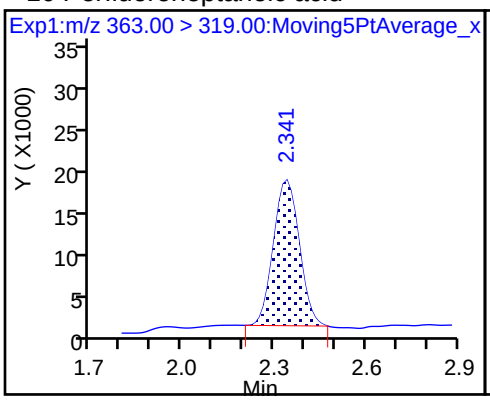
D 7 13C2 PFHxA



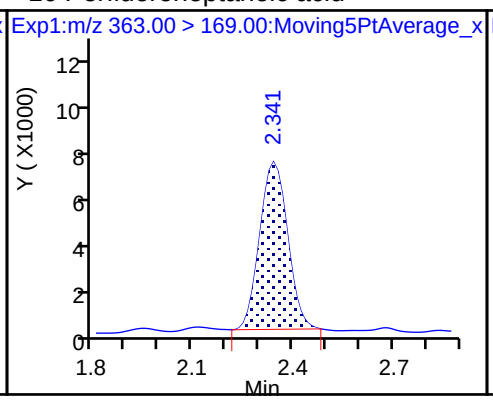
D 9 13C4-PFHpA



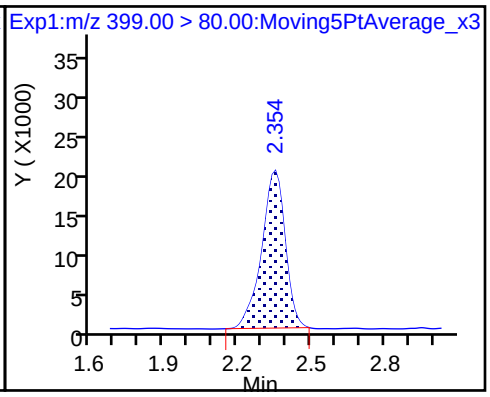
10 Perfluoroheptanoic acid



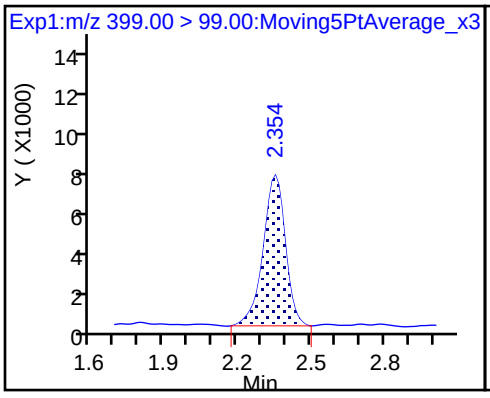
10 Perfluoroheptanoic acid



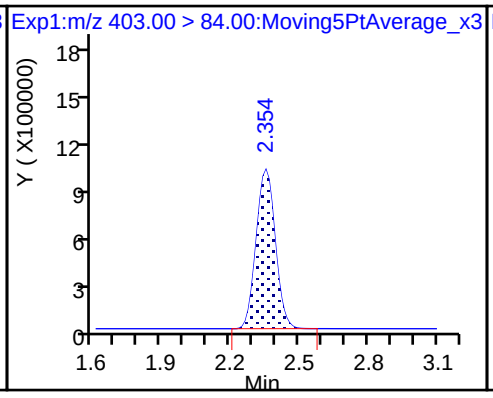
8 Perfluorohexanesulfonic acid



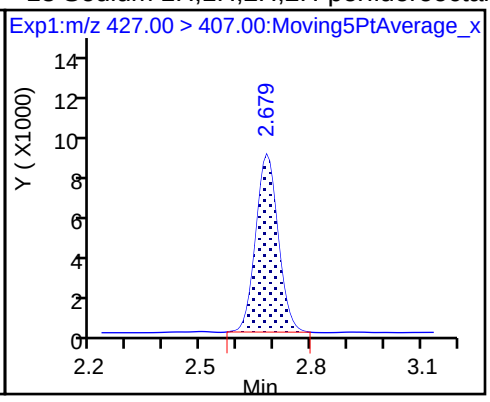
8 Perfluorohexanesulfonic acid



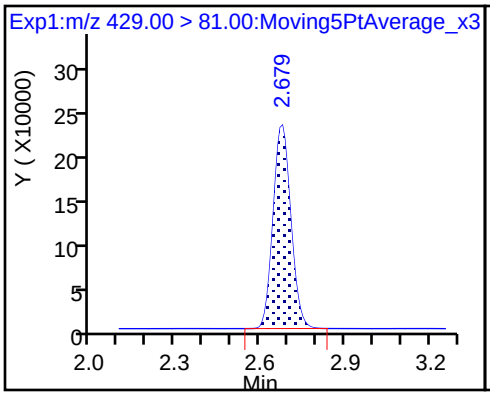
D 11 18O2 PFHxS



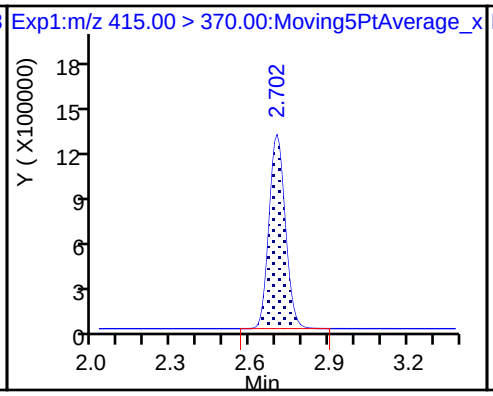
13 Sodium 1H,1H,2H,2H-perfluorooctane



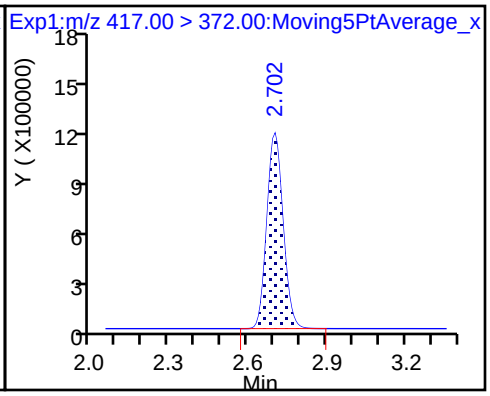
D 12 M2-6:2FTS



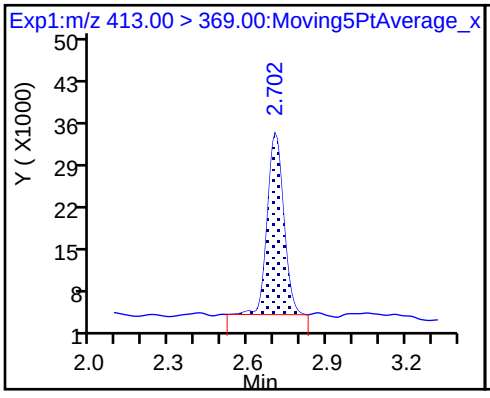
* 62 13C2-PFOA



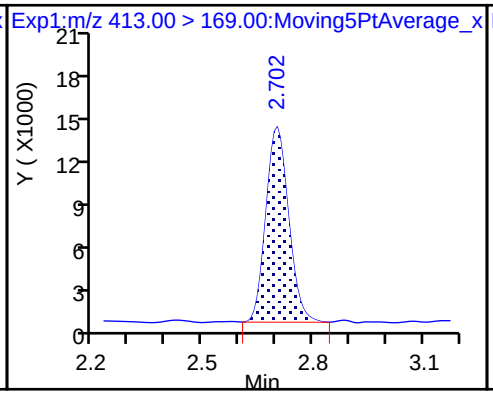
D 14 13C4 PFOA



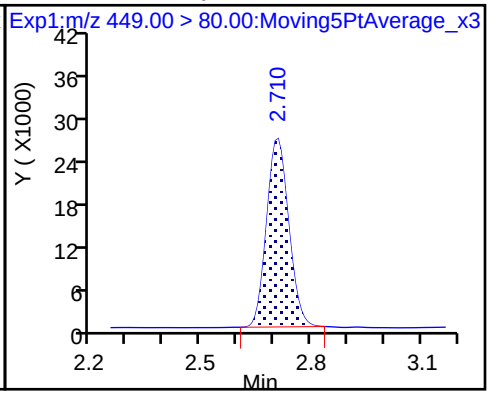
15 Perfluorooctanoic acid



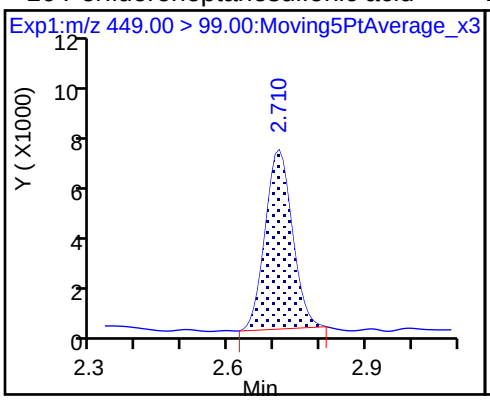
15 Perfluorooctanoic acid



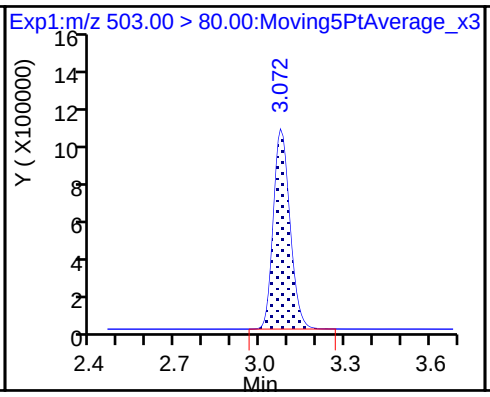
16 Perfluoroheptanesulfonic acid



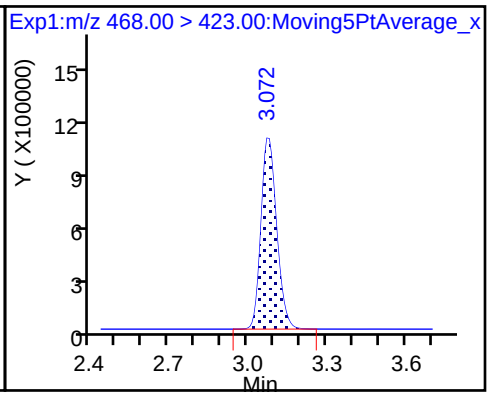
16 Perfluoroheptanesulfonic acid



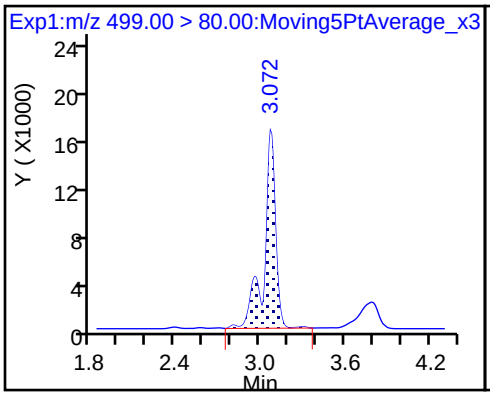
D 18 13C4 PFOS



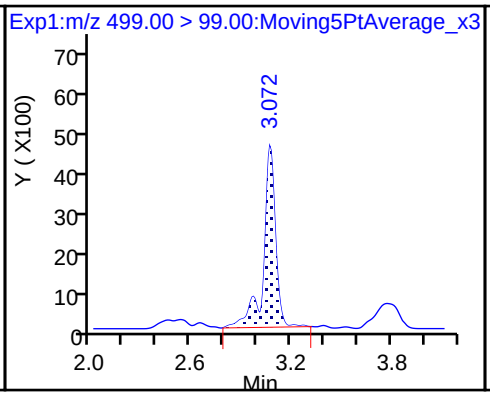
D 19 13C5 PFNA



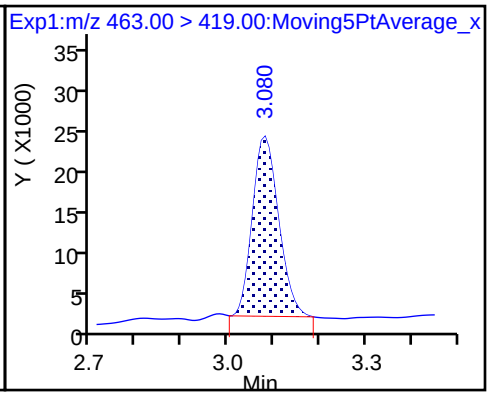
17 Perfluorooctane sulfonic acid



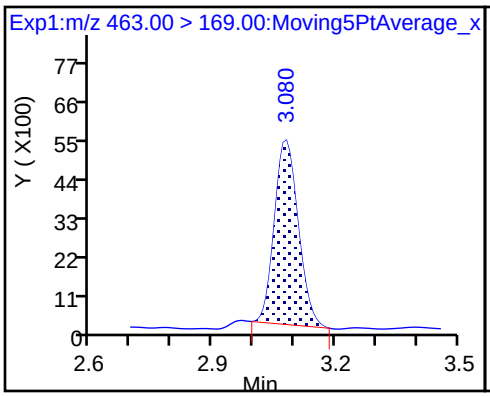
17 Perfluorooctane sulfonic acid



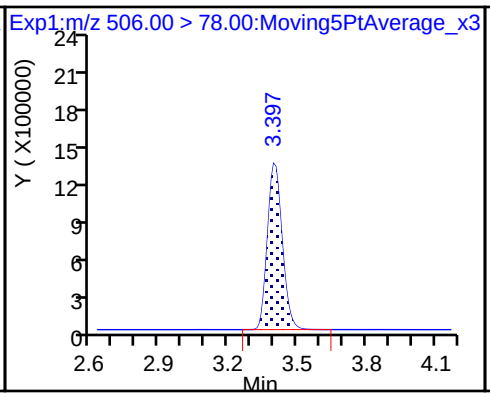
20 Perfluorononanoic acid



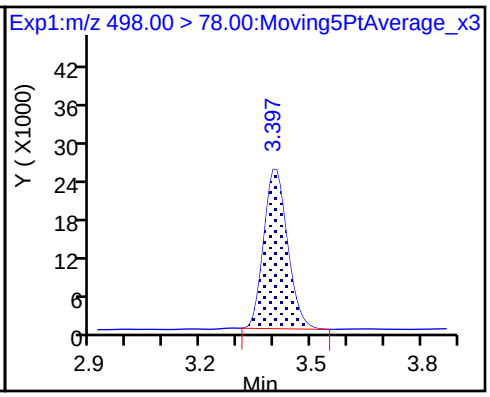
20 Perfluorononanoic acid



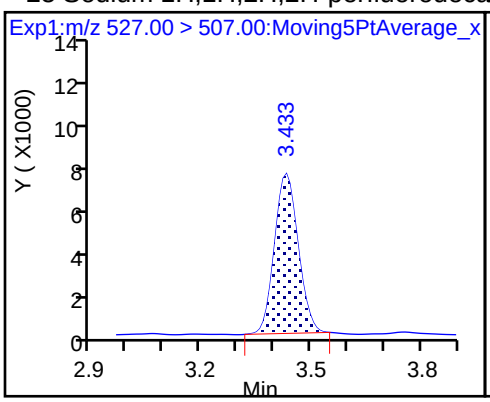
D 21 13C8 FOSA



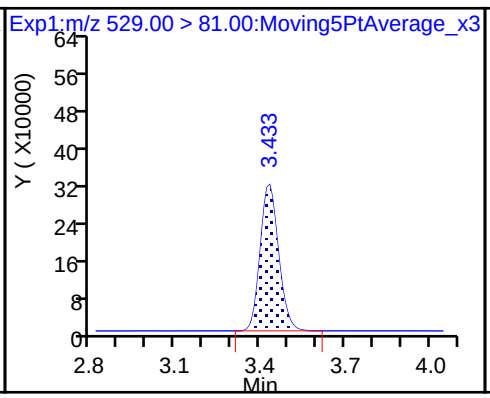
22 Perfluorooctane Sulfonamide



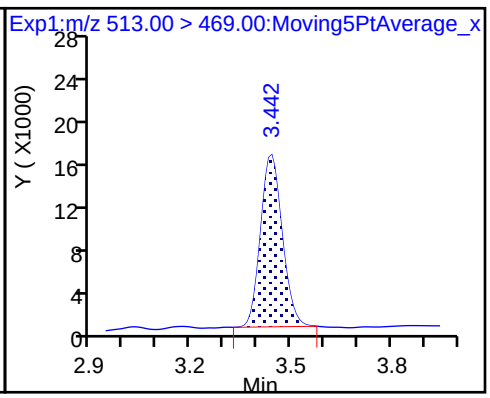
25 Sodium 1H,1H,2H,2H-perfluorodecane



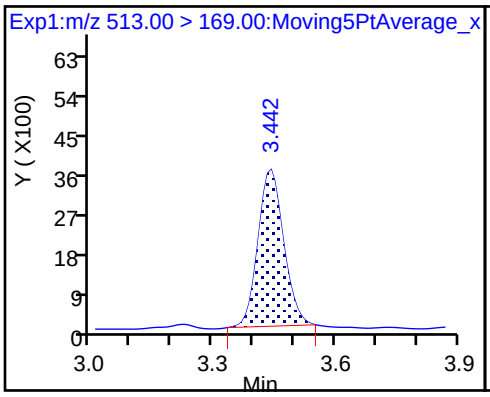
D 26 M2-8:2FTS



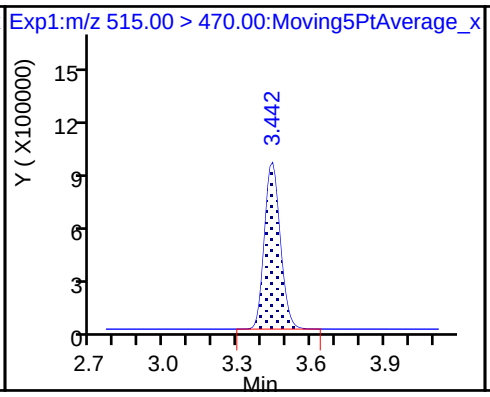
24 Perfluorodecanoic acid



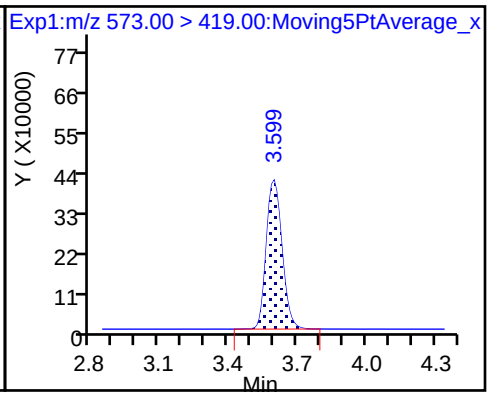
24 Perfluorodecanoic acid



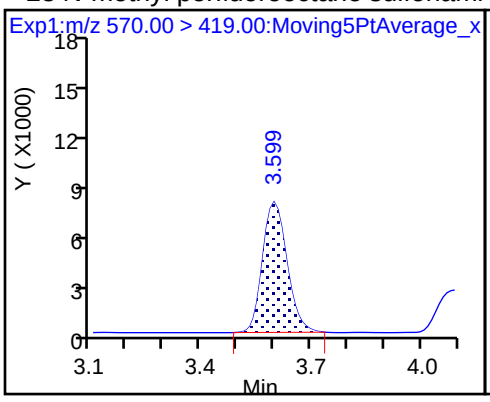
D 23 13C2 PFDA



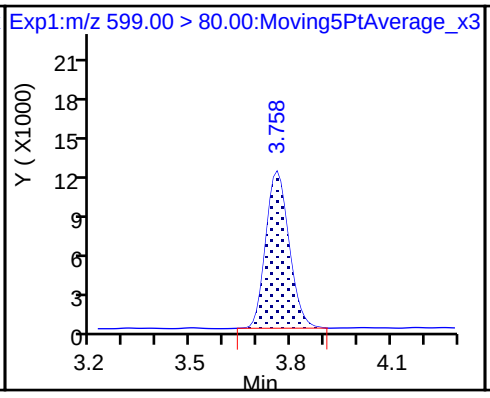
D 27 d3-NMeFOSAA



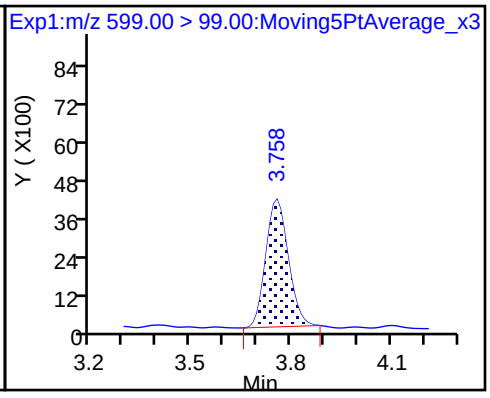
28 N-methyl perfluorooctane sulfonami



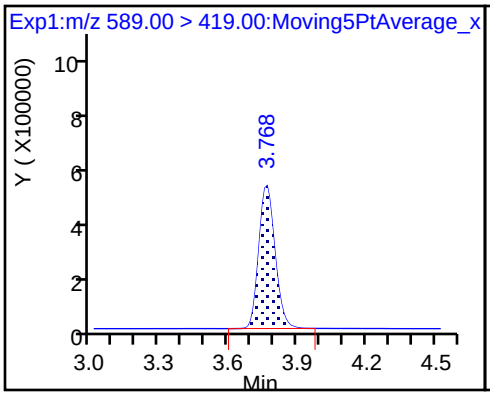
29 Perfluorodecane Sulfonic acid



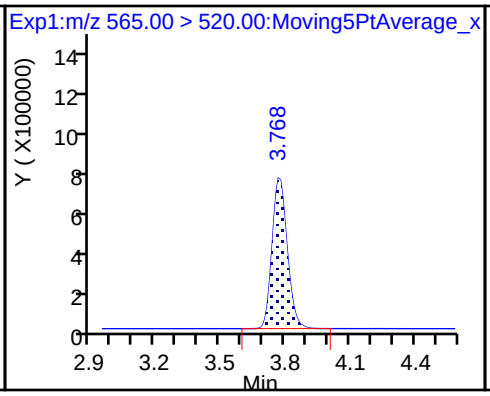
29 Perfluorodecane Sulfonic acid



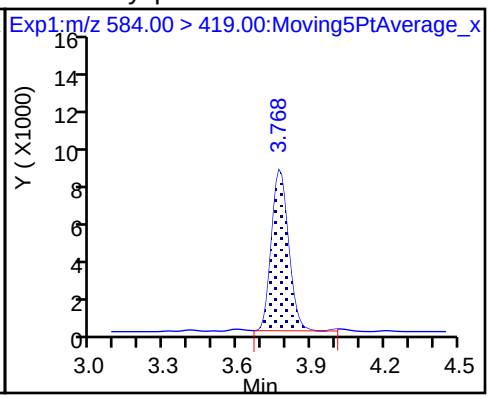
D 32 d5-NEtFOSAA



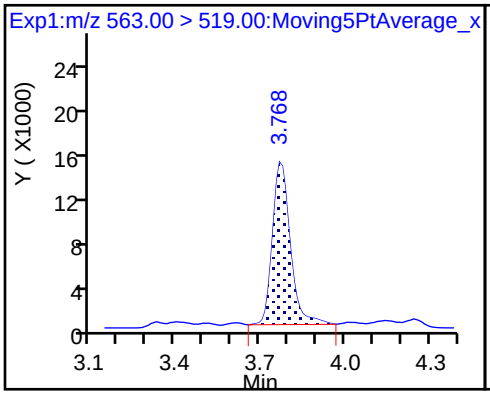
D 30 13C2 PFUnA



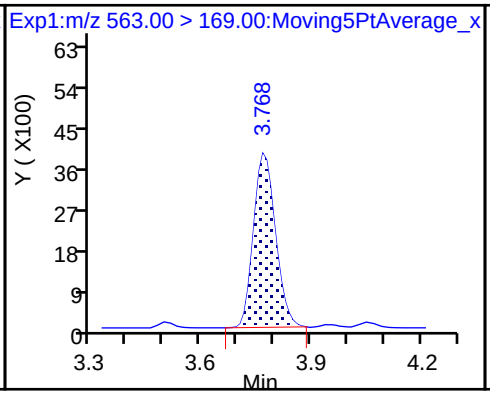
33 N-ethyl perfluorooctane sulfonamid



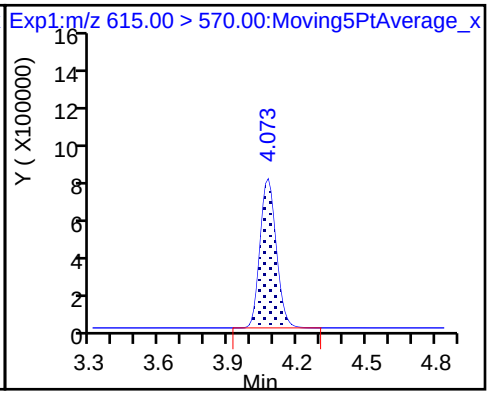
31 Perfluoroundecanoic acid



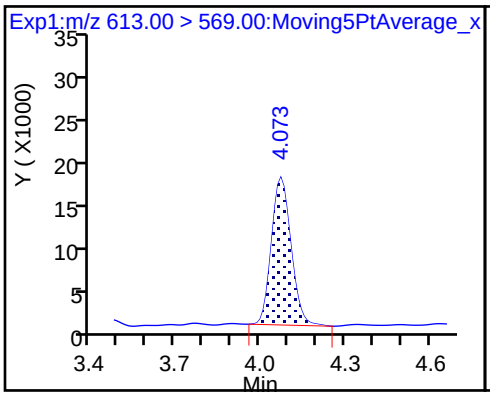
31 Perfluoroundecanoic acid



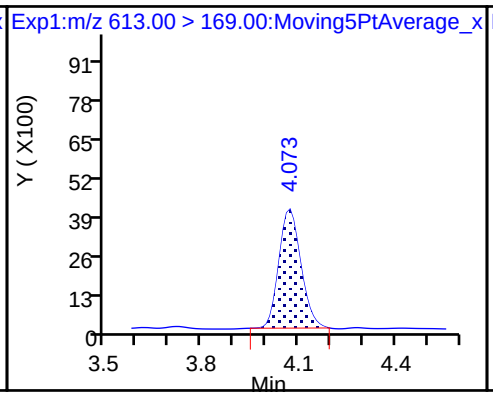
D 36 13C2 PFDoA



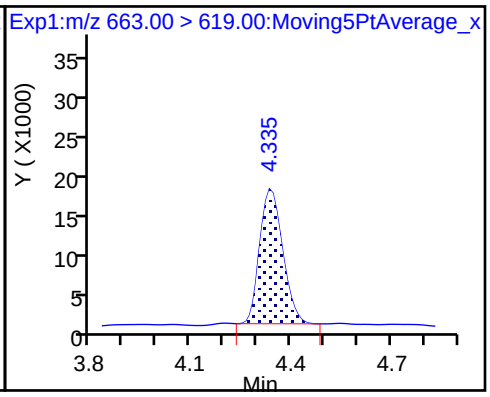
37 Perfluorododecanoic acid



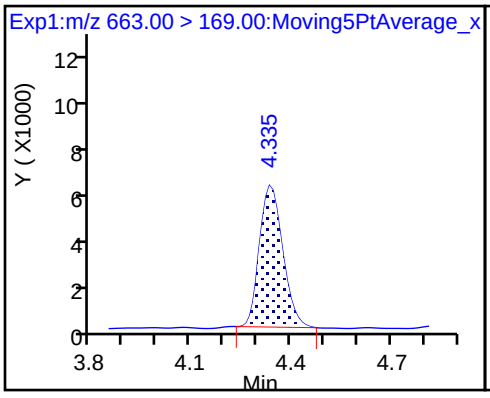
37 Perfluorododecanoic acid



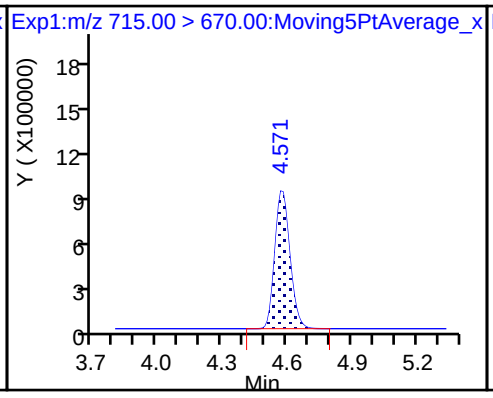
41 Perfluorotridecanoic acid



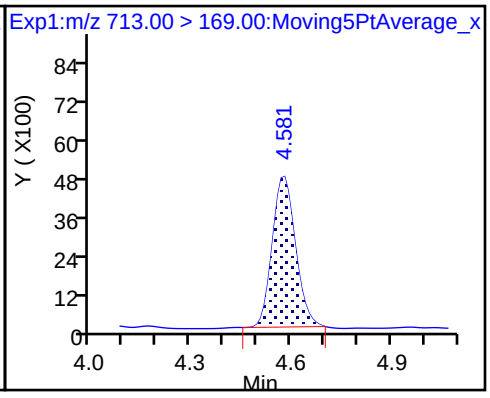
41 Perfluorotridecanoic acid



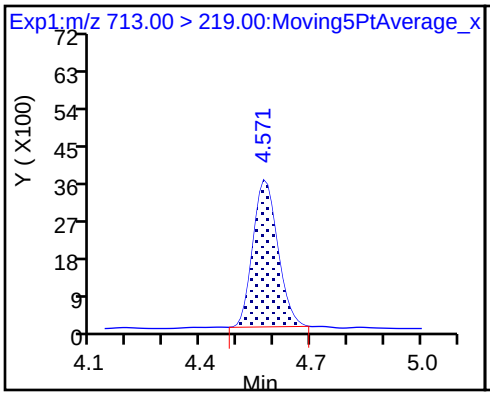
D 43 13C2-PFTeDA



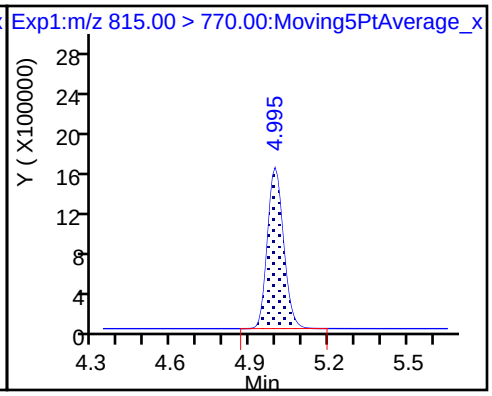
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_004.d
Lims ID: IC L3 Full
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 21-Mar-2018 18:39:58 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:42:31 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 21-Mar-2018 19:23:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.447	1.447	0.0	0.536	6702182	2.53		101	75015	
2 Perfluorobutyric acid										
212.90 > 169.00	1.447	1.449	-0.002	1.000	612393	0.2424		97.0	243	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.710	-0.001	0.634	4509425	2.56		102	109848	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.710	-0.001	1.000	514727	0.2531		101	294	
D 47 13C3-PFBS										
301.90 > 83.00	1.745	1.743	0.002	0.647	96305	2.40		103	583	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.745	1.745	0.0	1.000	700112	0.2175		98.4	3860	
298.90 > 99.00	1.745	1.745	0.0	1.000	305236		2.29(1.25-3.74)	98.4	1868	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.959	-0.003	0.725	671337	NC			8849	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.966	1.962	0.004	1.000	157752	0.2358		101	9759	
D 7 13C2 PFHxA										
315.00 > 270.00	1.998	1.998	0.0	0.741	4935175	2.53		101	100521	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.998	1.998	0.0	1.000	497709	0.2466		98.6	1488	
313.00 > 119.00	1.998	1.998	0.0	1.000	45082		11.04(5.03-15.10)	98.6	905	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.333	-0.005	0.863	5071076	2.64		106	96377	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.335	-0.007	1.000	497784	0.2372		94.9	1108	
363.00 > 169.00	2.328	2.335	-0.007	1.000	196215		2.54(1.13-3.40)	94.9	2375	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.346	-0.005	1.000	586824	0.2123		93.3	5073	
399.00 > 99.00	2.341	2.346	-0.005	1.000	193855		3.03(1.50-4.49)	93.3	806	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.868	5874354	2.48		105	67207	
D 12 M2-6:2FTS										
429.00 > 81.00	2.673	2.672	0.001	0.991	956838	2.40		101	20351	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.673	2.672	0.001	1.000	166250	0.2367		99.9	7823	
D 14 13C4 PFOA										
417.00 > 372.00	2.697	2.695	0.002	1.000	5033130	2.56		102	66085	
* 62 13C2-PFOA										
415.00 > 370.00	2.697	2.695	0.002		5240249	2.50			72893	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.697	2.697	0.0	1.000	551855	0.2426		97.1	186	
413.00 > 169.00	2.697	2.697	0.0	1.000	289099		1.91(0.84-2.52)	97.1	792	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.705	2.703	0.002	1.000	539007	0.2372		99.7	10606	
449.00 > 99.00	2.705	2.703	0.002	1.000	146271		3.68(1.94-5.82)	99.7	2312	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.068	-0.003	1.137	4237867	2.46		103	39217	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.072	3.070	0.002	1.002	451427	0.2285		98.5	1564	
499.00 > 99.00	3.072	3.070	0.002	1.002	100623		4.49(2.31-6.93)	98.5	894	
D 19 13C5 PFNA										
468.00 > 423.00	3.072	3.070	0.002	1.139	4472333	2.58		103	73916	
20 Perfluorononanoic acid										
463.00 > 419.00	3.072	3.072	0.0	1.000	441188	0.2472		98.9	582	
463.00 > 169.00	3.072	3.072	0.0	1.000	113267		3.90(1.90-5.69)	98.9	1929	
D 21 13C8 FOSA										
506.00 > 78.00	3.399	3.396	0.003	1.260	6203337	2.67		107	61203	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.399	3.397	0.002	1.000	592188	0.2421		96.8	13446	
D 26 M2-8:2FTS										
529.00 > 81.00	3.426	3.426	0.0	1.270	1407067	2.62		109	26205	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.426	3.426	0.0	1.000	176483	0.2354		98.3	7854	
D 23 13C2 PFDA										
515.00 > 470.00	3.435	3.435	0.0	1.274	3933118	2.59		104	68284	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.435	3.435	0.0	1.000	394276	0.2536		101	1808	
513.00 > 169.00	3.435	3.435	0.0	1.000	66021		5.97(2.36-7.09)	101	3009	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.590	3.591	-0.001	1.331	2099631	2.63		105	32210	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.590	3.594	-0.004	1.000	219720	0.2614		105	1753	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.748	3.749	-0.001	1.000	279040	0.2314		96.0	7395	
599.00 > 99.00	3.748	3.749	-0.001	1.000	91540		3.05(1.39-4.16)	96.0	3261	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.758	3.759	-0.001	1.394	2467789	2.71		108	15339	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.769	3.768	0.001	1.000	286311	0.2221		88.9	1276	
563.00 > 169.00	3.769	3.768	0.001	1.000	74133		3.86(2.12-6.36)	88.9	2992	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.769	3.768	0.001	1.003	224858	0.2438		97.5	5777	
D 30 13C2 PFUnA										
565.00 > 520.00	3.769	3.768	0.001	1.397	3737470	2.75		110	87838	
D 36 13C2 PFDoA										
615.00 > 570.00	4.068	4.066	0.002	1.508	3986883	2.59		103	35715	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.068	4.068	0.0	1.000	407079	0.2439		97.6	349	
613.00 > 169.00	4.068	4.068	0.0	1.000	100267		4.06(2.13-6.40)	97.6	2078	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.329	4.329	-0.001	1.000	437729	0.2494		99.7	324	
663.00 > 169.00	4.329	4.329	-0.001	1.000	138849		3.15(1.25-3.76)	99.7	2090	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.564	4.568	-0.004	1.692	4783571	2.54		102	32092	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.575	4.571	0.004	1.002	118401	0.2497		99.9	1652	
713.00 > 219.00	4.564	4.571	-0.007	1.000	85338		1.39(0.71-2.13)	99.9	2012	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.990	4.987	0.003	1.850	8384119	2.72		109	19806	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.990	4.989	0.001	1.000	829775	NC			259	
813.00 > 169.00	4.990	4.989	0.001	1.000	141643		5.86(2.86-8.58)		1896	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.355	5.354	0.001	1.000	760025	NC			259	
913.00 > 169.00	5.355	5.354	0.001	1.000	94500		8.04(3.83-11.48)		1322	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL3_00004 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:42:34 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_004.d

Injection Date: 21-Mar-2018 18:39:58 Instrument ID: A8_N

Lims ID: IC L3 Full

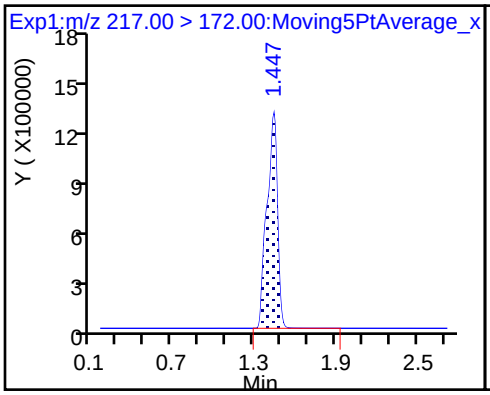
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4

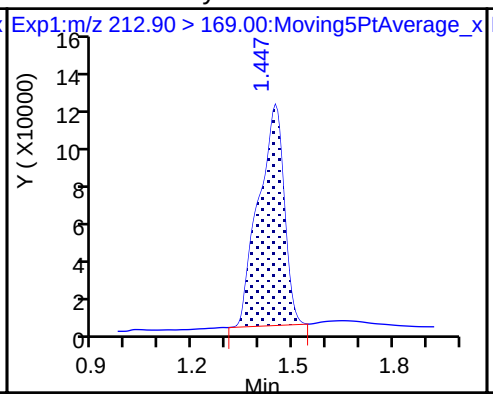
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

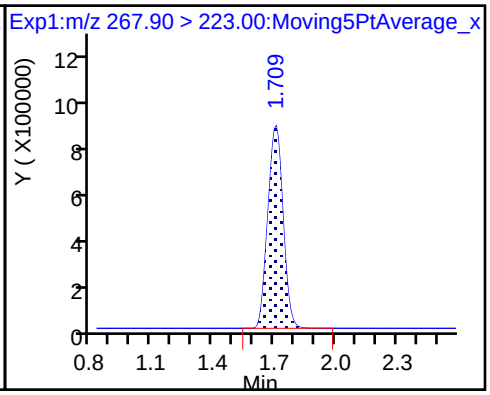
D 1 13C4 PFBA



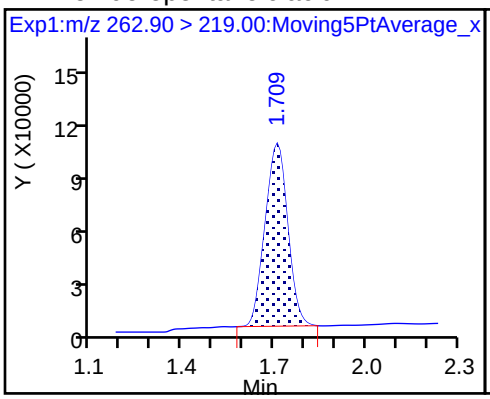
2 Perfluorobutyric acid



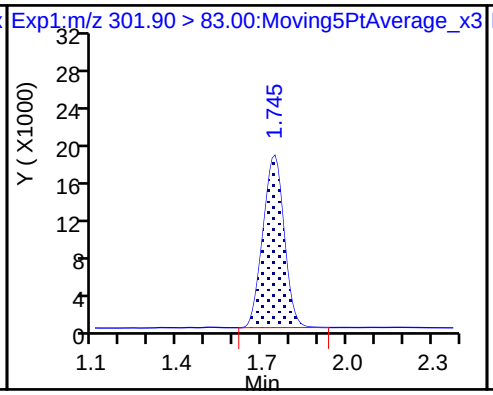
D 3 13C5-PFPeA



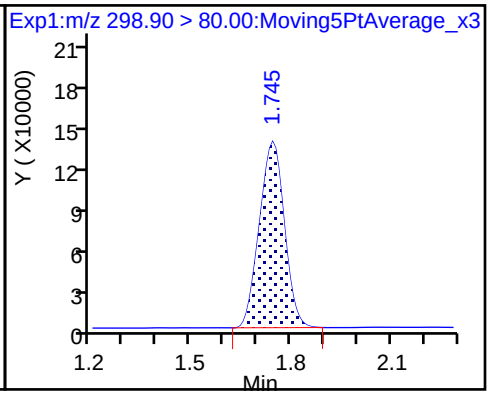
4 Perfluoropentanoic acid



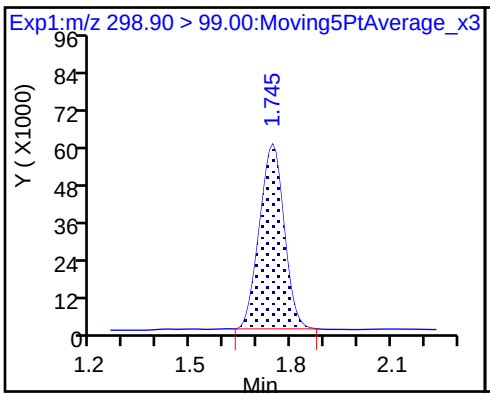
D 47 13C3-PFBS



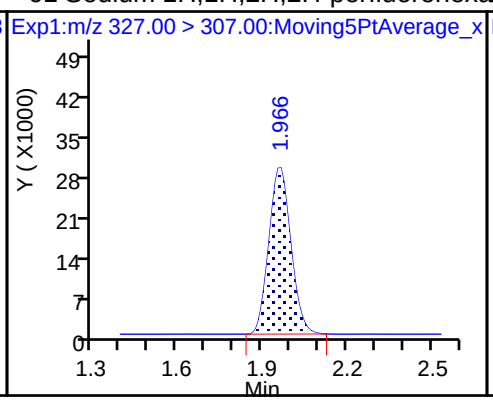
5 Perfluorobutanesulfonic acid



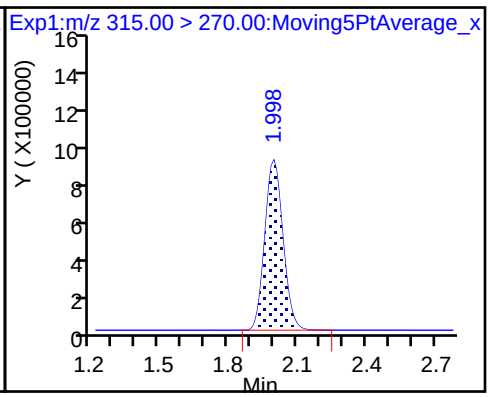
5 Perfluorobutanesulfonic acid



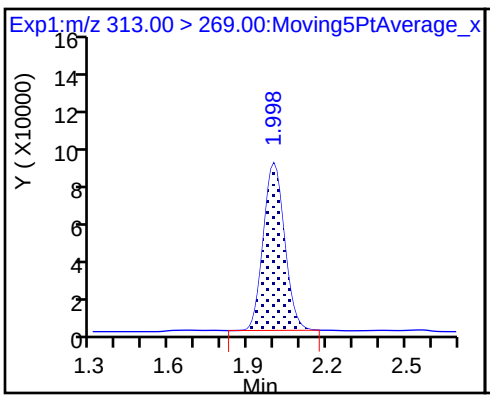
61 Sodium 1H,1H,2H,2H-perfluorohexa



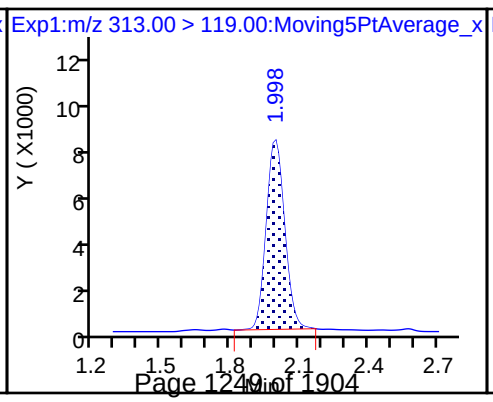
D 7 13C2 PFHxA



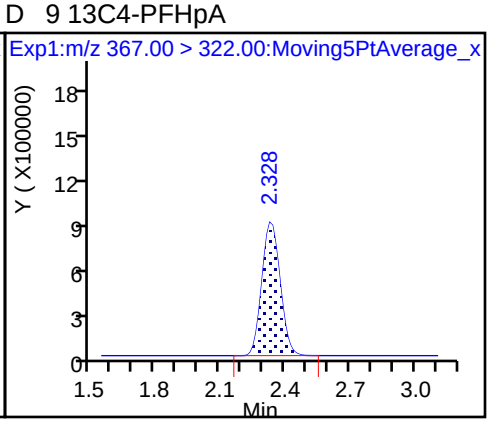
6 Perfluorohexanoic acid



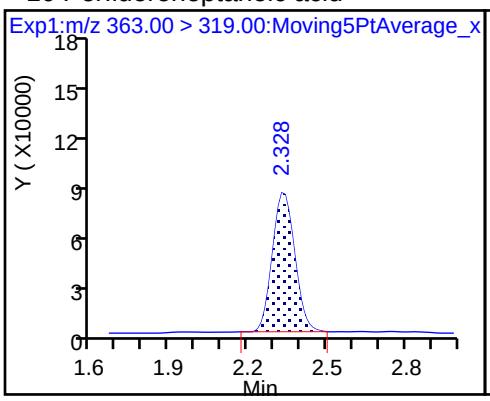
6 Perfluorohexanoic acid



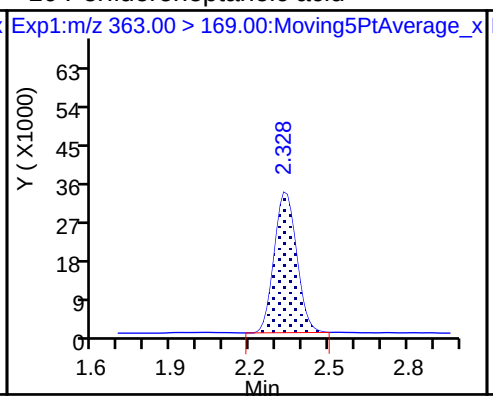
D 9 13C4-PFHpA



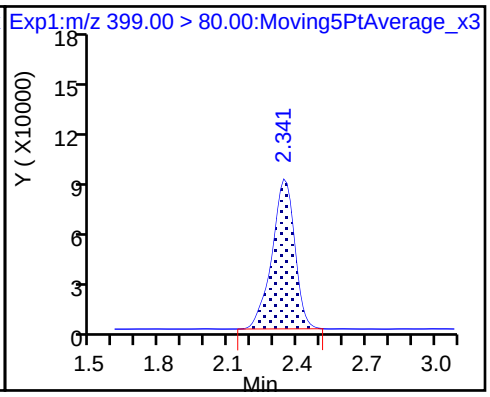
10 Perfluoroheptanoic acid



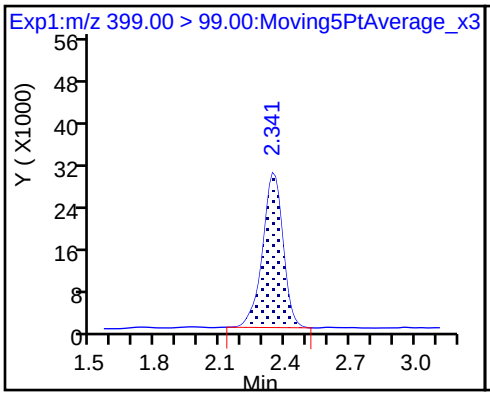
10 Perfluoroheptanoic acid



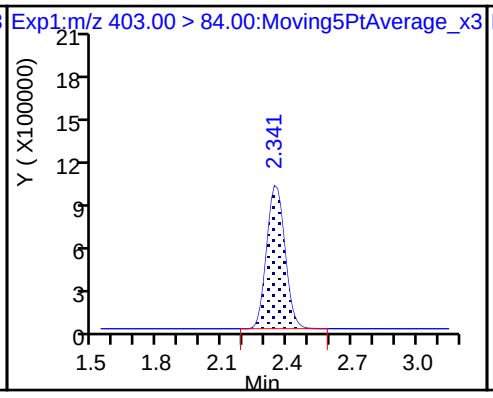
8 Perfluorohexanesulfonic acid



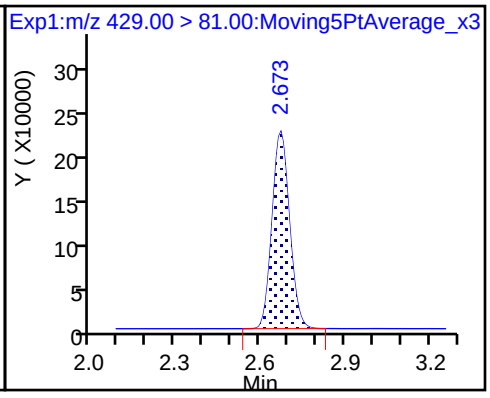
8 Perfluorohexanesulfonic acid



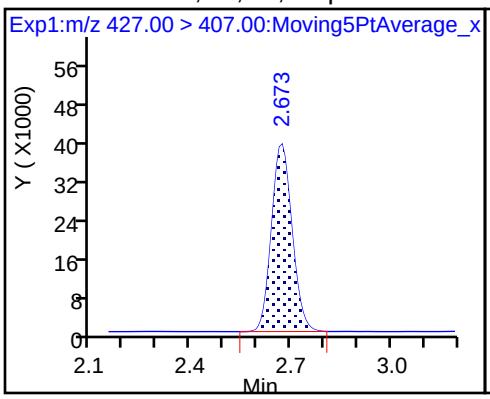
D 11 18O2 PFHxS



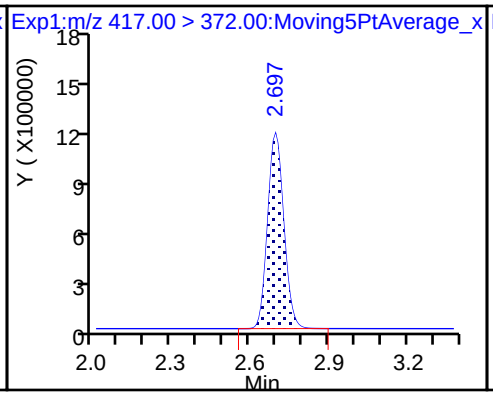
D 12 M2-6:2FTS



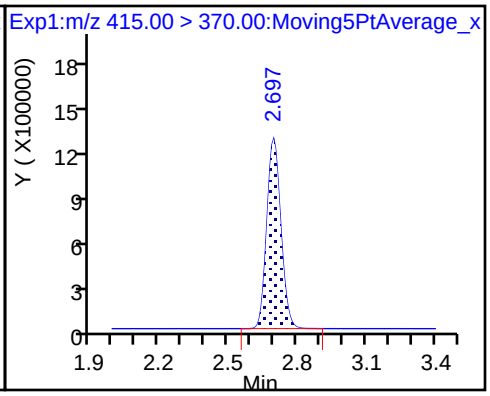
13 Sodium 1H,1H,2H,2H-perfluorooctane



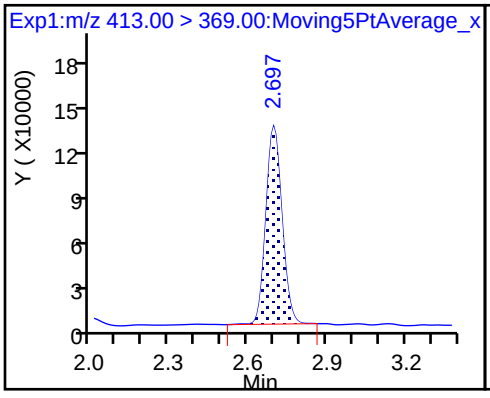
D 14 13C4 PFOA



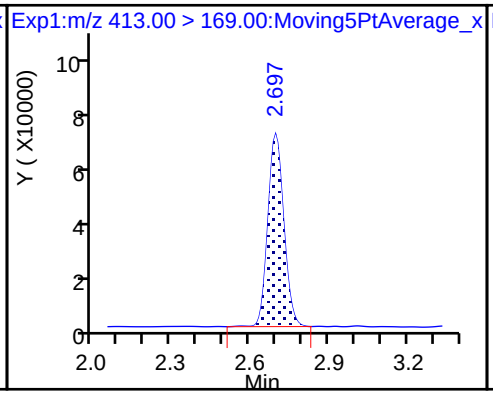
* 62 13C2-PFOA



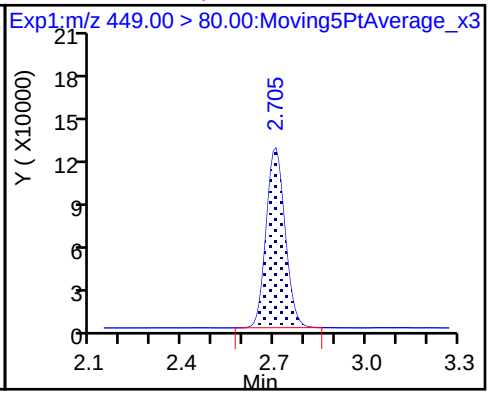
15 Perfluorooctanoic acid



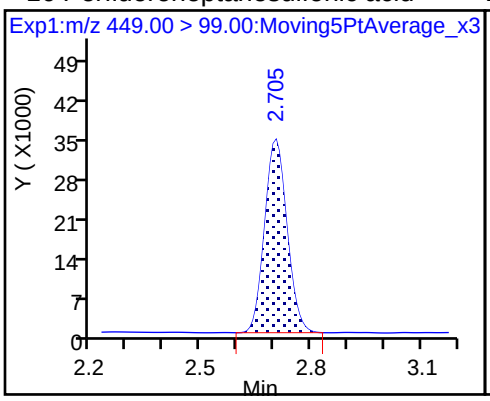
15 Perfluorooctanoic acid



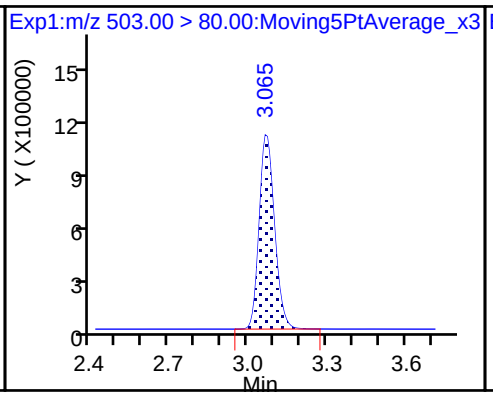
16 Perfluoroheptanesulfonic acid



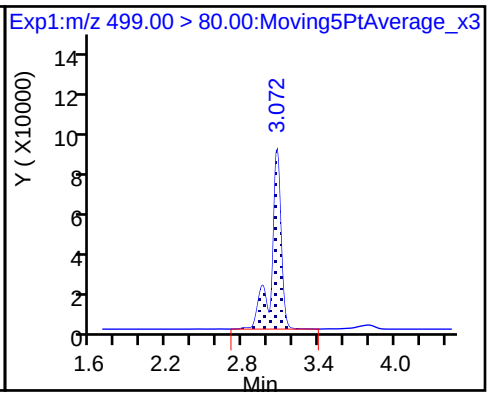
16 Perfluoroheptanesulfonic acid



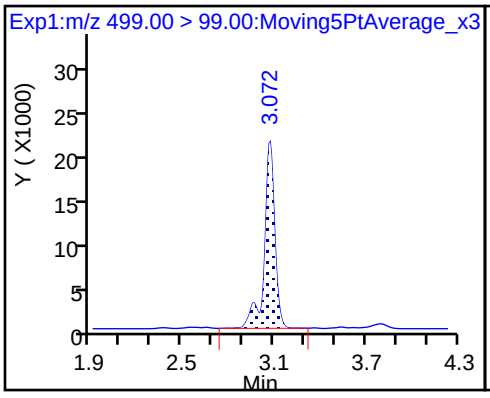
D 18 13C4 PFOS



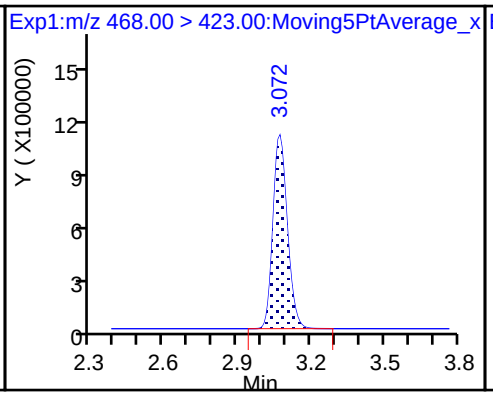
17 Perfluorooctane sulfonic acid



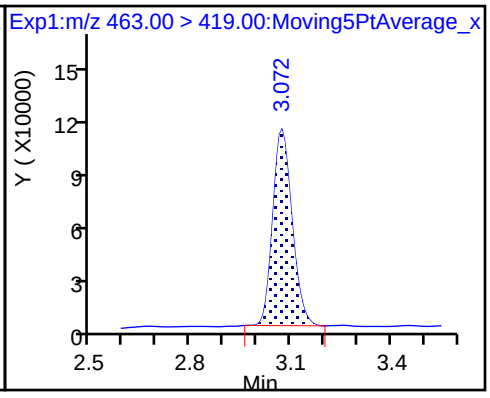
17 Perfluorooctane sulfonic acid



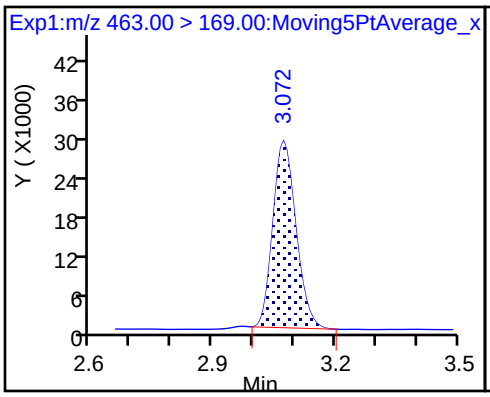
D 19 13C5 PFNA



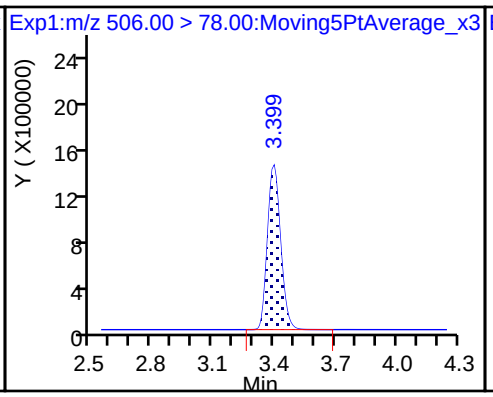
20 Perfluorononanoic acid



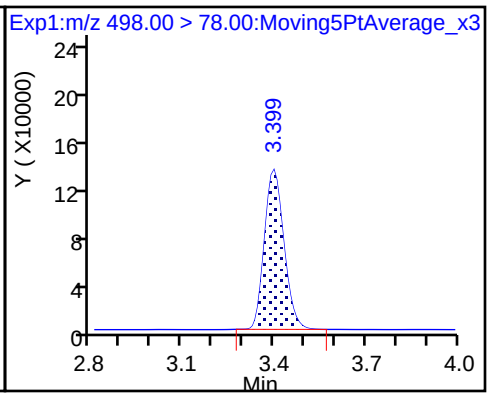
20 Perfluorononanoic acid



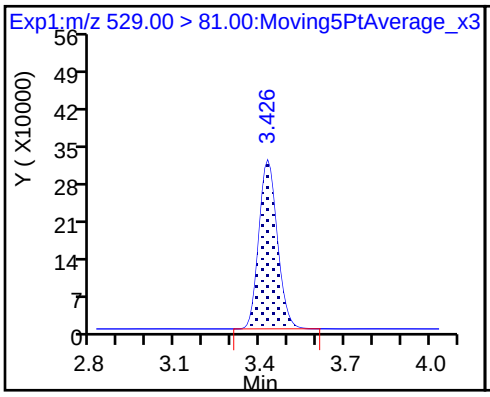
D 21 13C8 FOSA



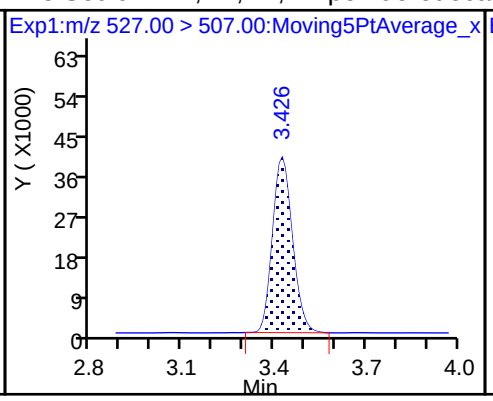
22 Perfluorooctane Sulfonamide



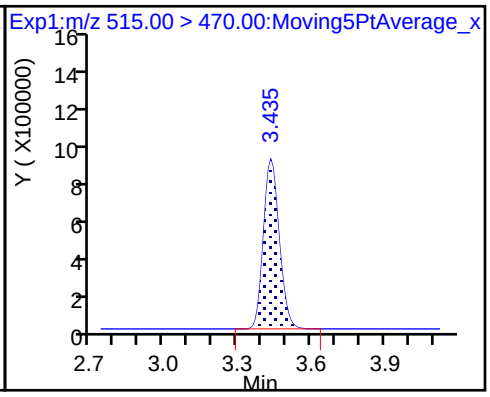
D 26 M2-8:2FTS



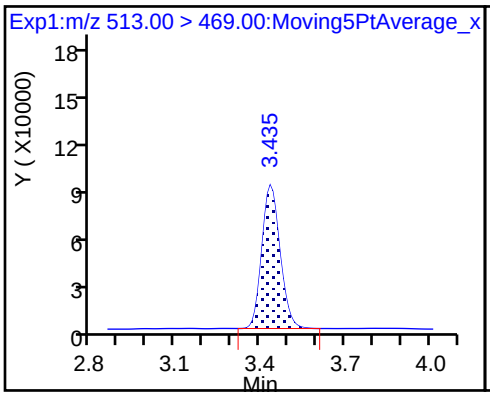
25 Sodium 1H,1H,2H,2H-perfluorodecane



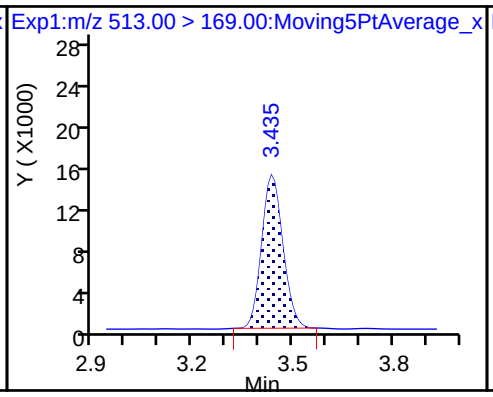
D 23 13C2 PFDA



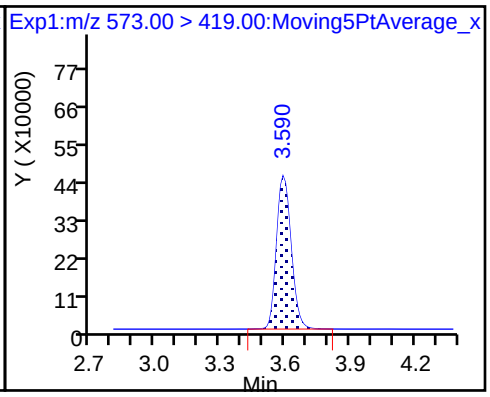
24 Perfluorodecanoic acid



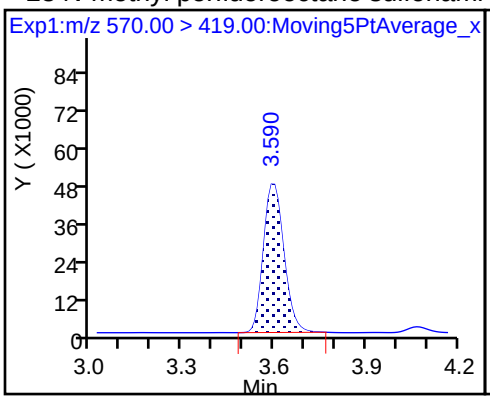
24 Perfluorodecanoic acid



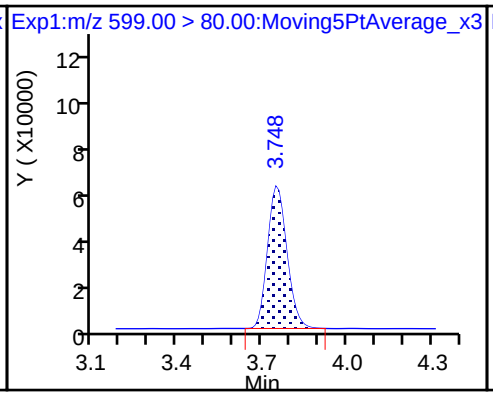
D 27 d3-NMeFOSAA



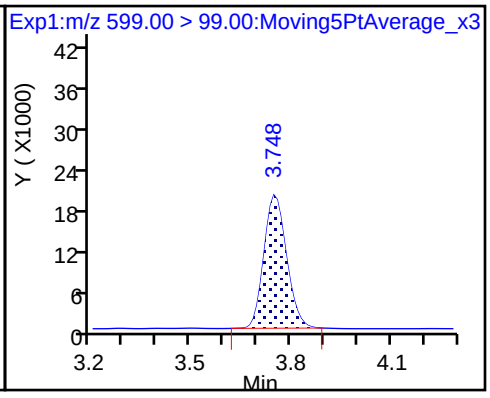
28 N-methyl perfluorooctane sulfonami



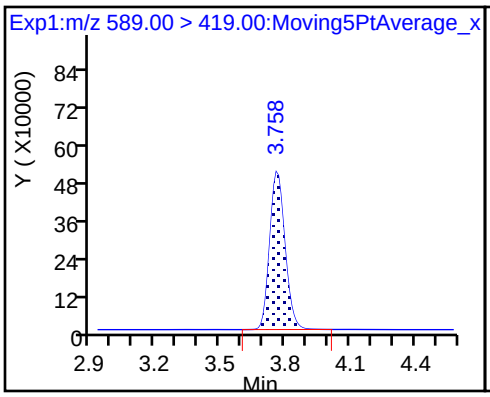
29 Perfluorodecane Sulfonic acid



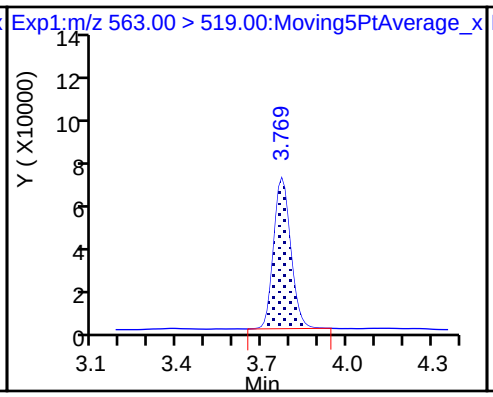
29 Perfluorodecane Sulfonic acid



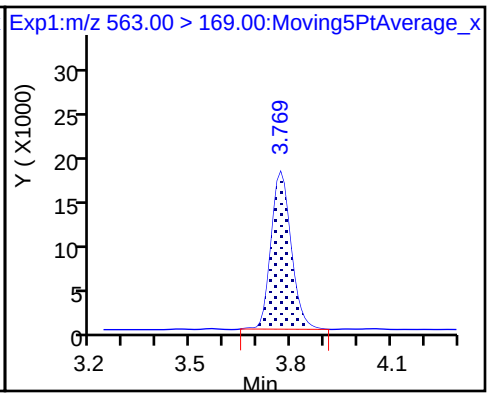
D 32 d5-NEtFOSAA



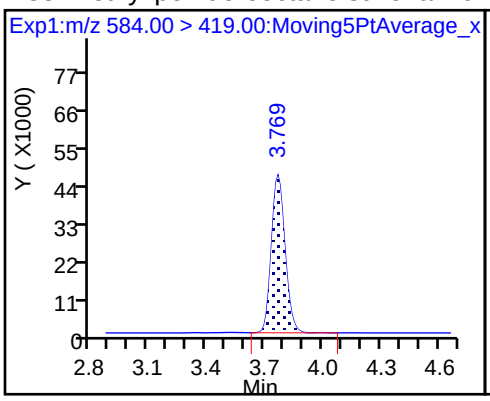
31 Perfluoroundecanoic acid



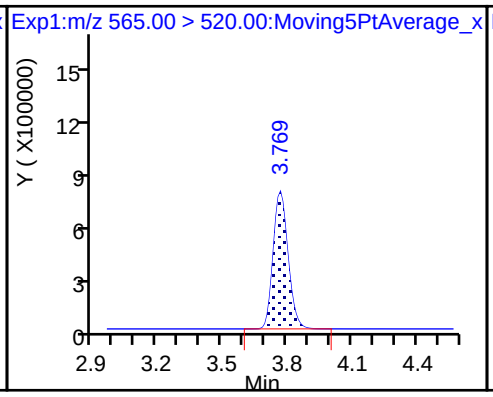
31 Perfluoroundecanoic acid



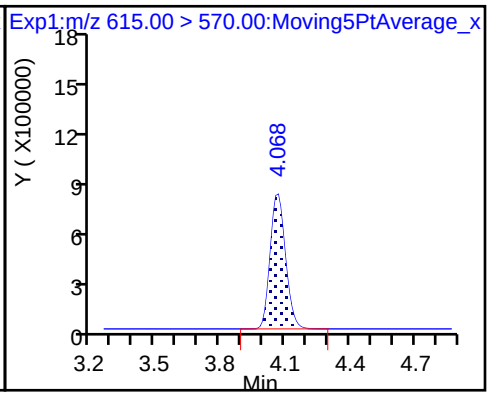
33 N-ethyl perfluorooctane sulfonamid



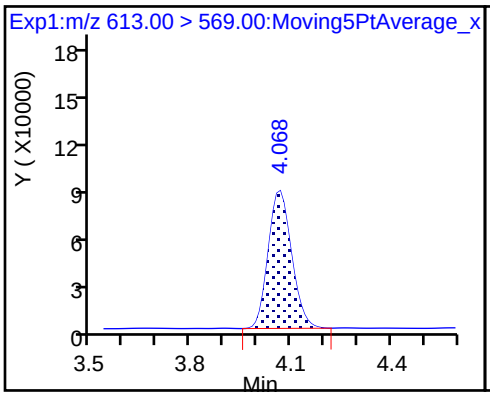
D 30 13C2 PFUnA



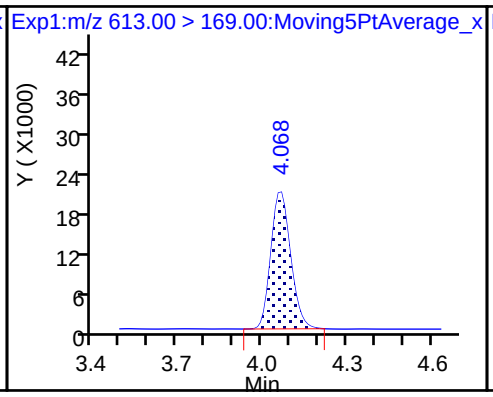
D 36 13C2 PFDoA



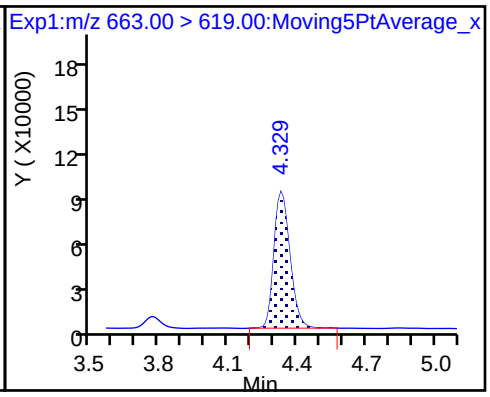
37 Perfluorododecanoic acid



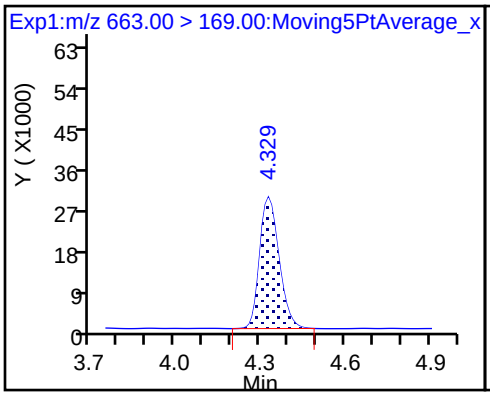
37 Perfluorododecanoic acid



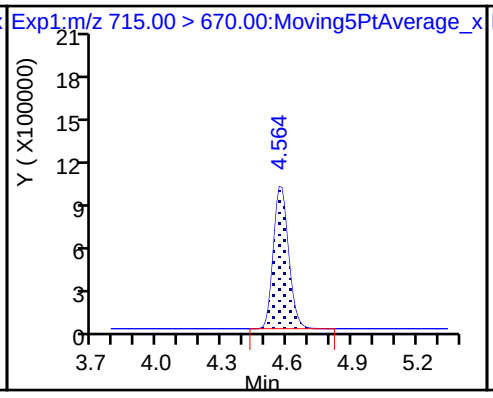
41 Perfluorotridecanoic acid



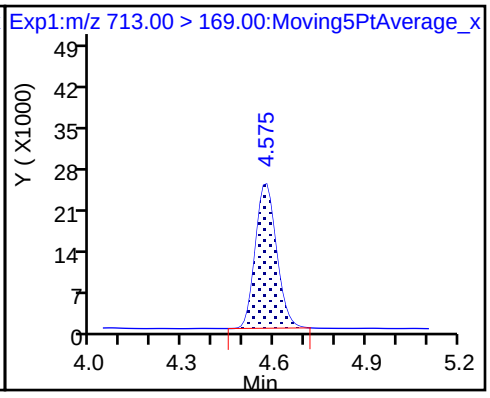
41 Perfluorotridecanoic acid



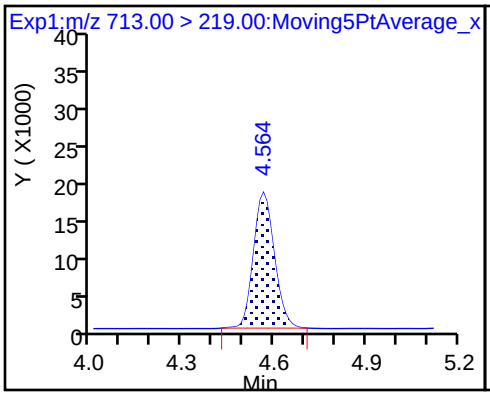
D 43 13C2-PFTeDA



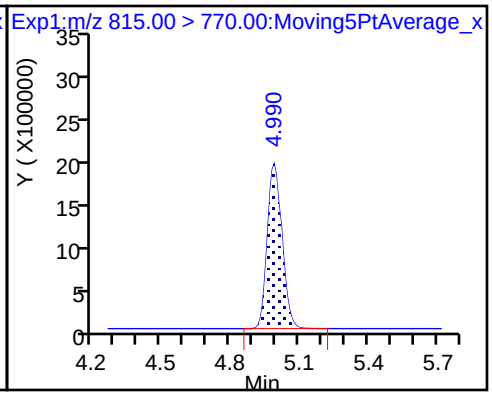
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_005.d
Lims ID: IC L4 Full
Client ID:
Sample Type: ICIS Calib Level: 4
Inject. Date: 21-Mar-2018 18:47:49 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:42:36 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 21-Mar-2018 19:24:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.447	1.447	0.0	0.537	6677108	2.48		99.3	91884	
2 Perfluorobutyric acid										
212.90 > 169.00	1.447	1.449	-0.002	1.000	2414180	0.9593		95.9	1039	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.710	-0.001	1.000	1955236	0.9777		97.8	1101	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.710	-0.001	0.634	4434133	2.49		99.4	122232	
D 47 13C3-PFBS										
301.90 > 83.00	1.745	1.743	0.002	0.647	94733	2.33		100	728	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.745	1.745	0.0	1.000	2745542	0.8672		98.1	15073	
298.90 > 99.00	1.745	1.745	0.0	1.000	1158456		2.37(1.25-3.74)	98.1	8636	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.959	-0.003	0.725	673891	NC			7759	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.956	1.962	-0.006	1.000	585674	0.8899		95.3	36020	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.998	1.998	0.0	1.000	1895160	0.9434		94.3	5502	
313.00 > 119.00	1.998	1.998	0.0	1.000	171177		11.07(5.03-15.10)	94.3	5106	
D 7 13C2 PFHxA										
315.00 > 270.00	1.998	1.998	0.0	0.741	4912134	2.49		99.6	148634	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.333	-0.005	0.863	4906862	2.52		101	91934	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.335	-0.007	1.000	1917800	0.9445		94.5	4030	
363.00 > 169.00	2.328	2.335	-0.007	1.000	781323		2.45(1.13-3.40)	94.5	11000	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.346	-0.005	1.000	2255246	0.8437		92.7	14407	
399.00 > 99.00	2.341	2.346	-0.005	1.000	758154		2.97(1.50-4.49)	92.7	2920	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.868	5679886	2.37		100	64479	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.673	2.672	0.001	1.000	658727	0.9206		97.1	39075	
D 12 M2-6:2FTS										
429.00 > 81.00	2.673	2.672	0.001	0.991	974611	2.41		102	32347	
* 62 13C2-PFOA										
415.00 > 370.00	2.697	2.695	0.002		5311138	2.50			78253	
D 14 13C4 PFOA										
417.00 > 372.00	2.697	2.695	0.002	1.000	5161114	2.59		104	75890	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.697	2.697	0.0	1.000	2181038	0.9352		93.5	739	
413.00 > 169.00	2.697	2.697	0.0	1.000	1079898		2.02(0.84-2.52)	93.5	2905	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.705	2.703	0.002	1.000	2094073	0.9272		97.4	32757	
449.00 > 99.00	2.705	2.703	0.002	1.000	562149		3.73(1.94-5.82)	97.4	7735	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.068	-0.003	1.137	4212796	2.41		101	38767	
D 19 13C5 PFNA										
468.00 > 423.00	3.072	3.070	0.002	1.139	4473666	2.55		102	61714	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.072	3.070	0.002	1.002	1712110	0.8720		94.0	5345	
499.00 > 99.00	3.065	3.070	-0.005	1.000	388300		4.41(2.31-6.93)	94.0	3489	
20 Perfluorononanoic acid										
463.00 > 419.00	3.072	3.072	0.0	1.000	1707633	0.9567		95.7	2306	
463.00 > 169.00	3.072	3.072	0.0	1.000	412933		4.14(1.90-5.69)	95.7	8555	
D 21 13C8 FOSA										
506.00 > 78.00	3.399	3.396	0.003	1.260	5926892	2.52		101	51859	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.399	3.397	0.002	1.000	2348890	1.01		101	35724	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.426	3.426	0.0	1.000	628171	0.9357		97.7	12703	
D 26 M2-8:2FTS										
529.00 > 81.00	3.426	3.426	0.0	1.270	1259787	2.31		96.5	25503	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.435	3.435	0.0	1.000	1449524	0.9682		96.8	7703	
513.00 > 169.00	3.435	3.435	0.0	1.000	250563		5.79(2.36-7.09)	96.8	5629	
D 23 13C2 PFDA										
515.00 > 470.00	3.435	3.435	0.0	1.274	3787833	2.46		98.4	60985	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.592	3.591	0.001	1.332	2005802	2.48		99.0	38757	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.592	3.594	-0.002	1.000	764025	0.9515		95.2	5524	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.750	3.749	0.001	1.000	1089522	0.9090		94.3	25437	
599.00 > 99.00	3.750	3.749	0.001	1.000	401224		2.72(1.39-4.16)	94.3	7593	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.760	3.759	0.001	1.394	2399407	2.60		104	12942	
D 30 13C2 PFUnA										
565.00 > 520.00	3.770	3.768	0.002	1.398	3376806	2.45		98.1	53912	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.770	3.768	0.002	1.003	854457	0.9529		95.3	15864	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.770	3.768	0.002	1.000	1113457	0.9561		95.6	5076	
563.00 > 169.00	3.770	3.768	0.002	1.000	264745		4.21(2.12-6.36)	95.6	9089	
D 36 13C2 PFDoA										
615.00 > 570.00	4.059	4.066	-0.007	1.505	3947765	2.53		101	38697	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.069	4.068	0.001	1.003	1543700	0.9343		93.4	1390	
613.00 > 169.00	4.069	4.068	0.001	1.003	381642		4.04(2.13-6.40)	93.4	5997	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.329	4.329	0.0	1.000	1762916	1.01		101	1166	
663.00 > 169.00	4.329	4.329	0.0	1.000	525318		3.36(1.25-3.76)	101	9931	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.565	4.568	-0.003	1.693	5036200	2.64		106	31784	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.565	4.571	-0.006	1.000	463840	0.9292		92.9	6420	
713.00 > 219.00	4.565	4.571	-0.006	1.000	332536		1.39(0.71-2.13)	92.9	6906	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.982	4.987	-0.005	1.847	8013194	2.56		102	20349	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.991	4.989	0.002	1.002	2896964	NC			883	
813.00 > 169.00	4.991	4.989	0.002	1.002	467916		6.19(2.86-8.58)		4401	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.352	5.354	-0.002	1.000	2837993	NC			899	
913.00 > 169.00	5.352	5.354	-0.002	1.000	349894		8.11(3.83-11.48)		3684	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:42:38 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_005.d

Injection Date: 21-Mar-2018 18:47:49 Instrument ID: A8_N

Lims ID: IC L4 Full

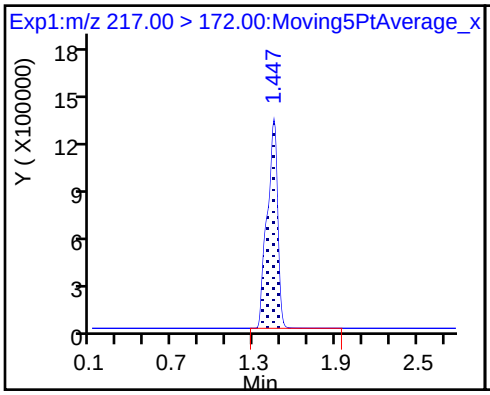
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5

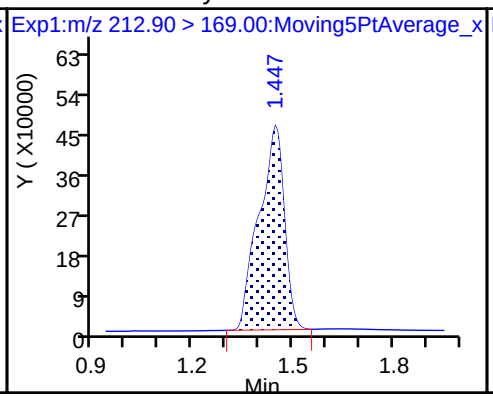
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

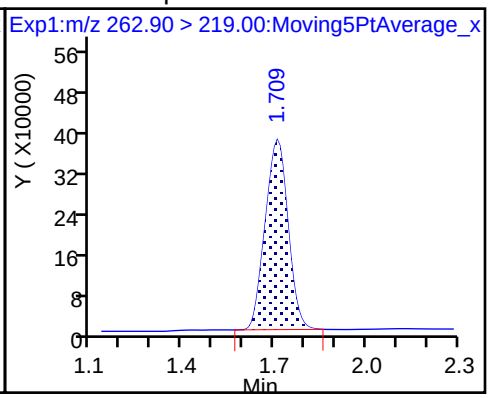
D 1 13C4 PFBA



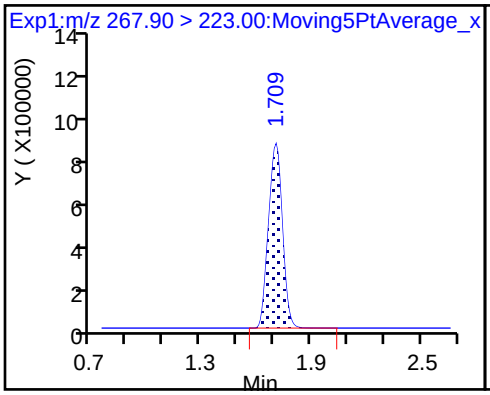
2 Perfluorobutyric acid



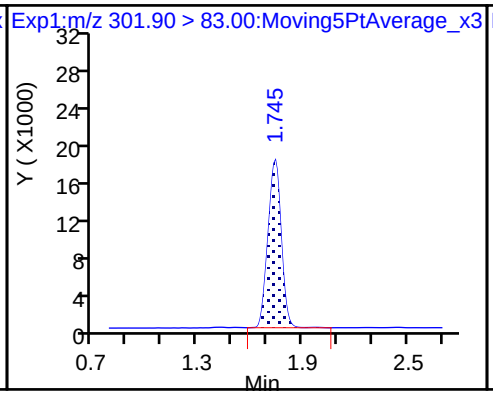
4 Perfluoropentanoic acid



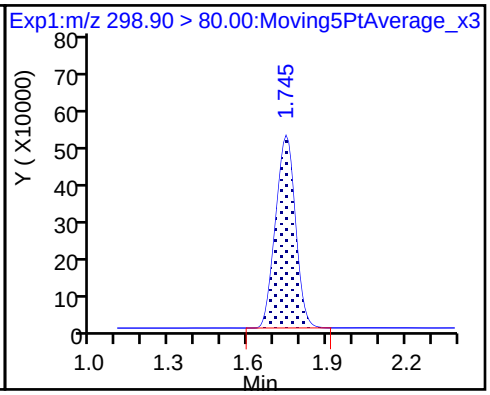
D 3 13C5-PFPeA



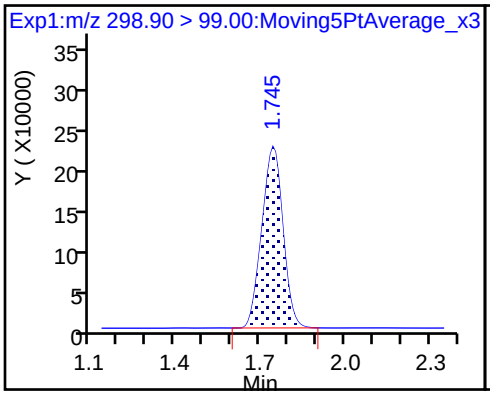
D 47 13C3-PFBS



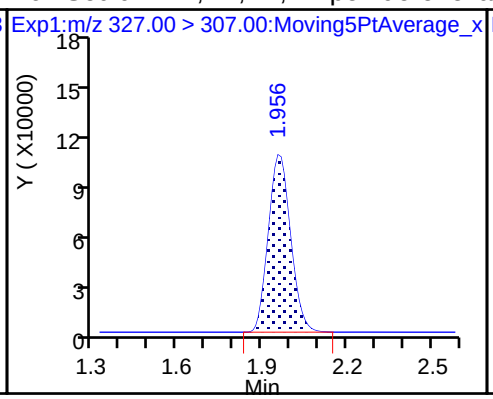
5 Perfluorobutanesulfonic acid



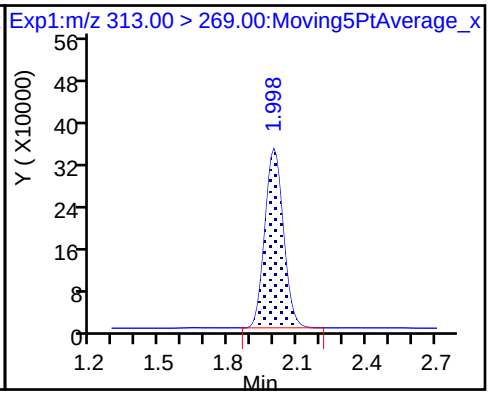
5 Perfluorobutanesulfonic acid



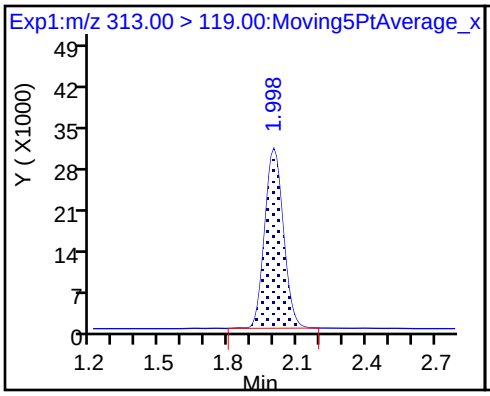
61 Sodium 1H,1H,2H,2H-perfluorohexane



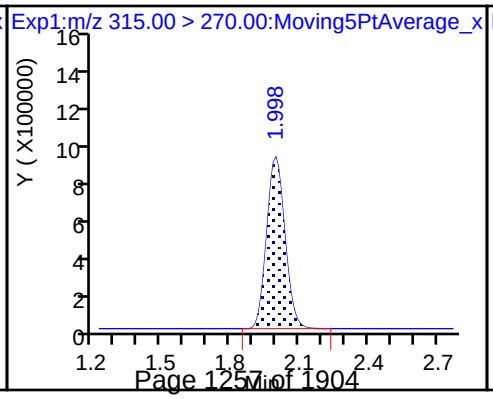
6 Perfluorohexanoic acid



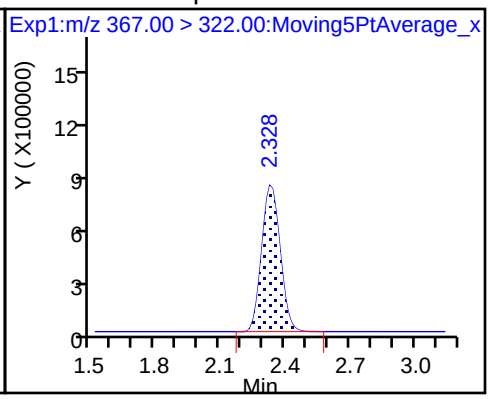
6 Perfluorohexanoic acid



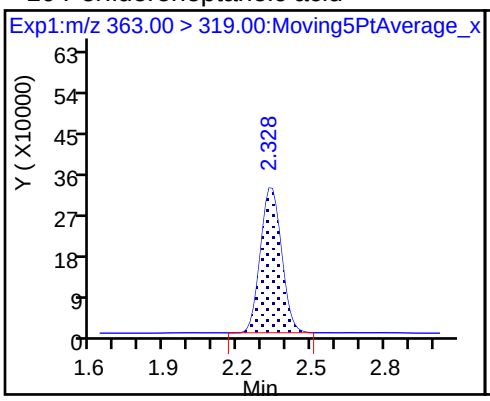
D 7 13C2 PFHxA



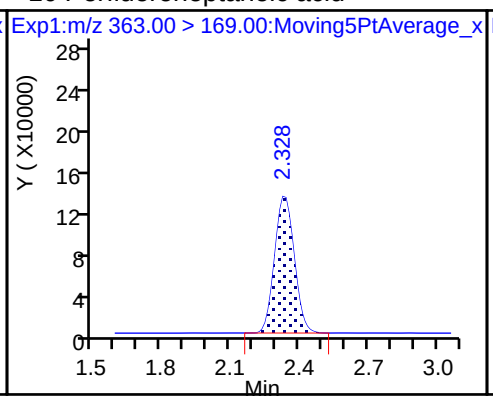
D 9 13C4-PFHpA



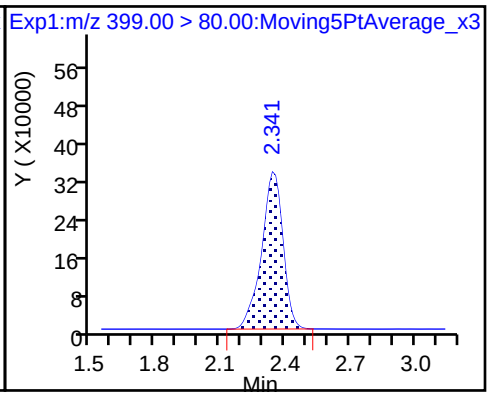
10 Perfluoroheptanoic acid



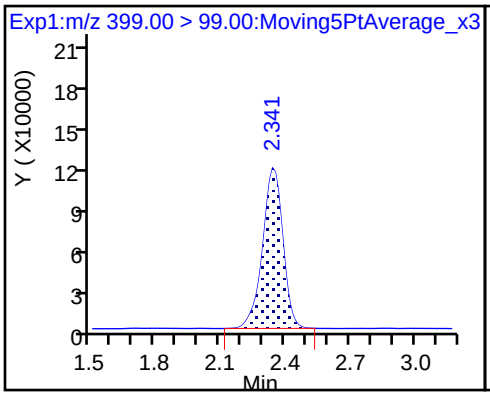
10 Perfluoroheptanoic acid



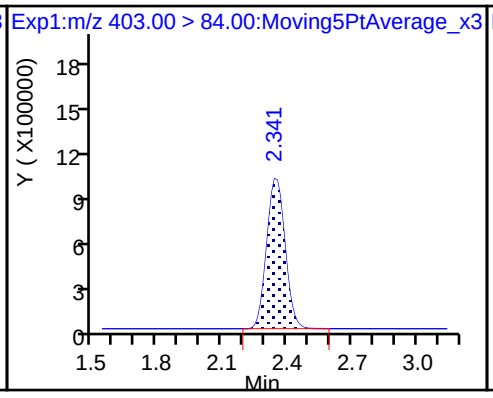
8 Perfluorohexanesulfonic acid



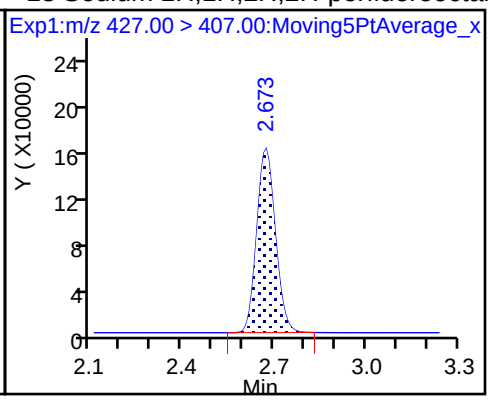
8 Perfluorohexanesulfonic acid



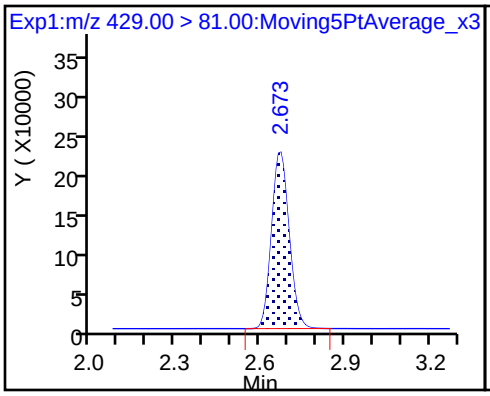
D 11 18O2 PFHxS



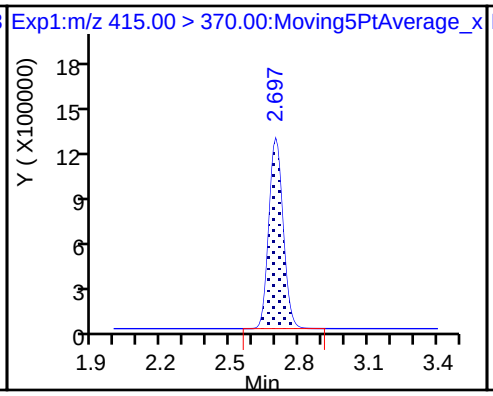
13 Sodium 1H,1H,2H,2H-perfluorooctane



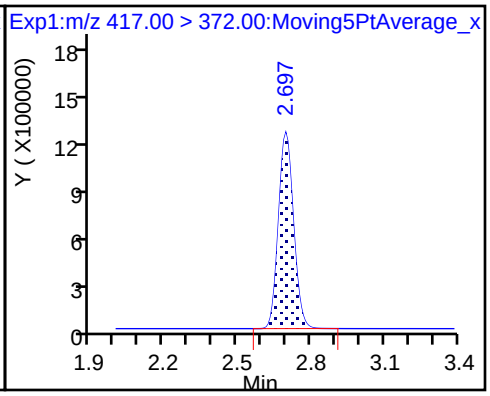
D 12 M2-6:2FTS



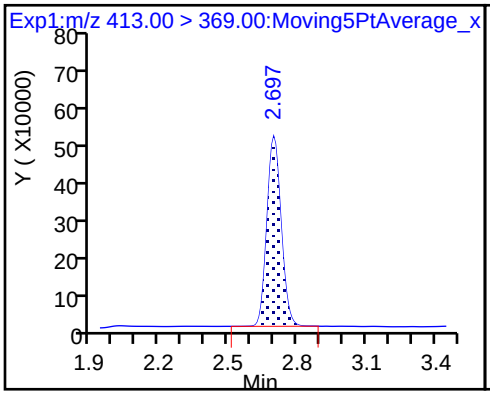
* 62 13C2-PFOA



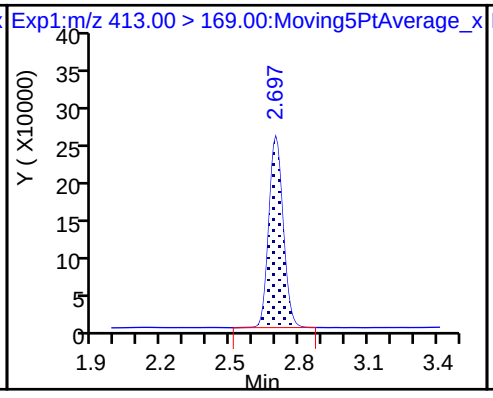
D 14 13C4 PFOA



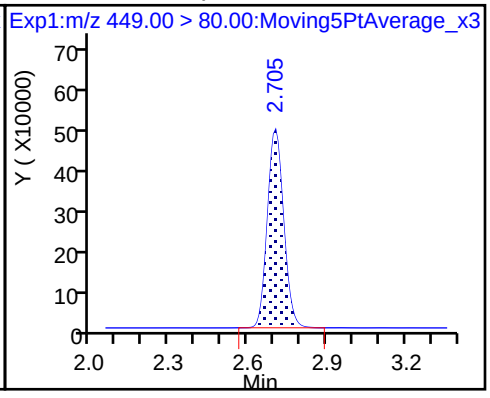
15 Perfluorooctanoic acid



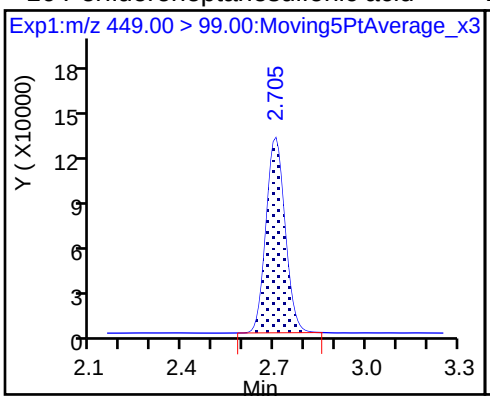
15 Perfluorooctanoic acid



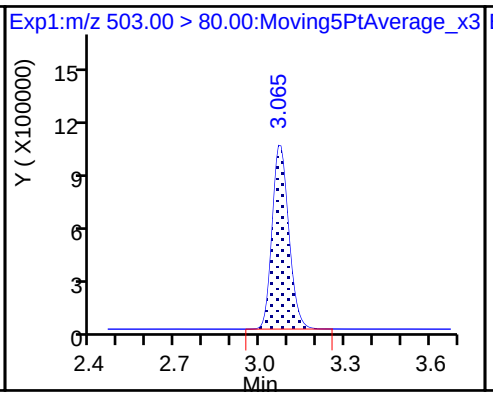
16 Perfluoroheptanesulfonic acid



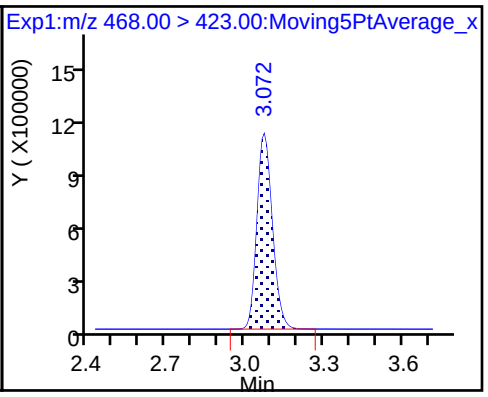
16 Perfluoroheptanesulfonic acid



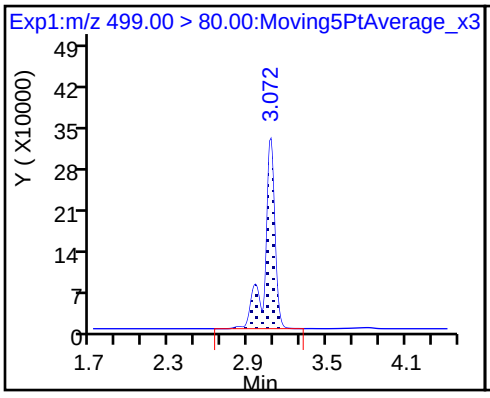
D 18 13C4 PFOS



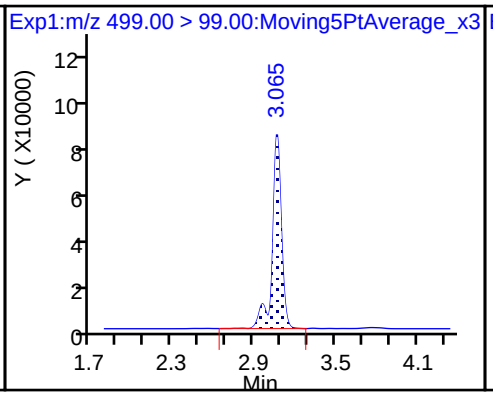
D 19 13C5 PFNA



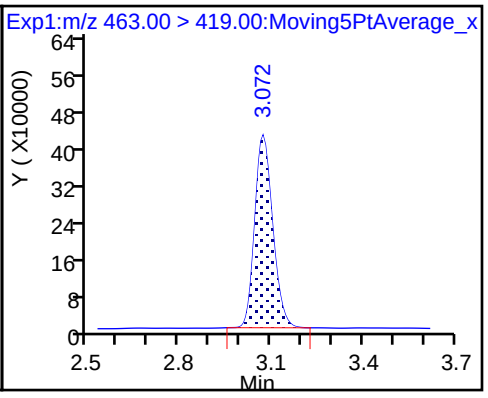
17 Perfluorooctane sulfonic acid



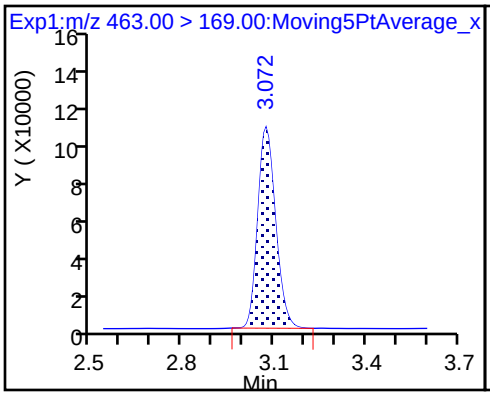
17 Perfluorooctane sulfonic acid



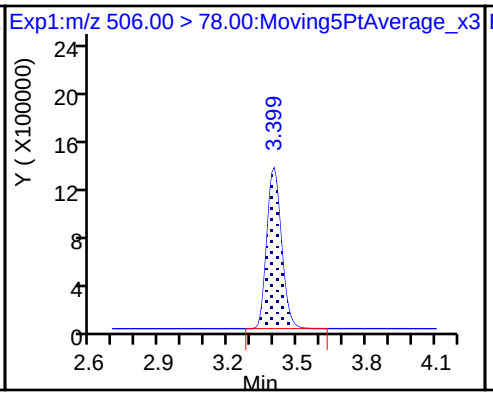
20 Perfluorononanoic acid



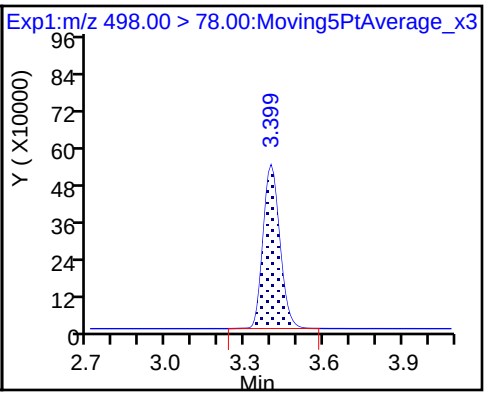
20 Perfluorononanoic acid



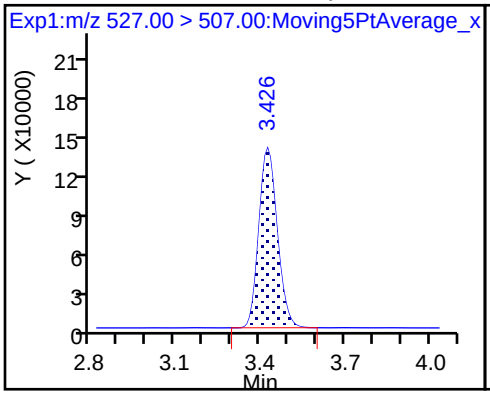
D 21 13C8 FOSA



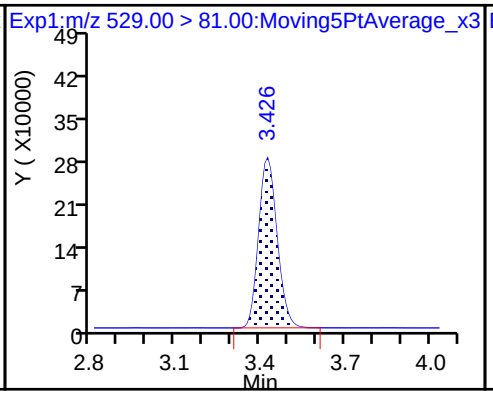
22 Perfluorooctane Sulfonamide



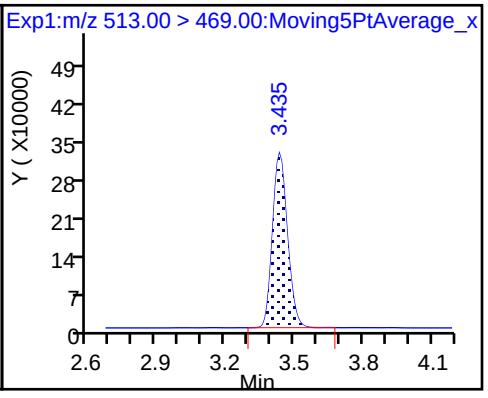
25 Sodium 1H,1H,2H,2H-perfluorodecane



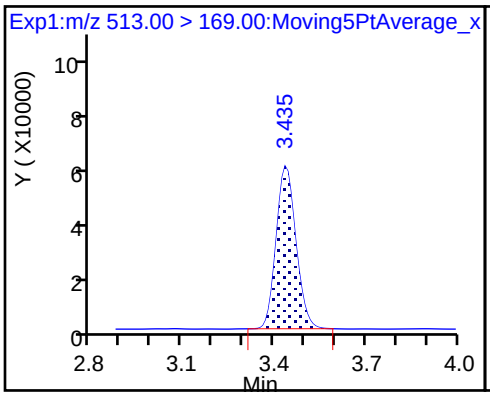
D 26 M2-8:2FTS



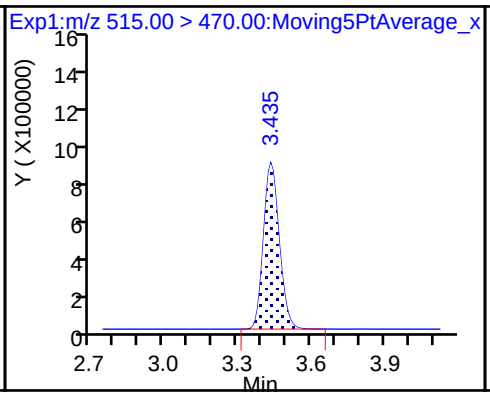
24 Perfluorodecanoic acid



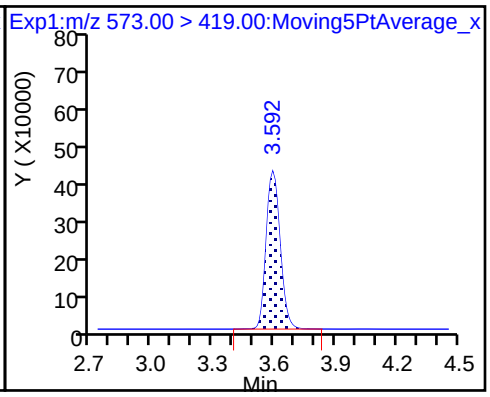
24 Perfluorodecanoic acid



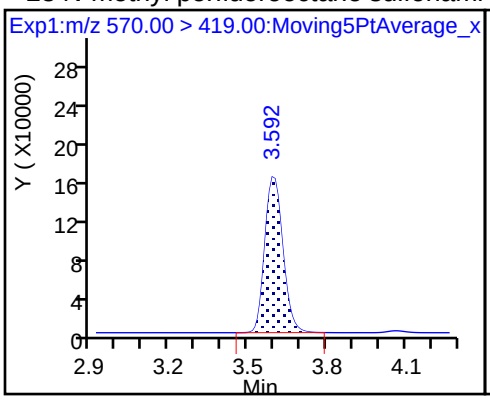
D 23 13C2 PFDA



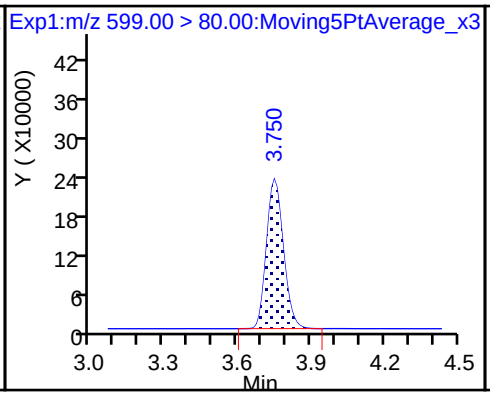
D 27 d3-NMeFOSAA



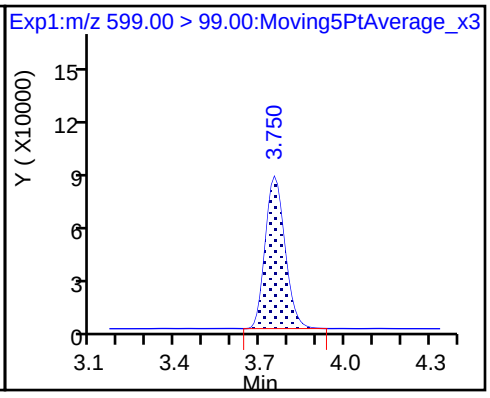
28 N-methyl perfluorooctane sulfonami



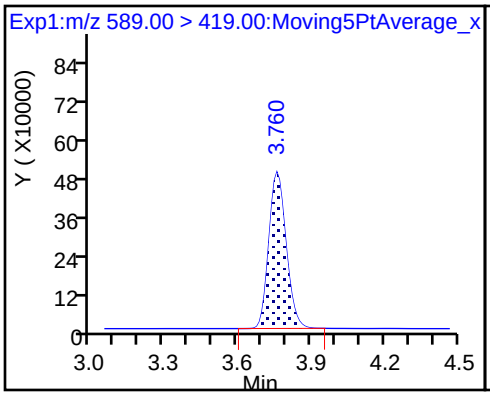
29 Perfluorodecane Sulfonic acid



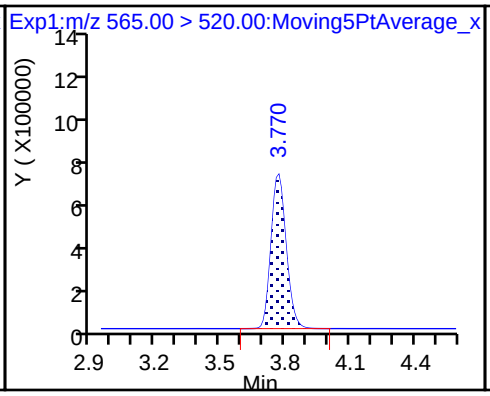
29 Perfluorodecane Sulfonic acid



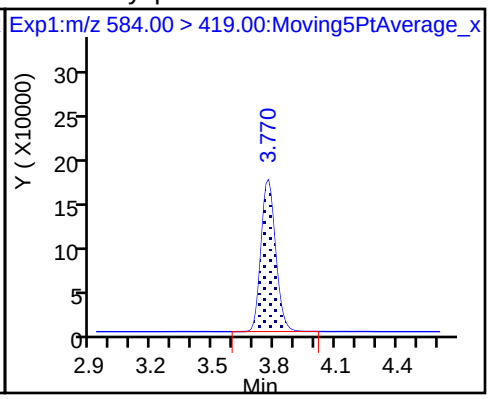
D 32 d5-NEtFOSAA



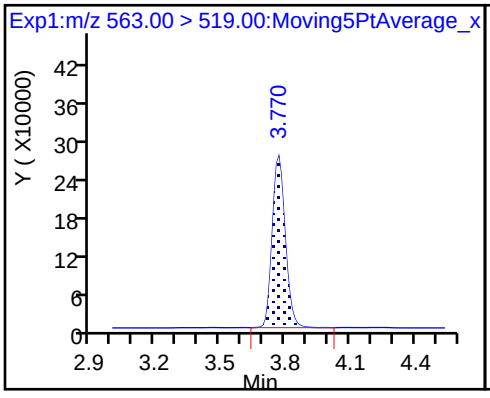
D 30 13C2 PFUnA



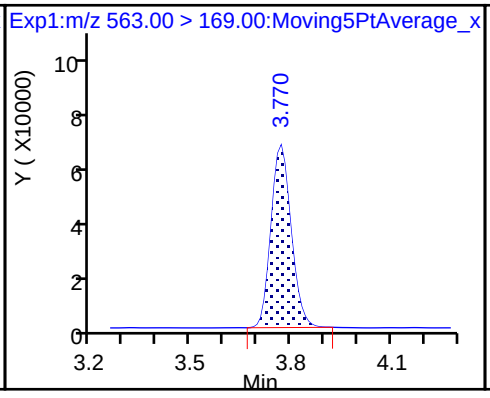
33 N-ethyl perfluorooctane sulfonamid



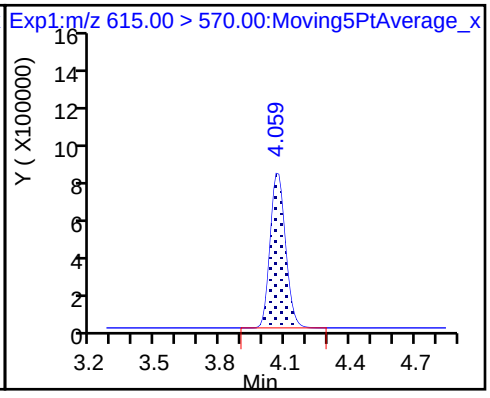
31 Perfluoroundecanoic acid



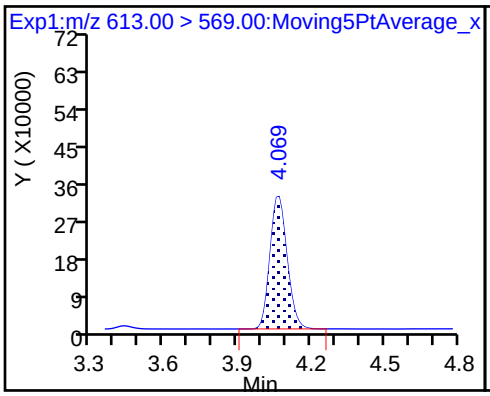
31 Perfluoroundecanoic acid



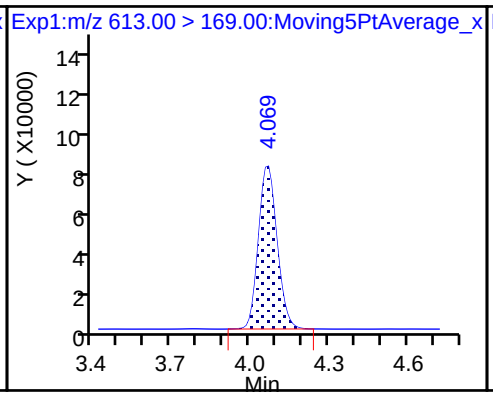
D 36 13C2 PFDoA



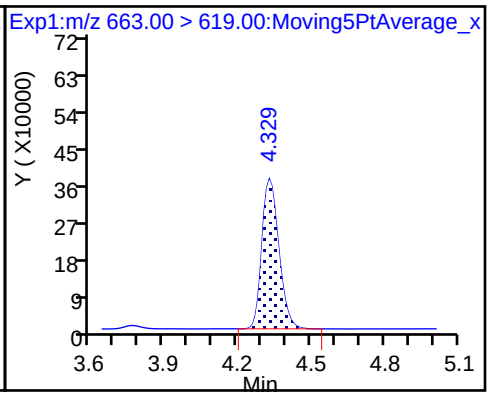
37 Perfluorododecanoic acid



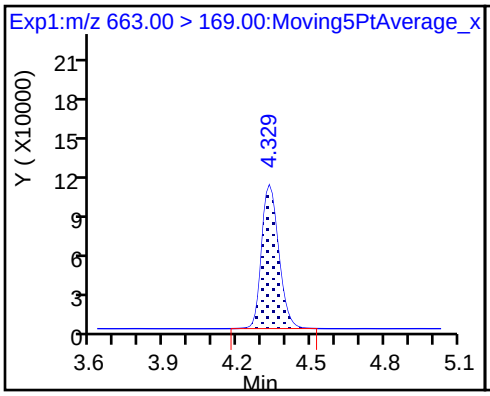
37 Perfluorododecanoic acid



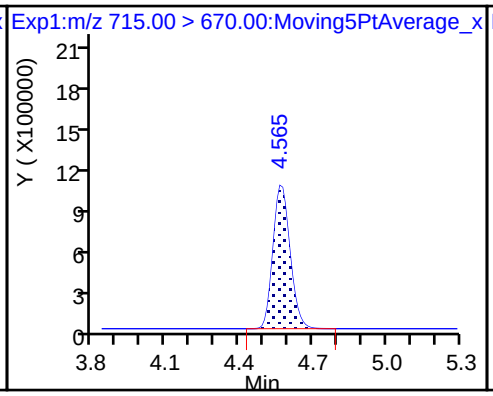
41 Perfluorotridecanoic acid



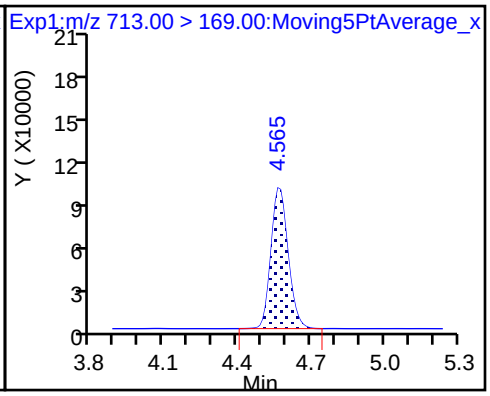
41 Perfluorotridecanoic acid



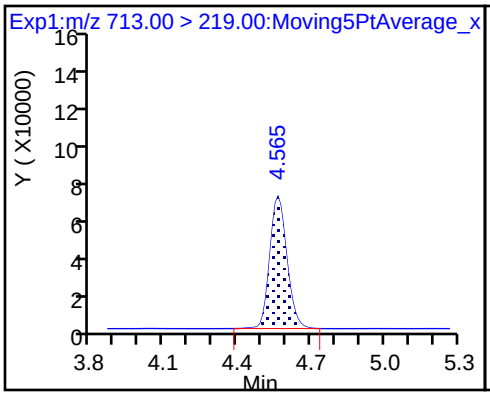
D 43 13C2-PFTeDA



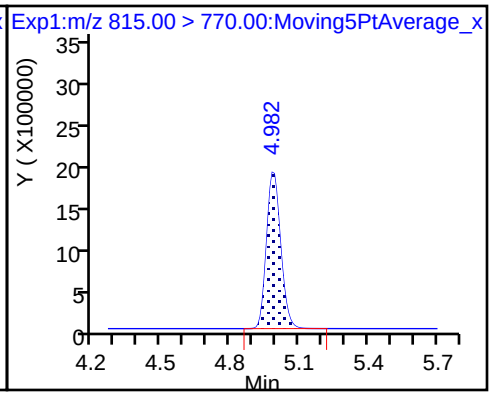
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_006.d
Lims ID: IC L5 Full
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 21-Mar-2018 18:55:39 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:42:40 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 21-Mar-2018 19:24:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.447	-0.001	0.536	6188661	2.33		93.4	78410	
2 Perfluorobutyric acid										
212.90 > 169.00	1.452	1.449	0.003	1.004	5823834	2.50		99.9	2918	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.710	-0.001	0.634	4090438	2.33		93.0	131212	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.710	-0.001	1.000	4762694	2.58		103	2851	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.743	0.001	0.647	87868	2.19		94.1	734	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.745	-0.001	1.000	6781882	2.31		104	33882	
298.90 > 99.00	1.744	1.745	-0.001	1.000	2805006		2.42(1.25-3.74)	104	17877	
D 60 M2-4:2FTS										
329.00 > 81.00	1.966	1.959	0.007	0.729	609343	NC			6498	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.966	1.962	0.004	1.000	1406742	2.30		98.7	64063	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.998	-0.001	0.741	4600880	2.37		94.6	103804	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.998	-0.001	1.000	4820853	2.56		102	14937	
313.00 > 119.00	1.997	1.998	-0.001	1.000	437719		11.01(5.03-15.10)	102	11379	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.333	-0.005	0.863	4537445	2.36		94.6	85099	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.335	0.006	1.006	5088526	2.71		108	9556	
363.00 > 169.00	2.328	2.335	-0.007	1.000	1858876		2.74(1.13-3.40)	108	18291	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.346	-0.005	0.995	5440694	2.15		94.6	25940	
399.00 > 99.00	2.341	2.346	-0.005	0.995	1777291		3.06(1.50-4.49)	94.6	6637	
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.348	0.006	0.873	5368855	2.27		95.9	60715	
D 12 M2-6:2FTS										
429.00 > 81.00	2.672	2.672	0.0	0.991	908164	2.28		96.1	19487	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.672	2.672	0.0	1.000	1590173	2.39		101	53321	
D 14 13C4 PFOA										
417.00 > 372.00	2.696	2.695	0.001	1.000	4742395	2.42		96.6	65924	
* 62 13C2-PFOA										
415.00 > 370.00	2.696	2.695	0.001		5235561	2.50			73005	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.696	2.697	-0.001	1.000	5003450	2.33		93.4	1574	
413.00 > 169.00	2.696	2.697	-0.001	1.000	2673743		1.87(0.84-2.52)	93.4	6944	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.704	2.703	0.001	1.000	5113485	2.40		101	52355	
449.00 > 99.00	2.704	2.703	0.001	1.000	1305904		3.92(1.94-5.82)	101	14612	
D 18 13C4 PFOS										
503.00 > 80.00	3.072	3.068	0.004	1.139	3973858	2.31		96.5	34284	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.072	3.070	0.002	1.000	4360129	2.35		101	13023	
499.00 > 99.00	3.072	3.070	0.002	1.000	949206		4.59(2.31-6.93)	101	11305	
D 19 13C5 PFNA										
468.00 > 423.00	3.072	3.070	0.002	1.139	4084349	2.36		94.4	91801	
20 Perfluorononanoic acid										
463.00 > 419.00	3.072	3.072	0.0	1.000	4311504	2.65		106	5737	
463.00 > 169.00	3.072	3.072	0.0	1.000	1044625		4.13(1.90-5.69)	106	21568	
D 21 13C8 FOSA										
506.00 > 78.00	3.398	3.396	0.002	1.260	5666432	2.44		97.6	47804	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.398	3.397	0.001	1.000	5602803	2.51		100	74799	
D 26 M2-8:2FTS										
529.00 > 81.00	3.426	3.426	0.0	1.271	1157021	2.15		89.9	32125	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.426	3.426	0.0	1.000	1588740	2.58		108	39307	
D 23 13C2 PFDA										
515.00 > 470.00	3.435	3.435	0.0	1.274	3515629	2.32		92.7	59893	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.435	3.435	0.0	1.000	3690292	2.66		106	13711	
513.00 > 169.00	3.435	3.435	0.0	1.000	621400		5.94(2.36-7.09)	106	1806	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.590	3.591	-0.001	1.331	1848322	2.31		92.6	43598	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.600	3.594	0.006	1.003	2049489	2.77		111	10939	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.748	3.749	-0.001	1.000	2934010	2.60		108	55841	
599.00 > 99.00	3.748	3.749	-0.001	1.000	945062		3.10(1.39-4.16)	108	19624	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.758	3.759	-0.001	1.394	2051910	2.26		90.2	11879	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.768	3.768	0.0	1.000	2666750	2.41		96.4	11171	
563.00 > 169.00	3.768	3.768	0.0	1.000	636340		4.19(2.12-6.36)	96.4	22140	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.768	3.768	0.0	1.003	2079318	2.71		108	23647	
D 30 13C2 PFUnA										
565.00 > 520.00	3.768	3.768	0.0	1.398	3209638	2.36		94.6	51590	
D 36 13C2 PFDoA										
615.00 > 570.00	4.067	4.066	0.001	1.508	3715622	2.41		96.5	29822	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.067	4.068	-0.001	1.000	3845398	2.47		98.9	3613	
613.00 > 169.00	4.067	4.068	-0.001	1.000	845112		4.55(2.13-6.40)	98.9	12526	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.329	4.329	-0.001	1.000	4156865	2.54		102	2825	
663.00 > 169.00	4.329	4.329	-0.001	1.000	1286777		3.23(1.25-3.76)	102	15589	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.575	4.568	0.007	1.697	4471429	2.38		95.1	25225	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.575	4.571	0.004	1.000	1127193	2.54		102	13059	
713.00 > 219.00	4.564	4.571	-0.007	0.998	791381		1.42(0.71-2.13)	102	14928	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.990	4.987	0.003	1.851	7064103	2.29		91.6	18829	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.990	4.989	0.001	1.000	7013285	NC			2178	
813.00 > 169.00	4.990	4.989	0.001	1.000	1094747		6.41(2.86-8.58)		9232	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.352	5.354	-0.002	1.000	6807875	NC			2083	
913.00 > 169.00	5.352	5.354	-0.002	1.000	815201		8.35(3.83-11.48)		6311	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:42:42 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_006.d

Injection Date: 21-Mar-2018 18:55:39 Instrument ID: A8_N

Lims ID: IC L5 Full

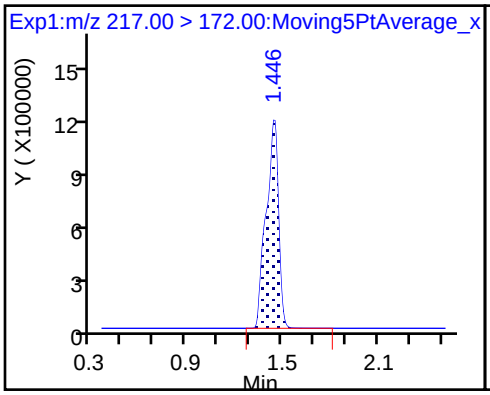
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 6

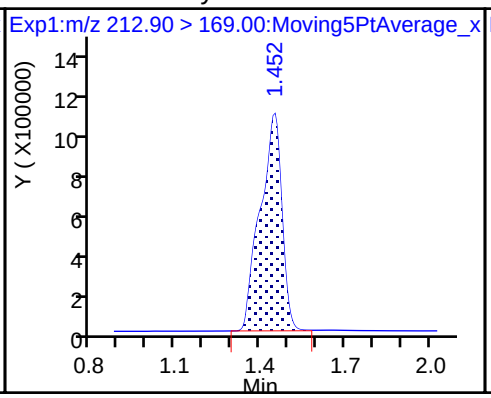
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

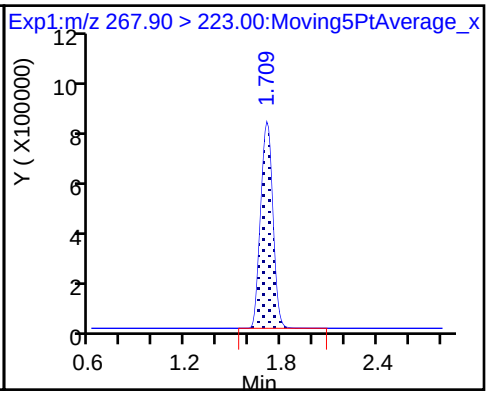
D 1 13C4 PFBA



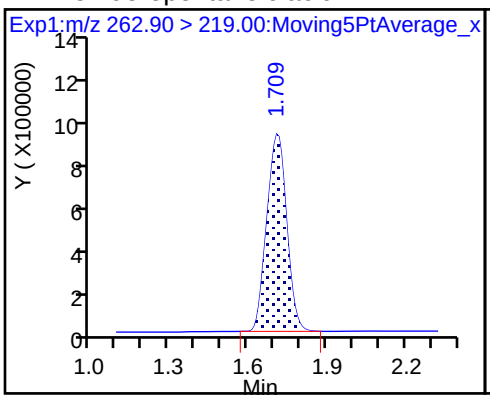
2 Perfluorobutyric acid



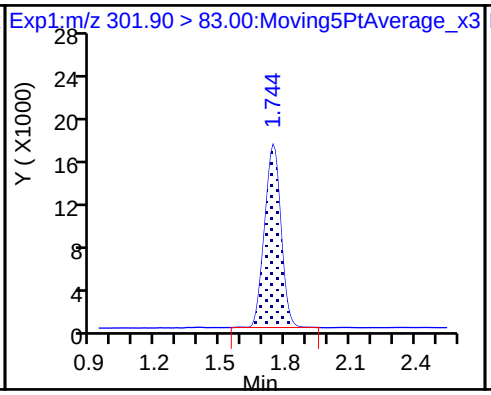
D 3 13C5-PFPeA



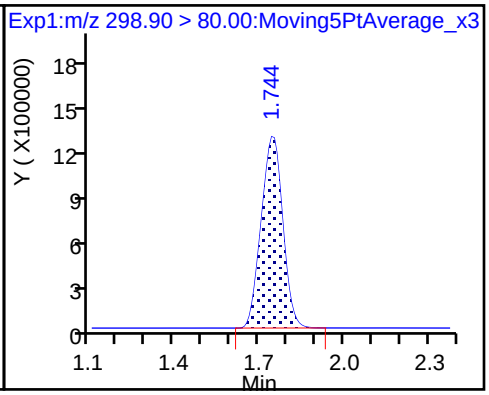
4 Perfluoropentanoic acid



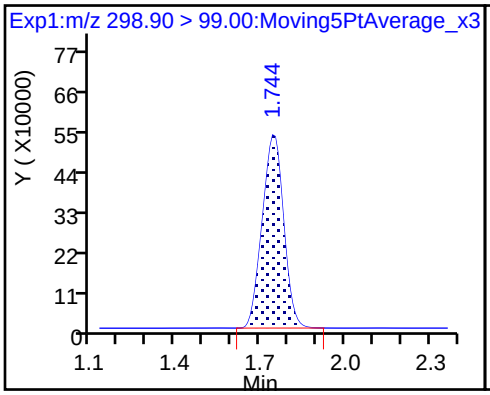
D 47 13C3-PFBS



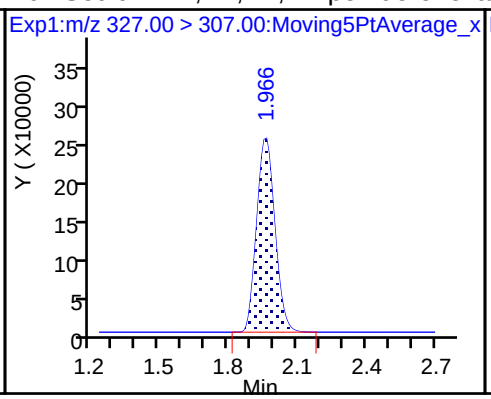
5 Perfluorobutanesulfonic acid



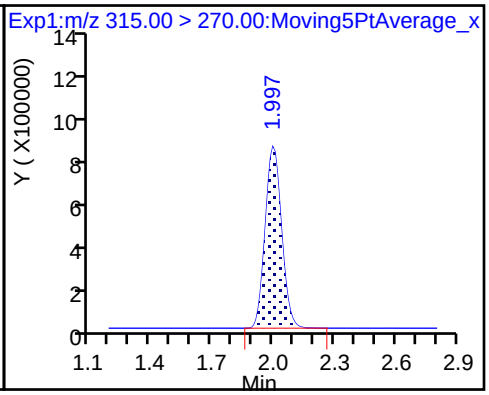
5 Perfluorobutanesulfonic acid



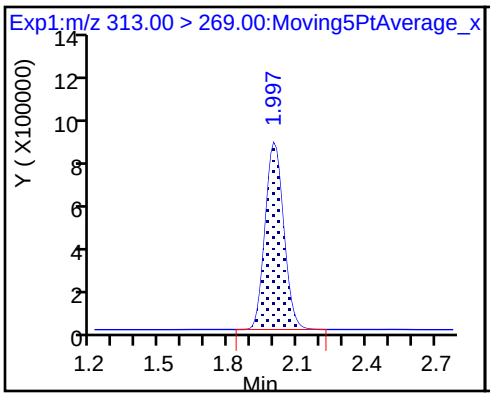
61 Sodium 1H,1H,2H,2H-perfluorohexa



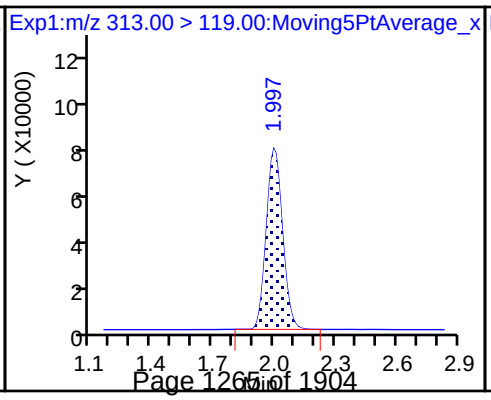
D 7 13C2 PFHxA



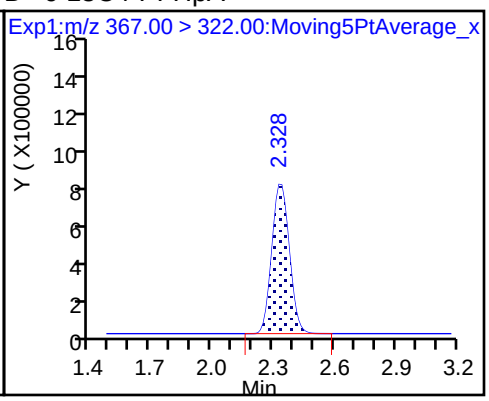
6 Perfluorohexanoic acid



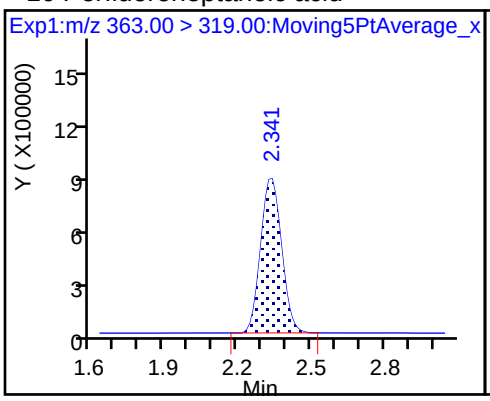
6 Perfluorohexanoic acid



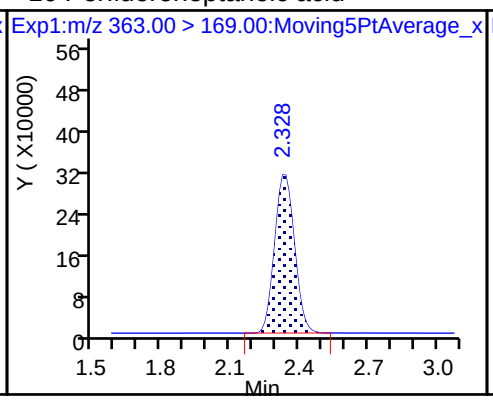
D 9 13C4-PFHpA



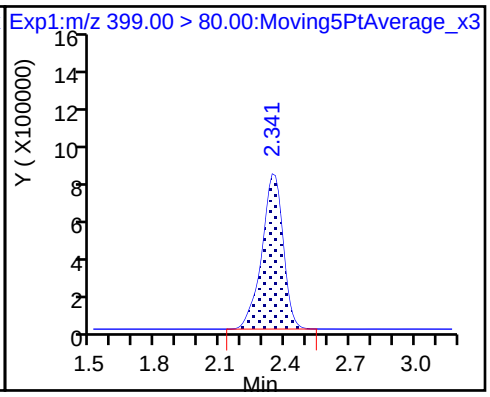
10 Perfluoroheptanoic acid



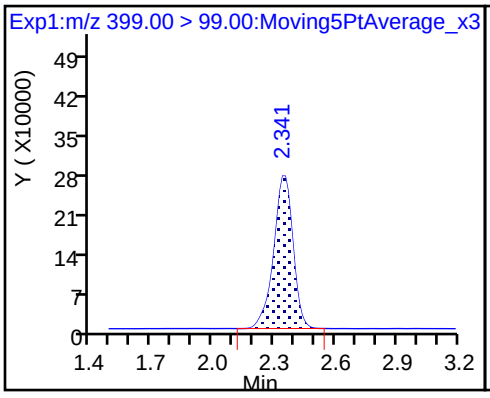
10 Perfluoroheptanoic acid



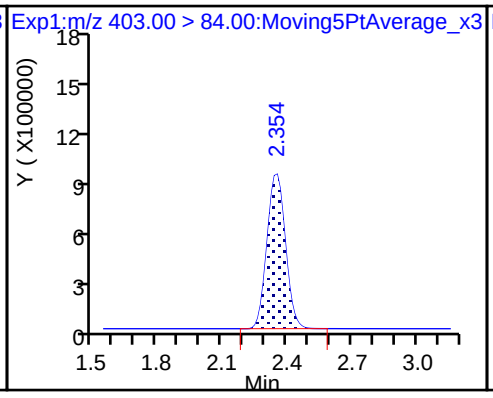
8 Perfluorohexanesulfonic acid



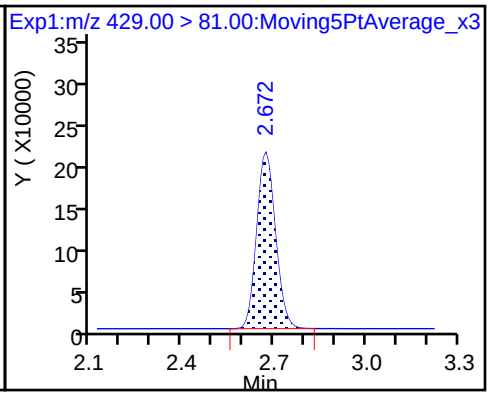
8 Perfluorohexanesulfonic acid



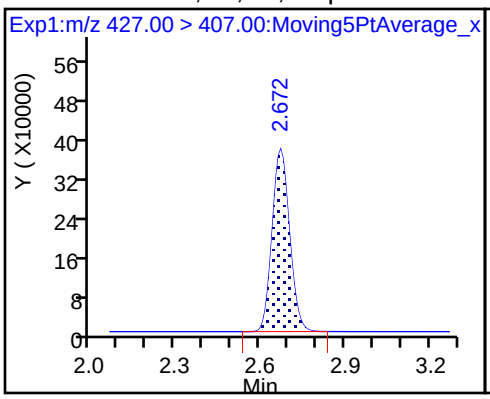
D 11 18O2 PFHxS



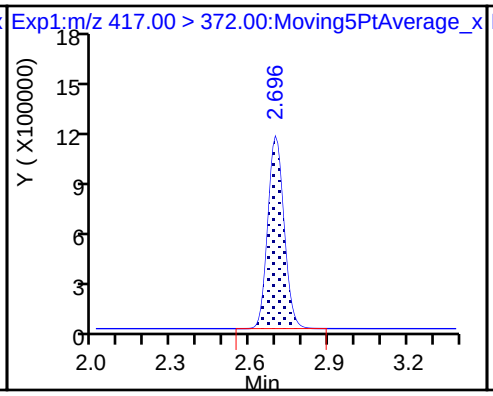
D 12 M2-6:2FTS



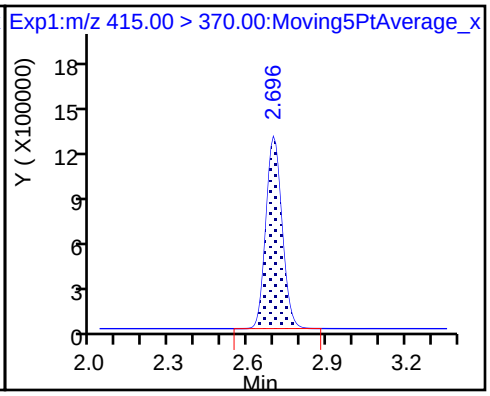
13 Sodium 1H,1H,2H,2H-perfluorooctane



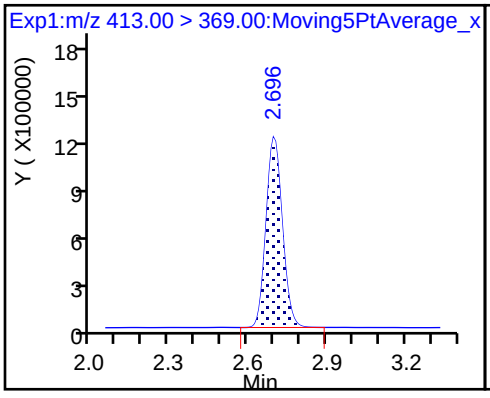
D 14 13C4 PFOA



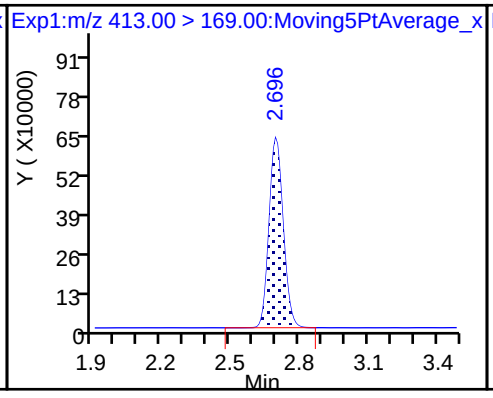
* 62 13C2-PFOA



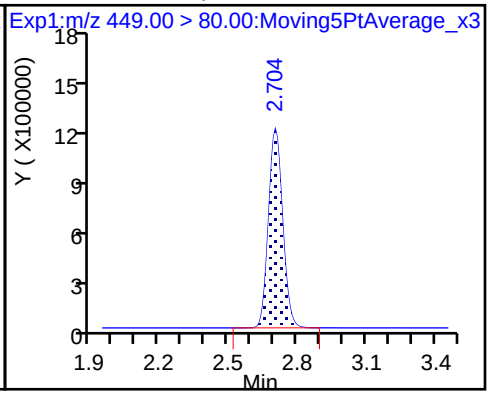
15 Perfluorooctanoic acid



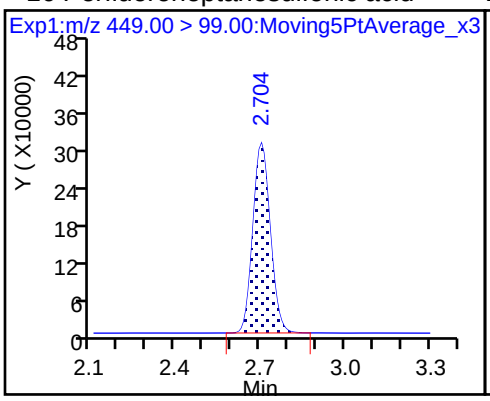
15 Perfluorooctanoic acid



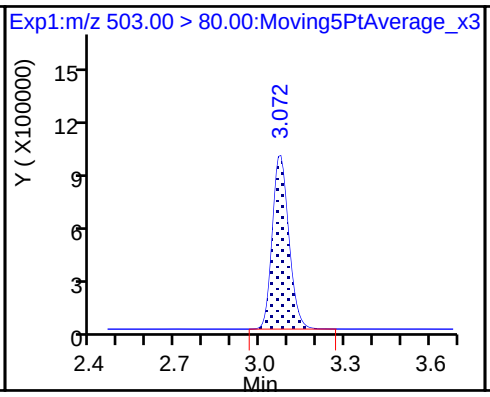
16 Perfluoroheptanesulfonic acid



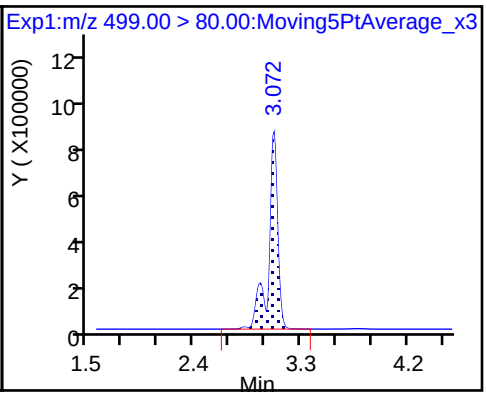
16 Perfluoroheptanesulfonic acid



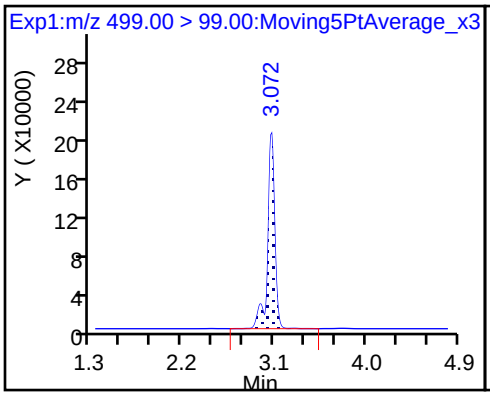
D 18 13C4 PFOS



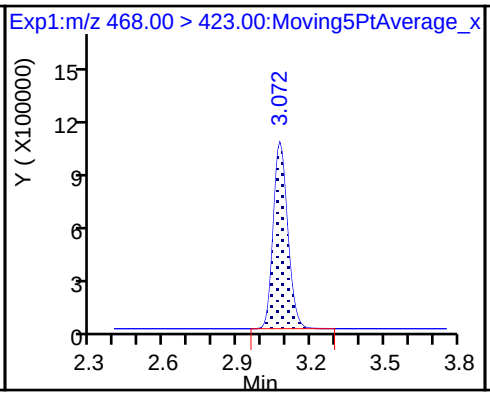
17 Perfluorooctane sulfonic acid



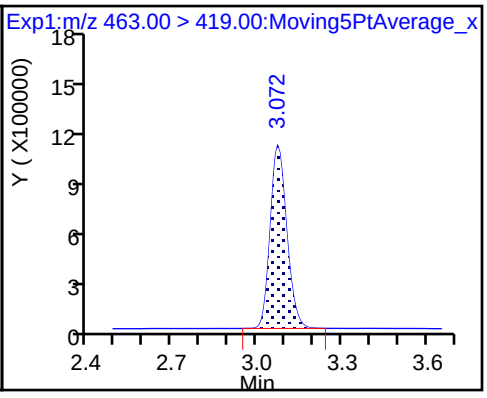
17 Perfluorooctane sulfonic acid



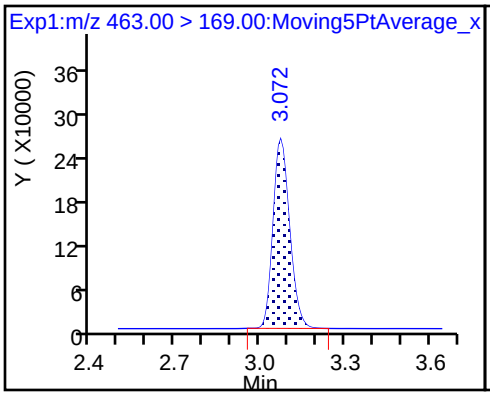
D 19 13C5 PFNA



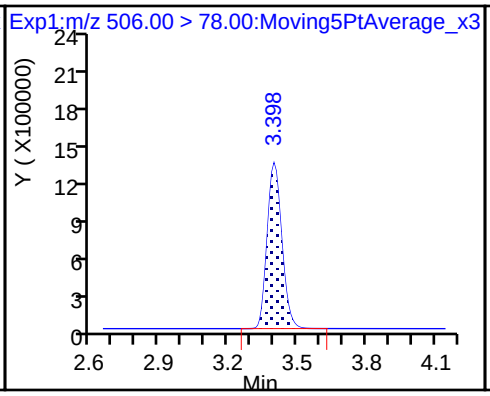
20 Perfluorononanoic acid



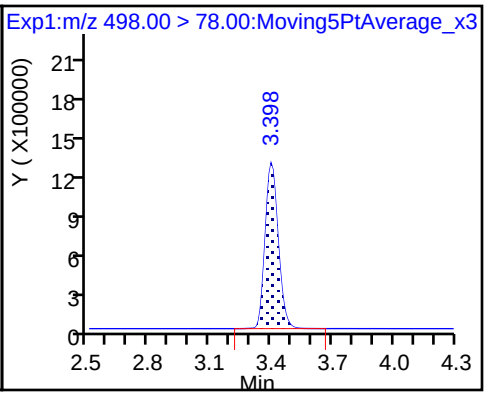
20 Perfluorononanoic acid



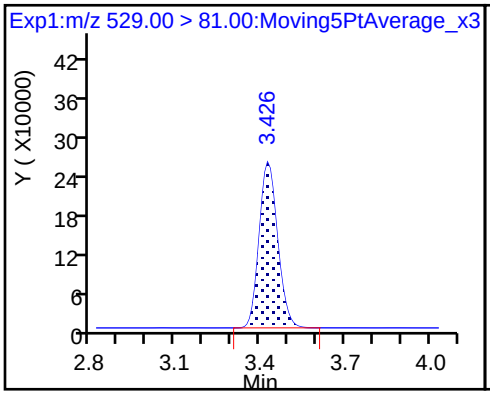
D 21 13C8 FOSA



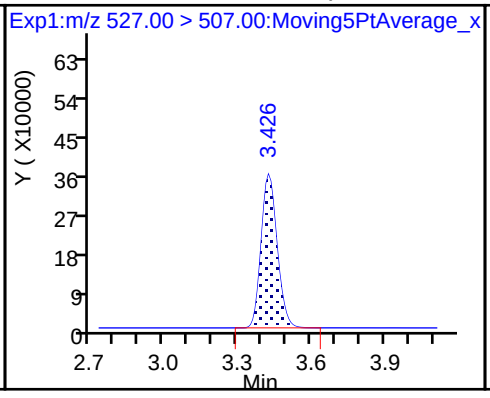
22 Perfluorooctane Sulfonamide



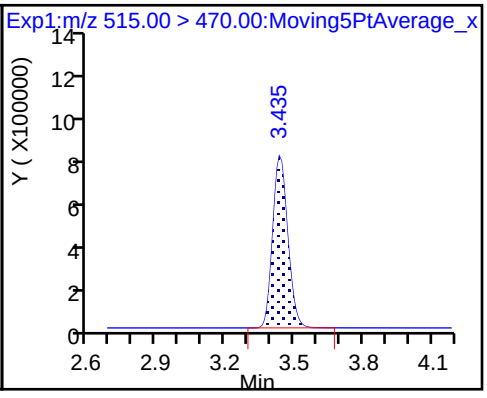
D 26 M2-8:2FTS



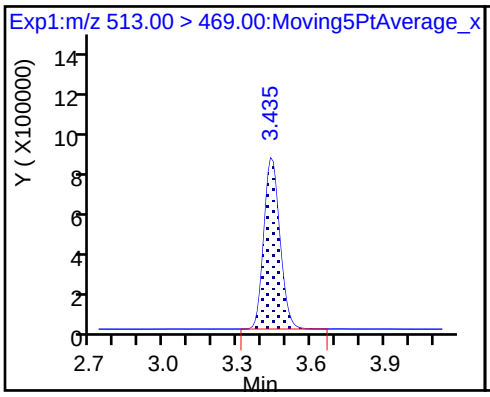
25 Sodium 1H,1H,2H,2H-perfluorodecane



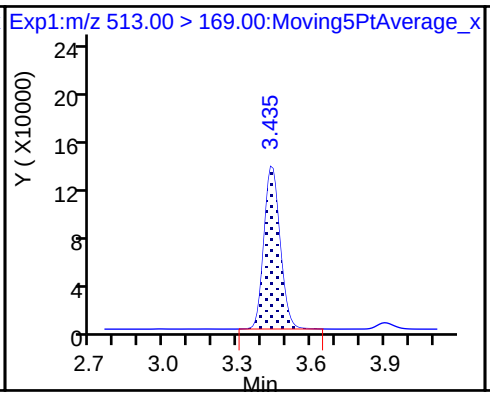
D 23 13C2 PFDA



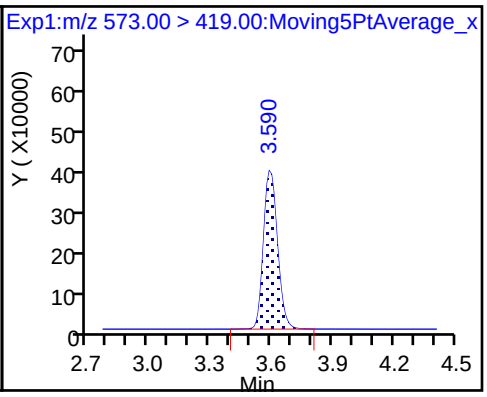
24 Perfluorodecanoic acid



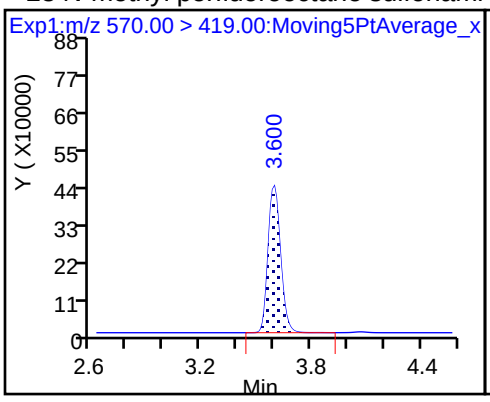
24 Perfluorodecanoic acid



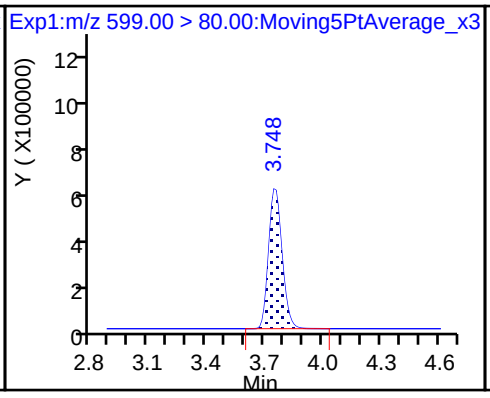
D 27 d3-NMeFOSAA



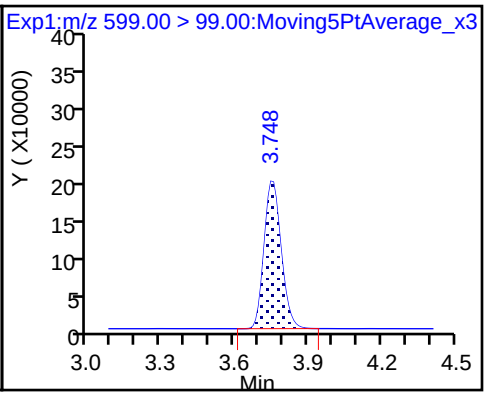
28 N-methyl perfluorooctane sulfonami



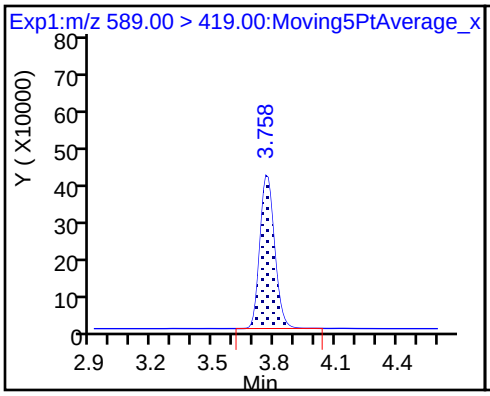
29 Perfluorodecane Sulfonic acid



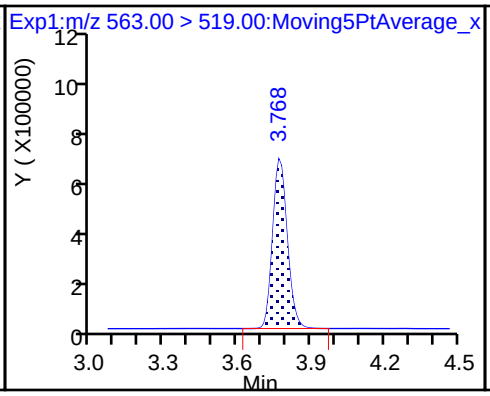
29 Perfluorodecane Sulfonic acid



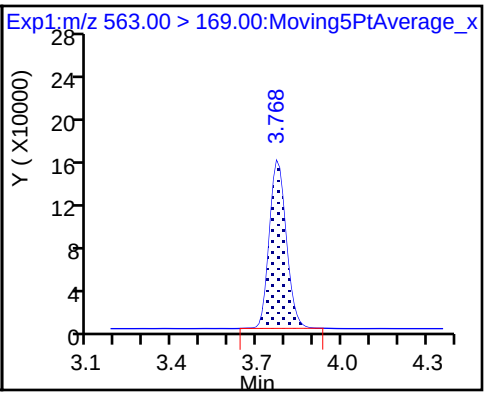
D 32 d5-NEtFOSAA



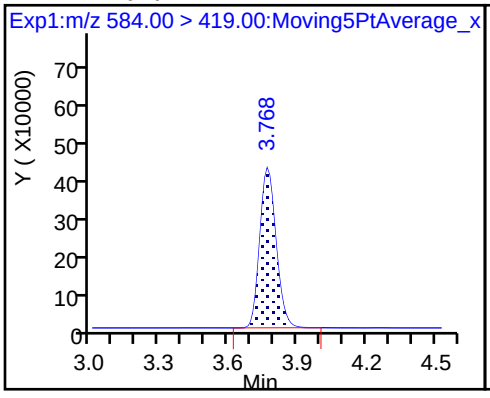
31 Perfluoroundecanoic acid



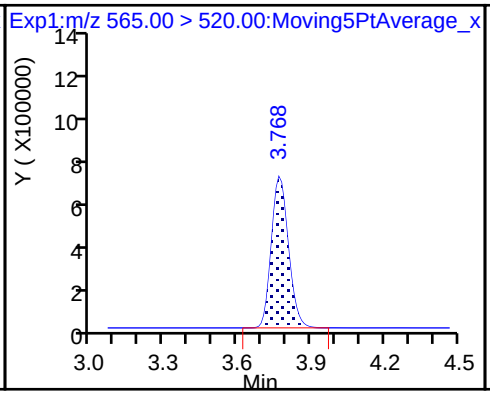
31 Perfluoroundecanoic acid



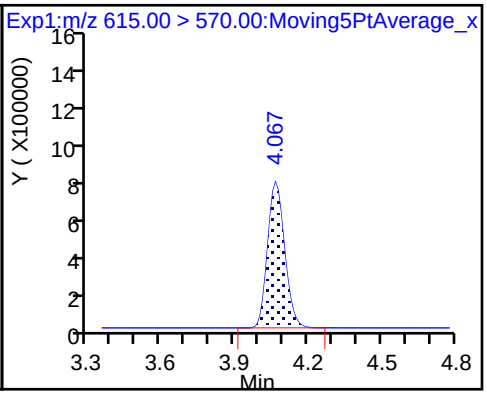
33 N-ethyl perfluorooctane sulfonamid



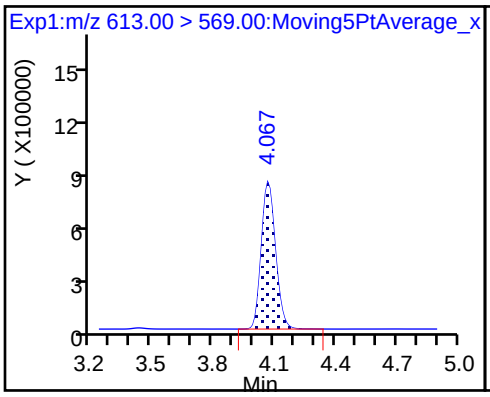
D 30 13C2 PFUnA



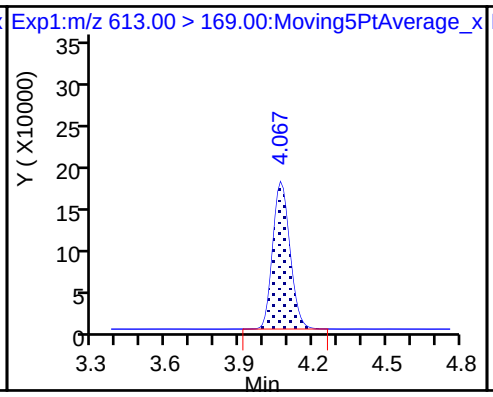
D 36 13C2 PFDoA



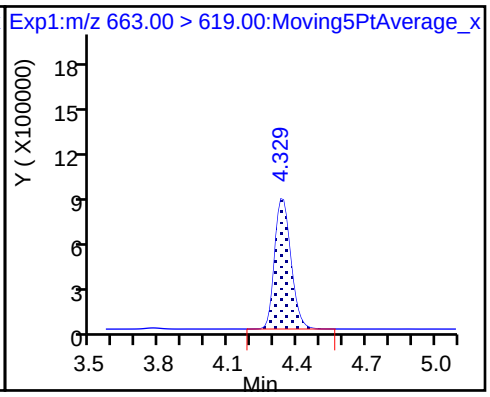
37 Perfluorododecanoic acid



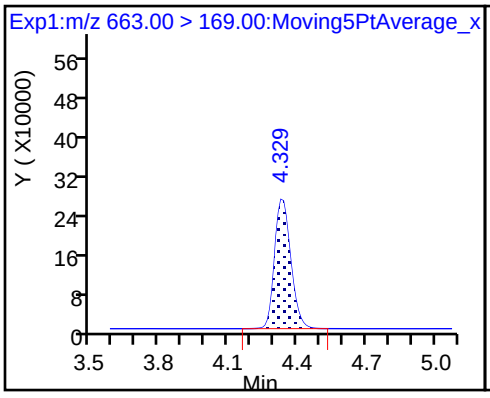
37 Perfluorododecanoic acid



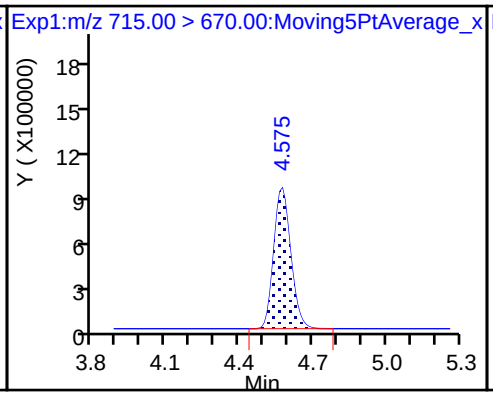
41 Perfluorotridecanoic acid



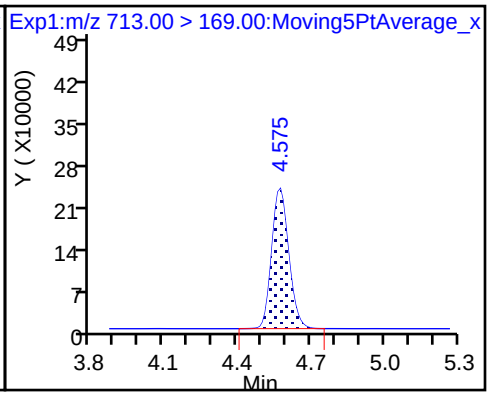
41 Perfluorotridecanoic acid



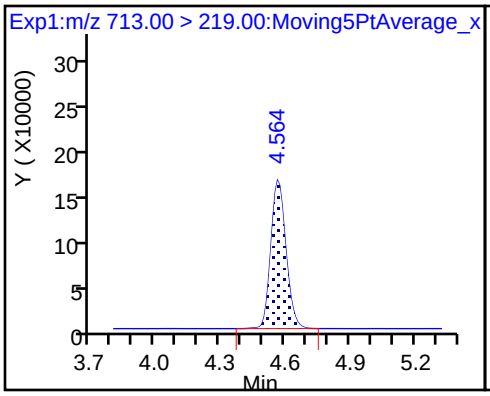
D 43 13C2-PFTeDA



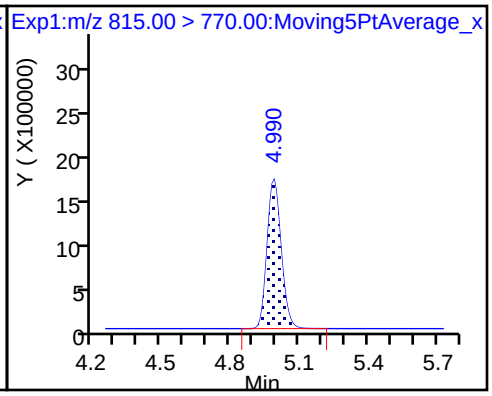
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_007.d
Lims ID: IC L6 Full
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 21-Mar-2018 19:03:30 ALS Bottle#: 15 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:42:44 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 21-Mar-2018 19:25:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.447	1.447	0.0	0.538	6477851	2.55		102	71577	
2 Perfluorobutyric acid										
212.90 > 169.00	1.447	1.449	-0.002	1.000	12506996	5.12		102	5009	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.710	-0.001	1.000	10061856	5.28		106	5962	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.710	-0.001	0.636	4228437	2.51		100	115375	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.743	-0.007	0.646	91170	2.37		102	642	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.745	-0.001	1.005	13614957	4.47		101	59974	
298.90 > 99.00	1.744	1.745	-0.001	1.005	5744856		2.37(1.25-3.74)	101	34133	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.959	-0.003	0.727	618185	NC			9508	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.956	1.962	-0.006	1.000	3074271	4.85		104	113750	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.998	-0.001	1.000	9699799	5.15		103	27756	
313.00 > 119.00	1.997	1.998	-0.001	1.000	852897		11.37(5.03-15.10)	103	18827	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.998	-0.001	0.743	4608558	2.48		99.0	117004	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.333	-0.005	0.866	4533044	2.47		98.7	76306	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.335	-0.007	1.000	9620973	5.13		103	19806	
363.00 > 169.00	2.328	2.335	-0.007	1.000	3676177		2.62(1.13-3.40)	103	44226	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.346	-0.005	1.000	11144344	4.59		101	37424	
399.00 > 99.00	2.341	2.346	-0.005	1.000	3686233		3.02(1.50-4.49)	101	14506	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.871	5161589	2.28		96.3	51420	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.665	2.672	-0.007	1.000	3079977	4.88		103	79193	
D 12 M2-6:2FTS										
429.00 > 81.00	2.665	2.672	-0.007	0.991	859398	2.26		95.0	19868	
* 62 13C2-PFOA										
415.00 > 370.00	2.689	2.695	-0.006		5010487	2.50			60852	
D 14 13C4 PFOA										
417.00 > 372.00	2.689	2.695	-0.006	1.000	4582778	2.44		97.6	62576	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.689	2.697	-0.008	1.000	10325028	4.99		99.7	3798	
413.00 > 169.00	2.689	2.697	-0.008	1.000	5578097		1.85(0.84-2.52)	99.7	12866	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.697	2.703	-0.007	1.000	10247281	4.92		103	95353	
449.00 > 99.00	2.697	2.703	-0.007	1.000	2802979		3.66(1.94-5.82)	103	30967	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.068	-0.003	1.140	3887079	2.36		98.7	34652	
D 19 13C5 PFNA										
468.00 > 423.00	3.065	3.070	-0.005	1.140	4190429	2.53		101	73908	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.065	3.070	-0.005	1.000	8507880	4.70		101	25330	
499.00 > 99.00	3.065	3.070	-0.005	1.000	1865180		4.56(2.31-6.93)	101	16885	
20 Perfluorononanoic acid										
463.00 > 419.00	3.065	3.072	-0.007	1.000	8405623	5.03		101	11383	
463.00 > 169.00	3.065	3.072	-0.007	1.000	2050780		4.10(1.90-5.69)	101	33608	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.396	-0.007	1.261	5524474	2.49		99.4	47817	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.398	3.397	0.001	1.003	11417156	5.24		105	103044	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.426	3.426	0.0	1.000	3110907	4.74		98.9	52787	
D 26 M2-8:2FTS										
529.00 > 81.00	3.426	3.426	0.0	1.274	1232595	2.40		100	20905	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.435	3.435	0.0	1.000	7434177	5.20		104	34723	
513.00 > 169.00	3.435	3.435	0.0	1.000	1267093		5.87(2.36-7.09)	104	25626	
D 23 13C2 PFDA										
515.00 > 470.00	3.435	3.435	0.0	1.278	3620699	2.49		99.7	67474	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.590	3.591	-0.001	1.335	1999896	2.62		105	32859	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.590	3.594	-0.004	1.000	4285891	5.35		107	16332	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.748	3.749	-0.001	1.000	5812987	5.26		109	81589	
599.00 > 99.00	3.748	3.749	-0.001	1.000	1938375		3.00(1.39-4.16)	109	40850	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.758	3.759	-0.001	1.398	2049207	2.35		94.1	11579	
D 30 13C2 PFUnA										
565.00 > 520.00	3.768	3.768	0.0	1.402	3287781	2.53		101	48915	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.768	3.768	0.0	1.003	4082815	5.33		107	52088	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.768	3.768	0.0	1.000	5555779	4.90		98.0	24720	
563.00 > 169.00	3.768	3.768	0.0	1.000	1268479		4.38(2.12-6.36)	98.0	37902	
D 36 13C2 PFDoA										
615.00 > 570.00	4.067	4.066	0.001	1.513	3576857	2.43		97.1	25243	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.067	4.068	-0.001	1.000	7940975	5.30		106	7729	
613.00 > 169.00	4.067	4.068	-0.001	1.000	1842955		4.31(2.13-6.40)	106	22214	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.329	4.329	0.0	1.000	8719608	5.54		111	6299	
663.00 > 169.00	4.329	4.329	0.0	1.000	2643202		3.30(1.25-3.76)	111	25957	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.564	4.568	-0.004	1.698	4422729	2.46		98.3	24229	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.564	4.571	-0.007	1.000	2258774	5.15		103	23470	
713.00 > 219.00	4.564	4.571	-0.007	1.000	1681977		1.34(0.71-2.13)	103	21838	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.981	4.987	-0.006	1.853	7843306	2.66		106	20262	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.981	4.989	-0.008	1.000	14354924	NC			4032	
813.00 > 169.00	4.981	4.989	-0.008	1.000	2391479		6.00(2.86-8.58)		14747	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.352	5.354	-0.002	1.000	14635504	NC			3845	
913.00 > 169.00	5.345	5.354	-0.009	0.999	1844593		7.93(3.83-11.48)		7769	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL6_00005 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:42:46 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_007.d

Injection Date: 21-Mar-2018 19:03:30 Instrument ID: A8_N

Lims ID: IC L6 Full

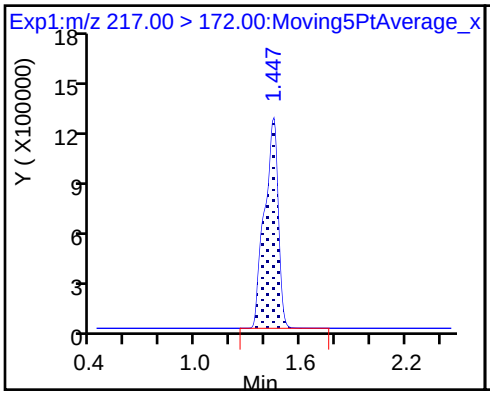
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 7

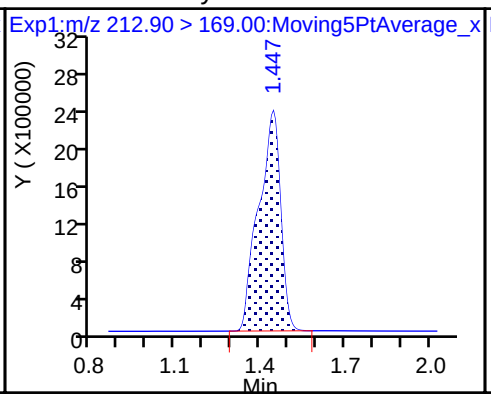
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

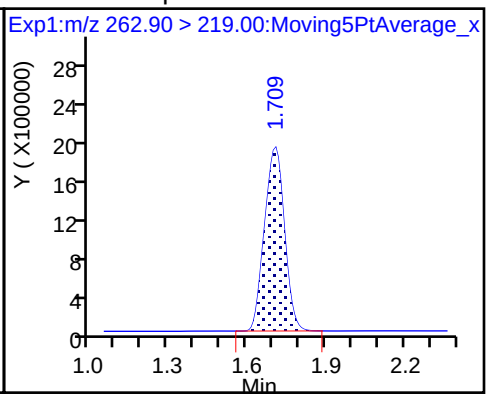
D 1 13C4 PFBA



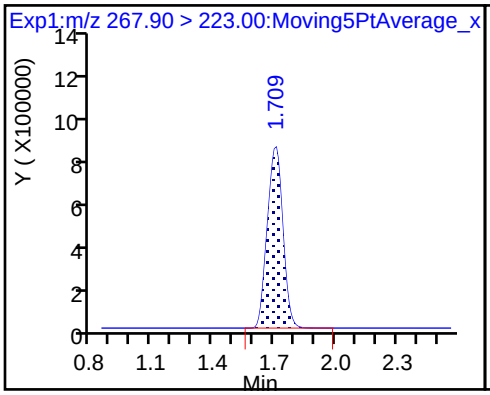
2 Perfluorobutyric acid



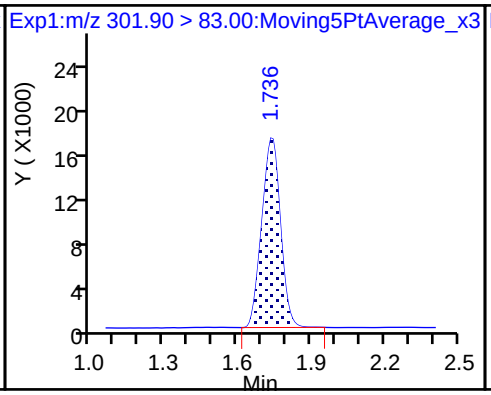
4 Perfluoropentanoic acid



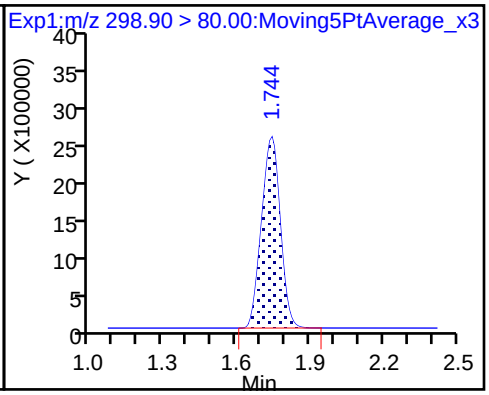
D 3 13C5-PFPeA



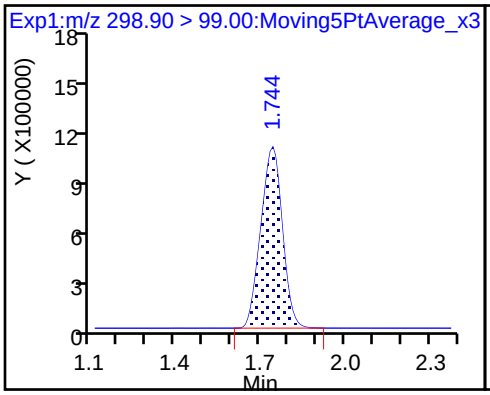
D 47 13C3-PFBS



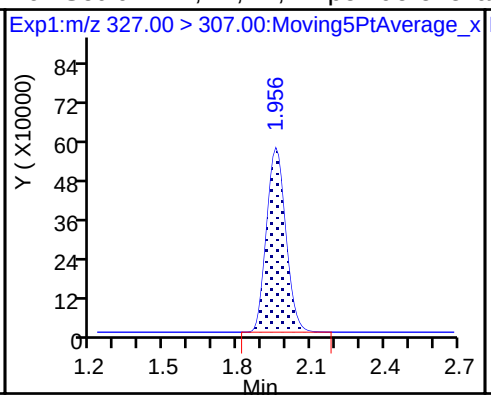
5 Perfluorobutanesulfonic acid



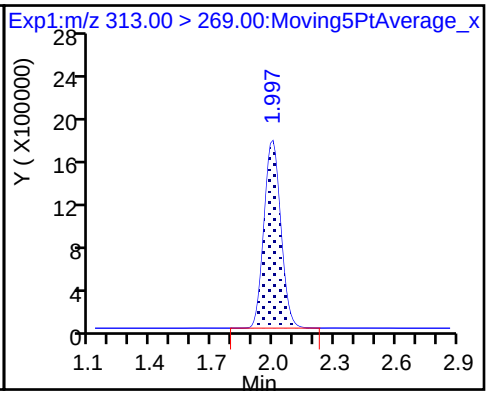
5 Perfluorobutanesulfonic acid



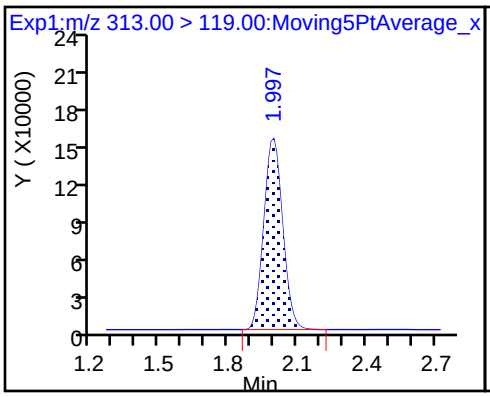
61 Sodium 1H,1H,2H,2H-perfluorohexane



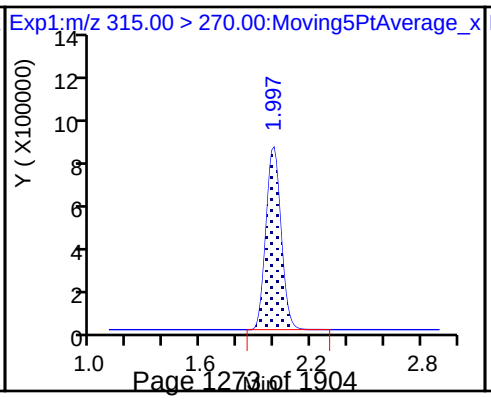
6 Perfluorohexanoic acid



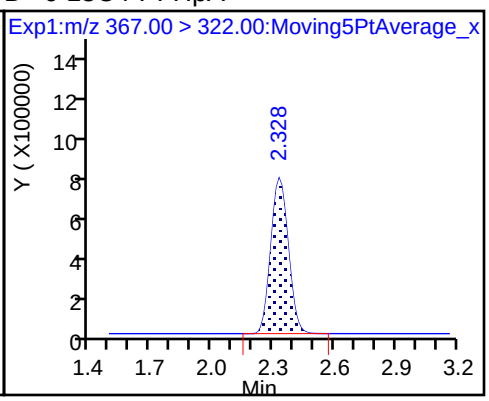
6 Perfluorohexanoic acid



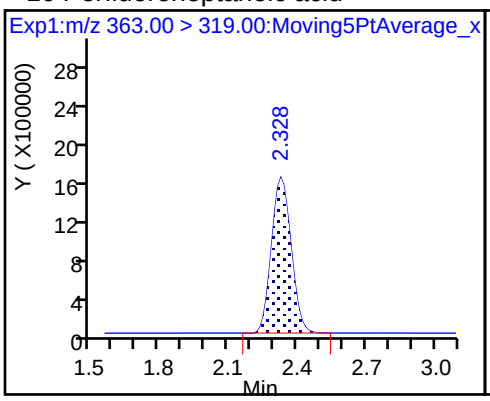
D 7 13C2 PFHxA



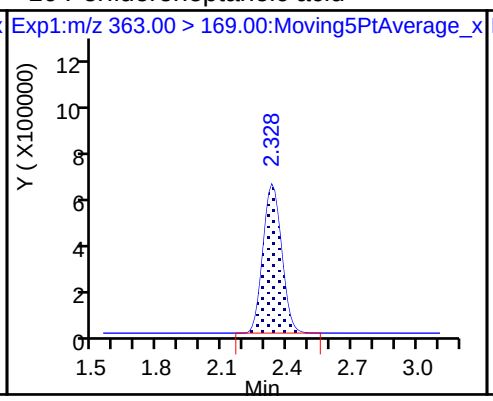
D 9 13C4-PFHpA



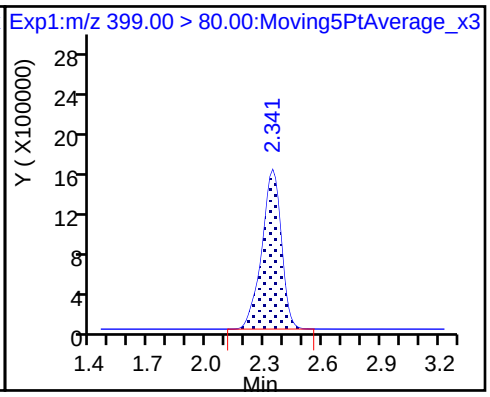
10 Perfluoroheptanoic acid



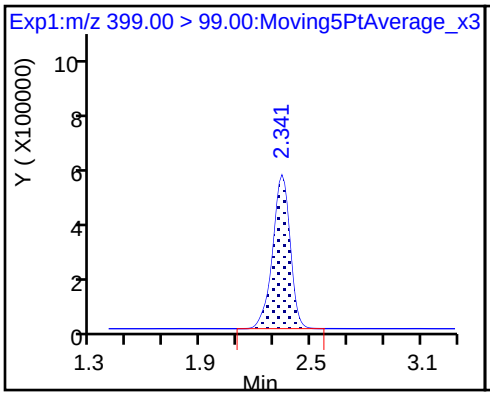
10 Perfluoroheptanoic acid



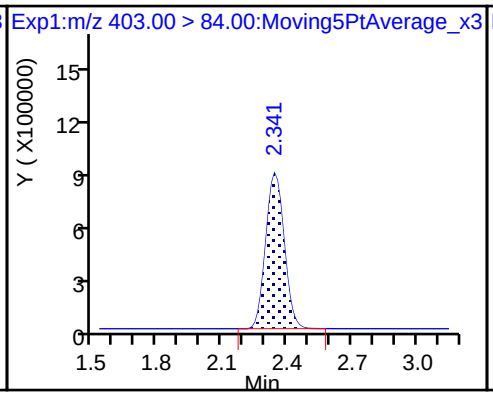
8 Perfluorohexanesulfonic acid



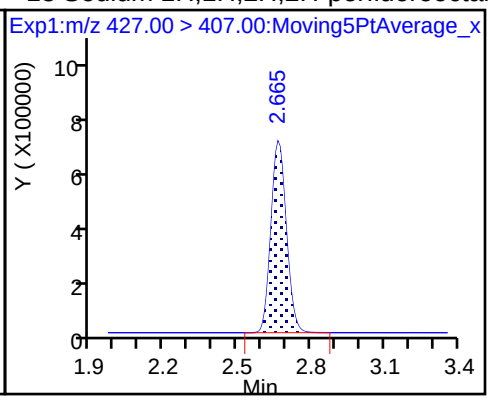
8 Perfluorohexanesulfonic acid



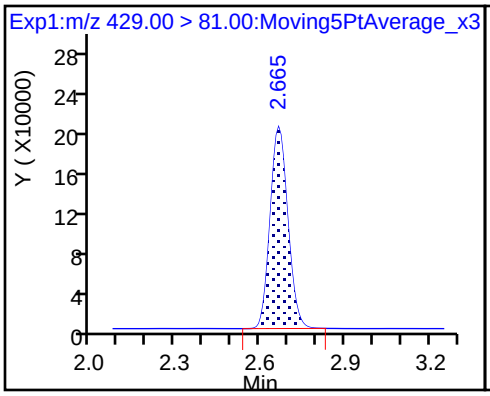
D 11 18O2 PFHxS



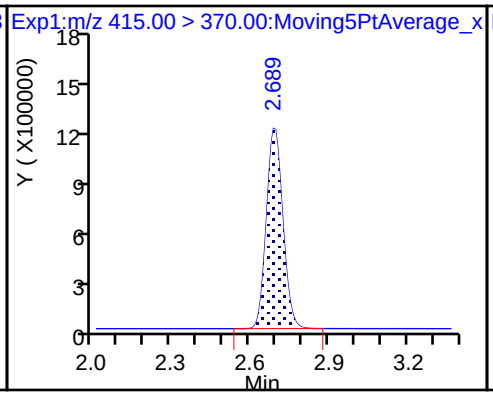
13 Sodium 1H,1H,2H,2H-perfluorooctane



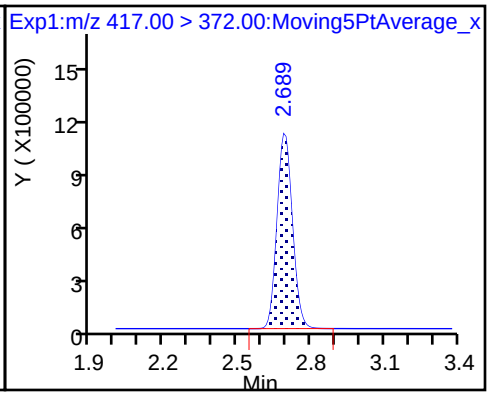
D 12 M2-6:2FTS



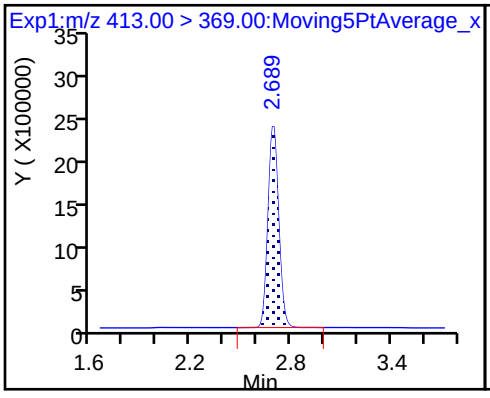
* 62 13C2-PFOA



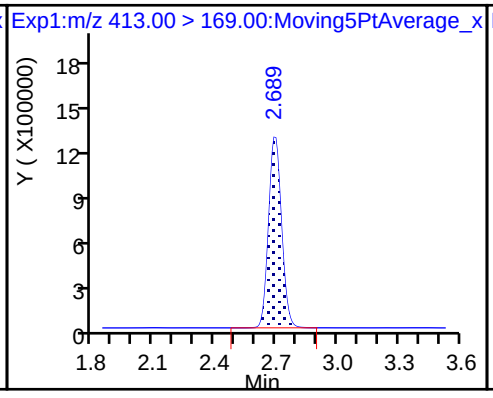
D 14 13C4 PFOA



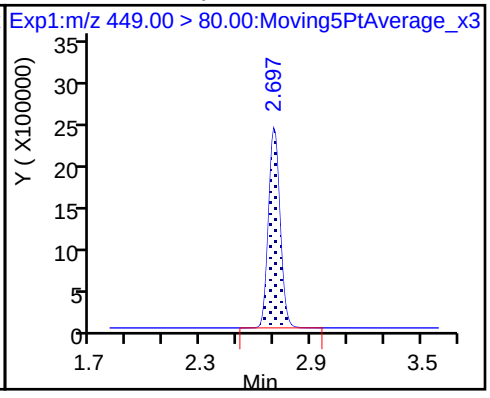
15 Perfluorooctanoic acid



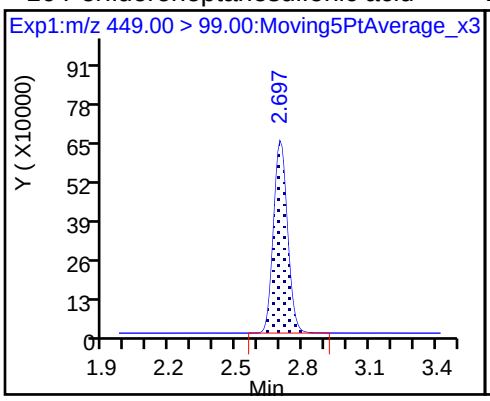
15 Perfluorooctanoic acid



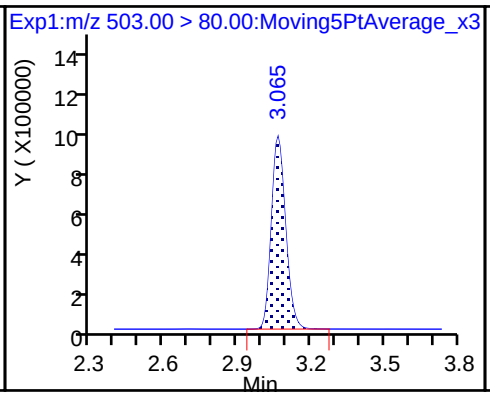
16 Perfluoroheptanesulfonic acid



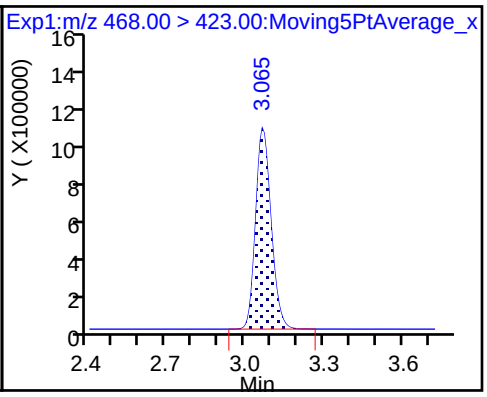
16 Perfluoroheptanesulfonic acid



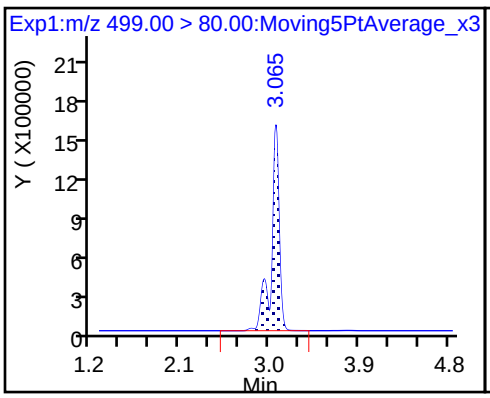
D 18 13C4 PFOS



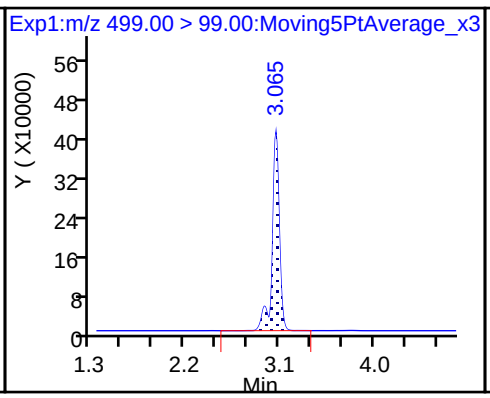
D 19 13C5 PFNA



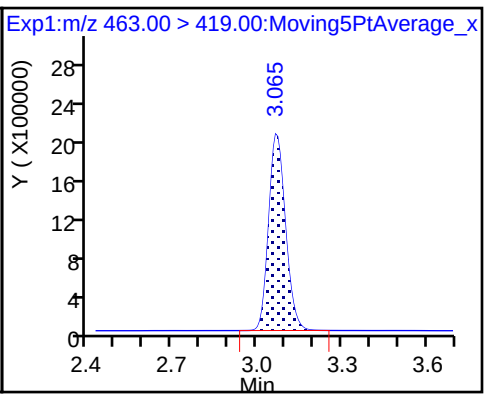
17 Perfluorooctane sulfonic acid



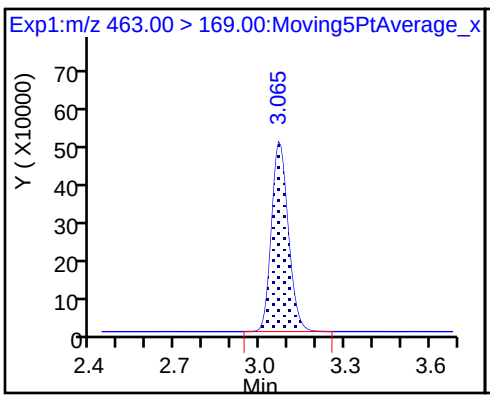
17 Perfluorooctane sulfonic acid



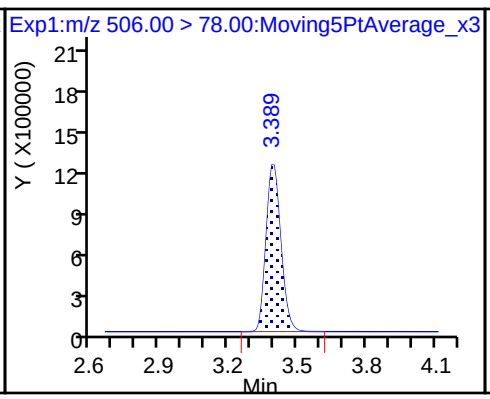
20 Perfluorononanoic acid



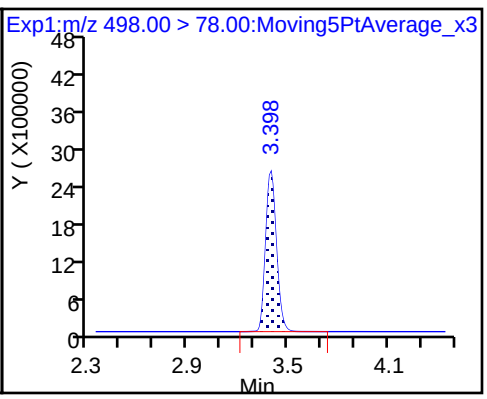
20 Perfluorononanoic acid



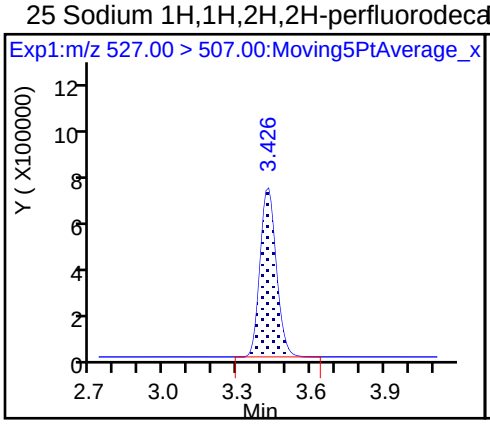
D 21 13C8 FOSA



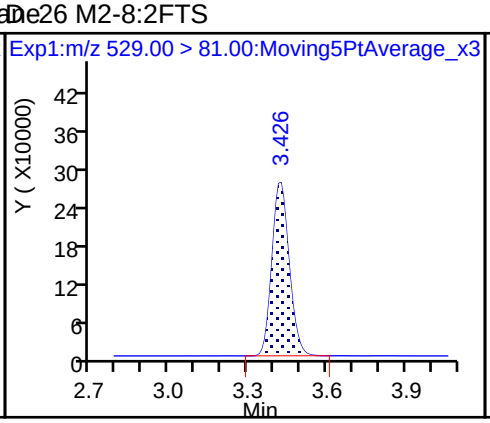
22 Perfluorooctane Sulfonamide



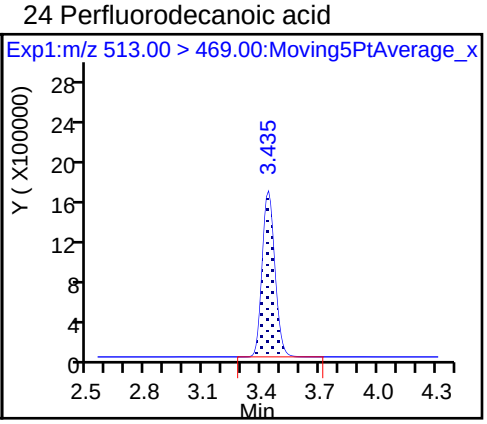
25 Sodium 1H,1H,2H,2H-perfluorodecane



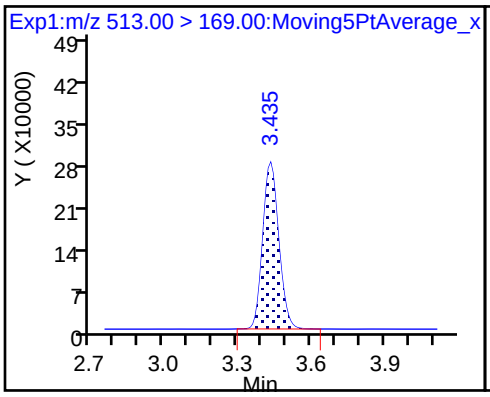
D 26 M2-8:2FTS



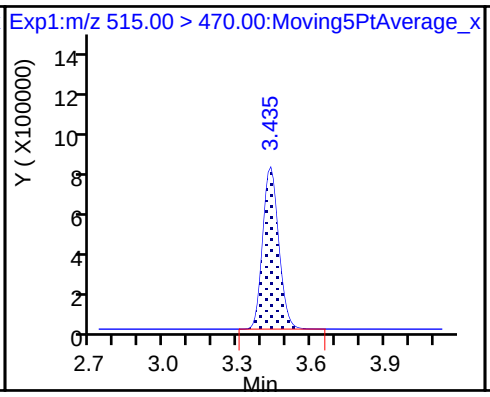
24 Perfluorodecanoic acid



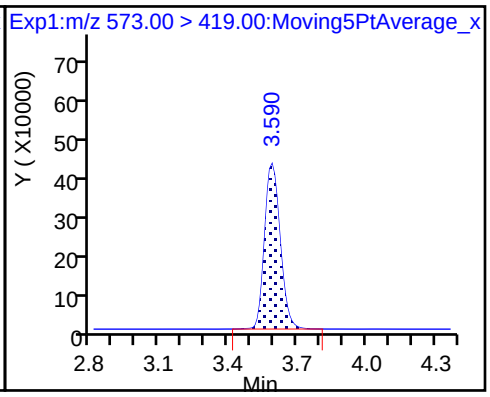
24 Perfluorodecanoic acid



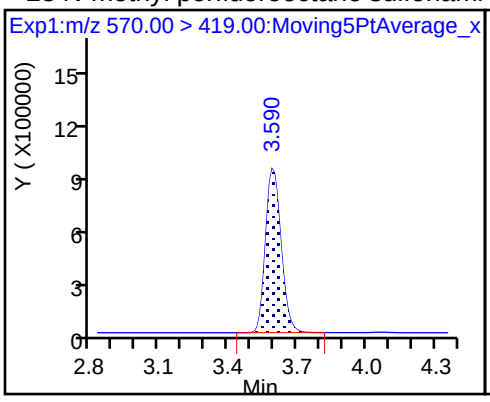
D 23 13C2 PFDA



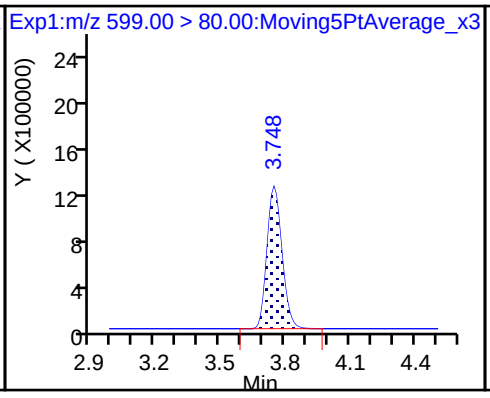
D 27 d3-NMeFOSAA



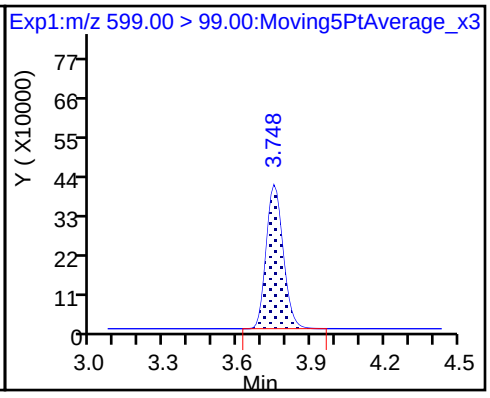
28 N-methyl perfluorooctane sulfonami



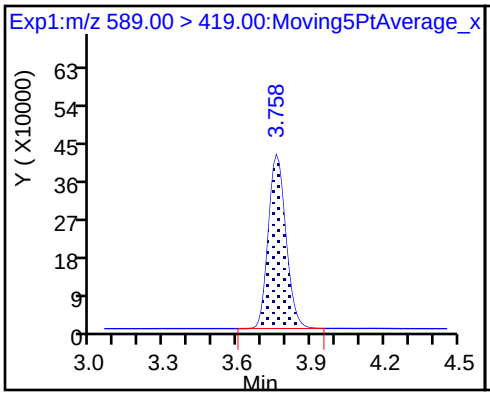
29 Perfluorodecane Sulfonic acid



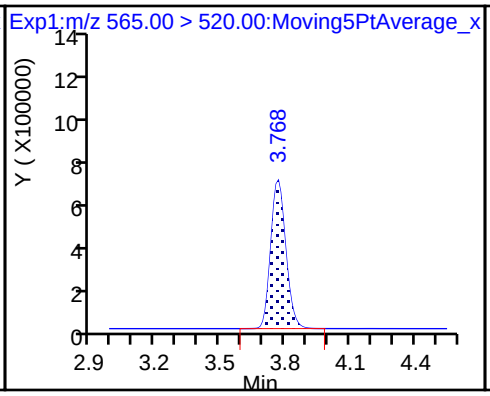
29 Perfluorodecane Sulfonic acid



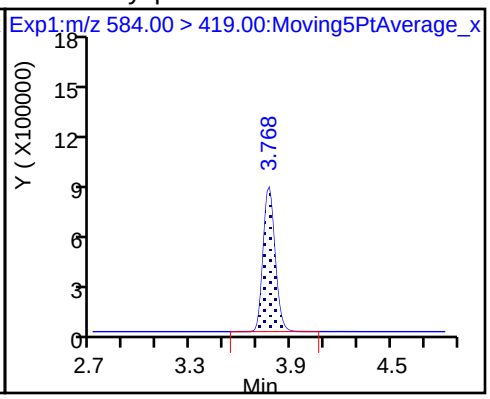
D 32 d5-NEtFOSAA



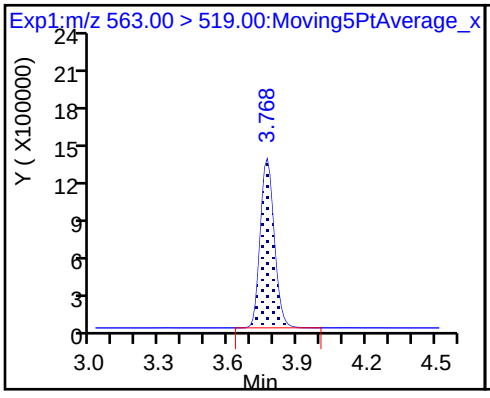
D 30 13C2 PFUnA



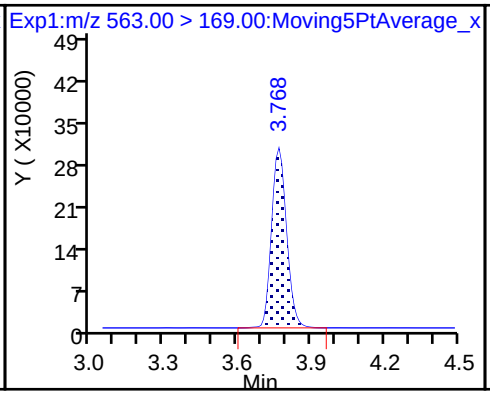
33 N-ethyl perfluorooctane sulfonamid



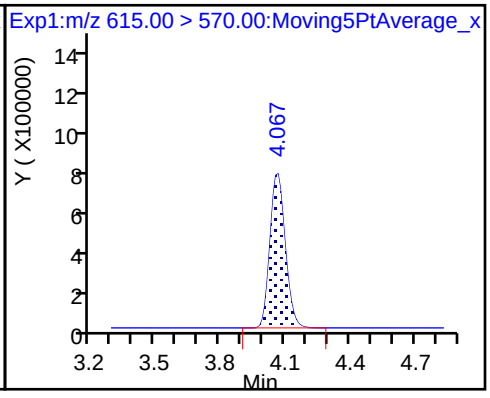
31 Perfluoroundecanoic acid



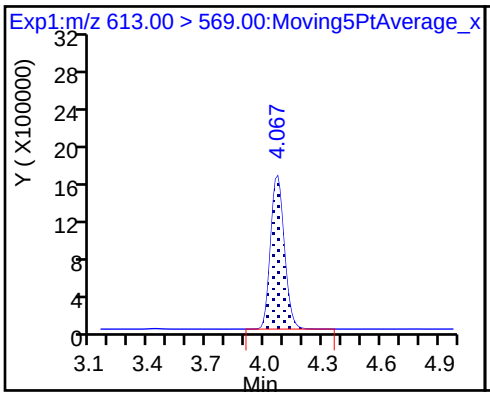
31 Perfluoroundecanoic acid



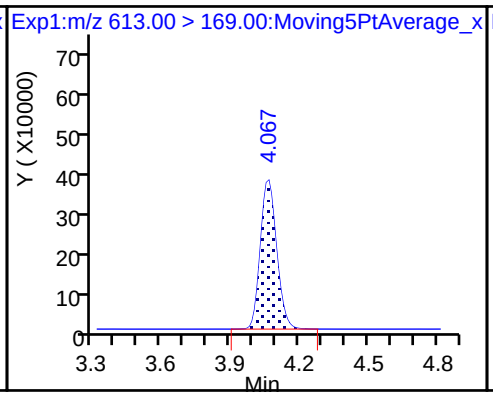
D 36 13C2 PFDoA



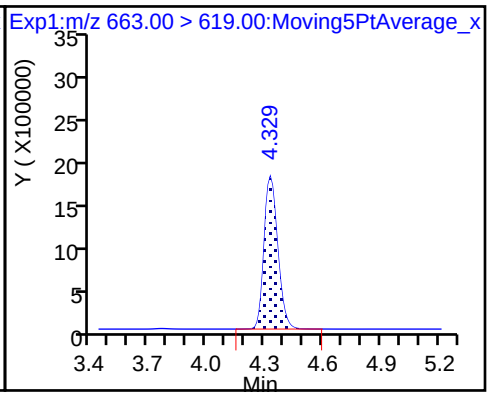
37 Perfluorododecanoic acid



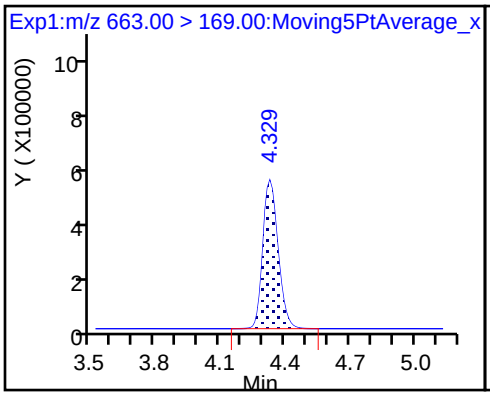
37 Perfluorododecanoic acid



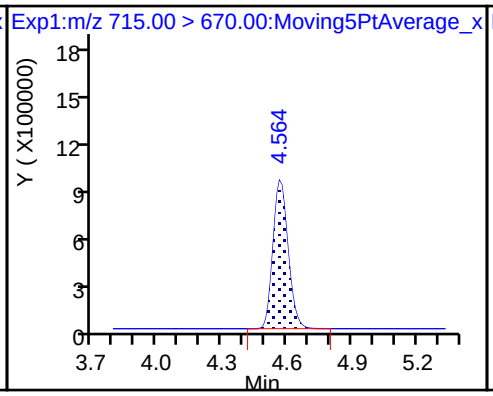
41 Perfluorotridecanoic acid



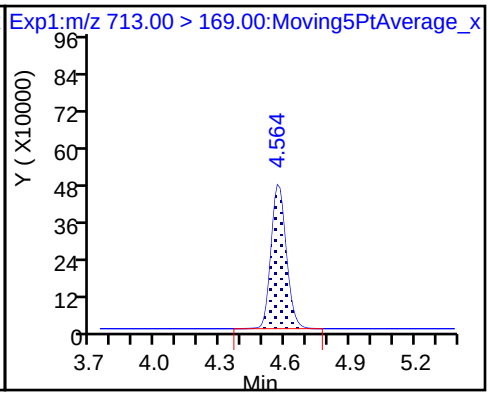
41 Perfluorotridecanoic acid



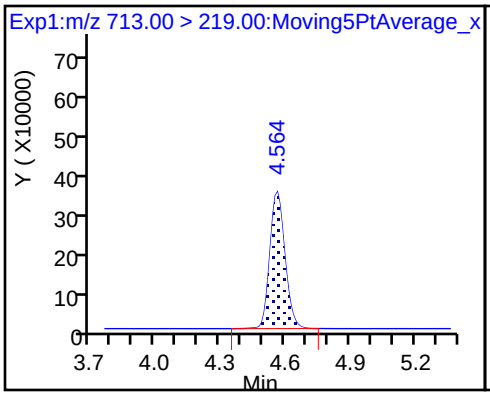
D 43 13C2-PFTeDA



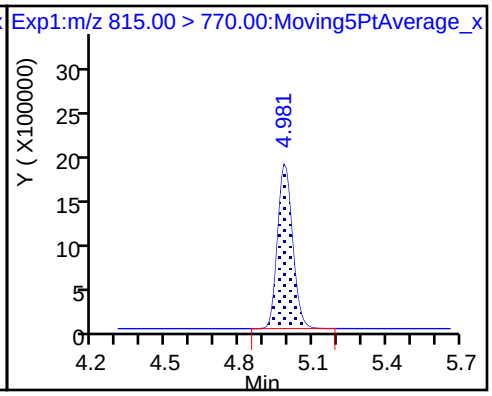
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d
Lims ID: IC L7 Full
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 21-Mar-2018 19:11:19 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L7-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:42:48 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 21-Mar-2018 19:26:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.444	1.447	-0.003	0.537	6100844	2.65		106	75996	
2 Perfluorobutyric acid										
212.90 > 169.00	1.450	1.449	0.001	1.004	22360079	9.72		97.2	8015	
D 3 13C5-PFPeA										
267.90 > 223.00	1.705	1.710	-0.005	0.634	4046135	2.65		106	97369	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.705	1.710	-0.005	1.000	18500324	10.1		101	10333	
D 47 13C3-PFBS										
301.90 > 83.00	1.740	1.743	-0.003	0.647	84106	2.41		104	620	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.740	1.745	-0.005	1.000	24100878	8.57		97.0	85607	
298.90 > 99.00	1.740	1.745	-0.005	1.000	10977956		2.20(1.25-3.74)	97.0	60614	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.959	0.001	0.729	533647	NC			6419	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.960	1.962	-0.002	1.000	5293270	9.06		97.0	195984	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.998	-0.006	0.740	4257747	2.52		101	74703	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.992	1.998	-0.006	1.000	17232401	9.90		99.0	44074	
313.00 > 119.00	1.992	1.998	-0.006	1.000	1540944		11.18(5.03-15.10)	99.0	34184	
D 9 13C4-PFHpA										
367.00 > 322.00	2.335	2.333	0.002	0.868	4129064	2.48		99.0	69460	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.335	2.335	0.0	1.000	17149506	10.0		100	30306	
363.00 > 169.00	2.335	2.335	0.0	1.000	6613832		2.59(1.13-3.40)	100	48365	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.348	2.346	0.002	1.000	19742275	8.51		93.5	51185	
399.00 > 99.00	2.348	2.346	0.002	1.000	7022065		2.81(1.50-4.49)	93.5	22400	
D 11 18O2 PFHxS										
403.00 > 84.00	2.348	2.348	0.0	0.873	4928998	2.40		101	64840	
D 12 M2-6:2FTS										
429.00 > 81.00	2.667	2.672	-0.005	0.991	845912	2.45		103	18074	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.667	2.672	-0.005	1.000	5982174	9.63		102	108087	
D 14 13C4 PFOA										
417.00 > 372.00	2.691	2.695	-0.004	1.000	4169807	2.44		97.7	59737	
* 62 13C2-PFOA										
415.00 > 370.00	2.691	2.695	-0.004		4550962	2.50			65302	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.691	2.697	-0.006	1.000	18212815	9.67		96.7	5500	
413.00 > 169.00	2.691	2.697	-0.006	1.000	10080594		1.81(0.84-2.52)	96.7	18247	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.699	2.703	-0.004	1.000	17826274	9.17		96.3	103505	
449.00 > 99.00	2.699	2.703	-0.004	1.000	4999808		3.57(1.94-5.82)	96.3	34087	
D 18 13C4 PFOS										
503.00 > 80.00	3.067	3.068	-0.001	1.140	3625826	2.42		101	21910	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.067	3.070	-0.003	1.000	15932478	9.43		102	19647	M
499.00 > 99.00	3.067	3.070	-0.003	1.000	3468678		4.59(2.31-6.93)	102	82323	
D 19 13C5 PFNA										
468.00 > 423.00	3.067	3.070	-0.003	1.140	3729104	2.48		99.1	64949	
20 Perfluorononanoic acid										
463.00 > 419.00	3.067	3.072	-0.005	1.000	15598692	10.5		105	18229	
463.00 > 169.00	3.067	3.072	-0.005	1.000	3729122		4.18(1.90-5.69)	105	50397	
D 21 13C8 FOSA										
506.00 > 78.00	3.393	3.396	-0.004	1.261	4957065	2.46		98.2	34240	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.393	3.397	-0.005	1.000	18741888	9.59		95.9	103813	
D 26 M2-8:2FTS										
529.00 > 81.00	3.420	3.426	-0.006	1.271	1040808	2.23		93.1	16509	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.420	3.426	-0.006	1.000	5541846	10.0		104	80664	
D 23 13C2 PFDA										
515.00 > 470.00	3.429	3.435	-0.006	1.274	3248595	2.46		98.5	64981	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.429	3.435	-0.006	1.000	12786299	9.96		99.6	52903	
513.00 > 169.00	3.429	3.435	-0.006	1.000	2320539		5.51(2.36-7.09)	99.6	85814	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.584	3.591	-0.007	1.332	1816501	2.62		105	27279	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.595	3.594	0.001	1.003	7642171	10.5		105	37247	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.744	3.749	-0.005	1.000	10545265	10.2		106	168906	
599.00 > 99.00	3.744	3.749	-0.005	1.000	3537256		2.98(1.39-4.16)	106	56975	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.754	3.759	-0.005	1.395	1842170	2.33		93.2	10683	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.764	3.768	-0.004	1.000	10065814	10.5		105	36194	
563.00 > 169.00	3.764	3.768	-0.004	1.000	2312836		4.35(2.12-6.36)	105	50289	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.764	3.768	-0.004	1.003	6938724	10.1		101	87182	
D 30 13C2 PFUnA										
565.00 > 520.00	3.764	3.768	-0.004	1.399	2787354	2.36		94.5	52309	
D 36 13C2 PFDoA										
615.00 > 570.00	4.063	4.066	-0.003	1.510	3528118	2.64		105	29032	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.063	4.068	-0.005	1.000	14548343	9.85		98.5	12448	
613.00 > 169.00	4.063	4.068	-0.005	1.000	3568672		4.08(2.13-6.40)	98.5	36734	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.325	4.329	-0.004	1.000	14795343	9.52		95.2	10222	
663.00 > 169.00	4.325	4.329	-0.004	1.000	4868530		3.04(1.25-3.76)	95.2	33458	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.561	4.568	-0.007	1.695	4321269	2.64		106	28163	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.561	4.571	-0.010	1.000	4319552	10.1		101	40804	
713.00 > 219.00	4.561	4.571	-0.010	1.000	3132710		1.38(0.71-2.13)	101	38066	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.978	4.987	-0.009	1.850	6875940	2.56		103	18896	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.987	4.989	-0.002	1.002	23776796	NC			6474	
813.00 > 169.00	4.978	4.989	-0.011	1.000	4555370		5.22(2.86-8.58)		19192	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.349	5.354	-0.005	1.000	24460507	NC			5275	
913.00 > 169.00	5.342	5.354	-0.012	0.999	3189601		7.67(3.83-11.48)		10811	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL7_00004 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:42:50 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Injection Date: 21-Mar-2018 19:11:19 Instrument ID: A8_N

Lims ID: IC L7 Full

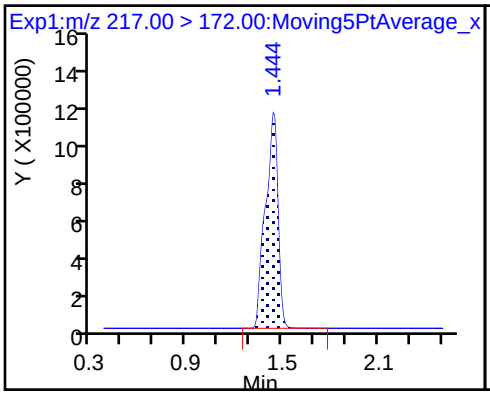
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8

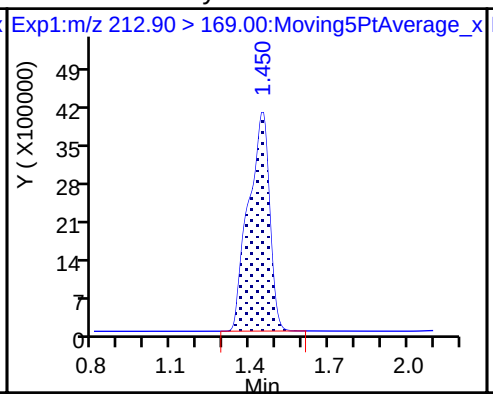
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

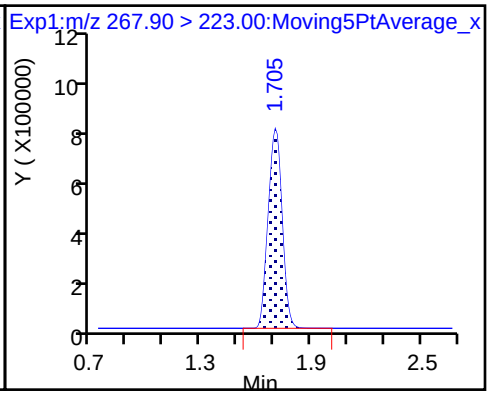
D 1 13C4 PFBA



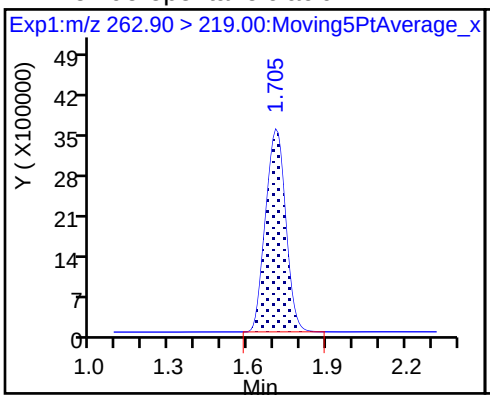
2 Perfluorobutyric acid



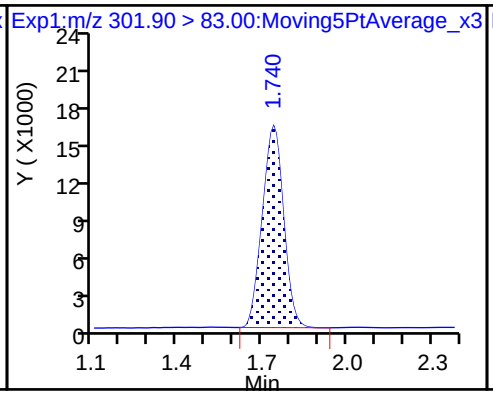
D 3 13C5-PFPeA



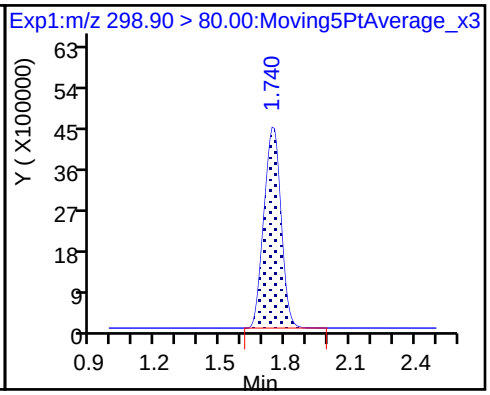
4 Perfluoropentanoic acid



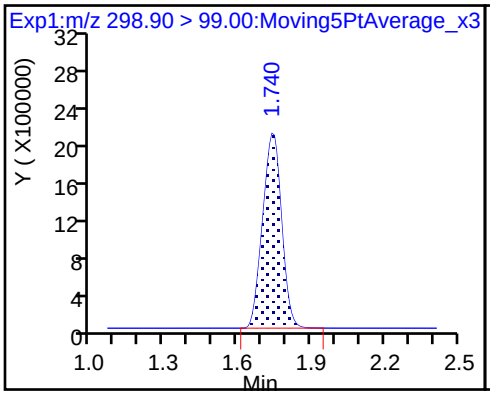
D 47 13C3-PFBS



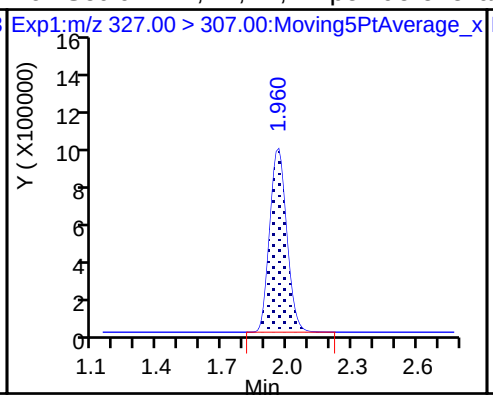
5 Perfluorobutanesulfonic acid



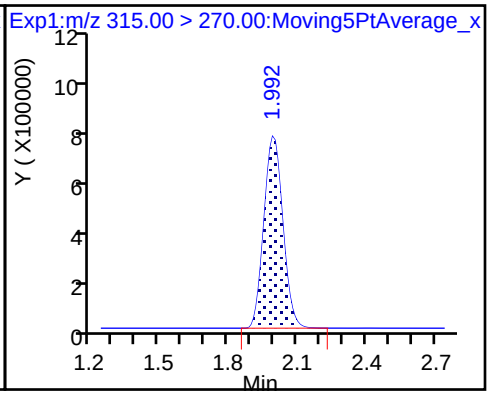
5 Perfluorobutanesulfonic acid



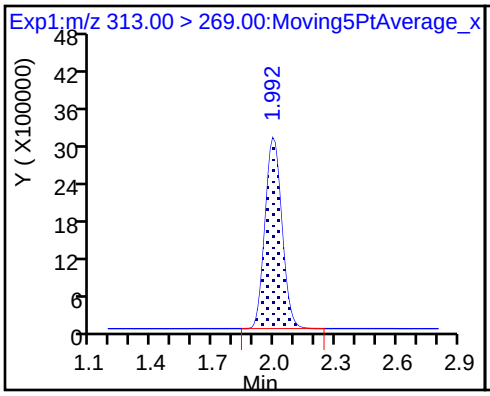
61 Sodium 1H,1H,2H,2H-perfluorohexa



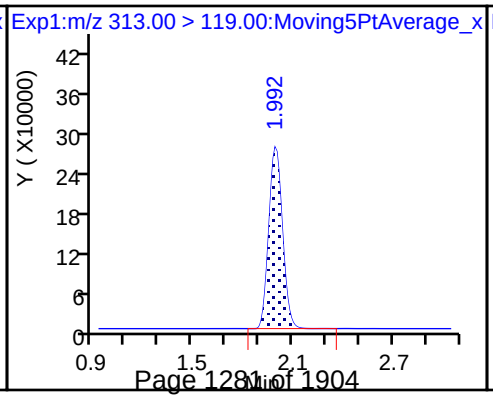
D 7 13C2 PFHxA



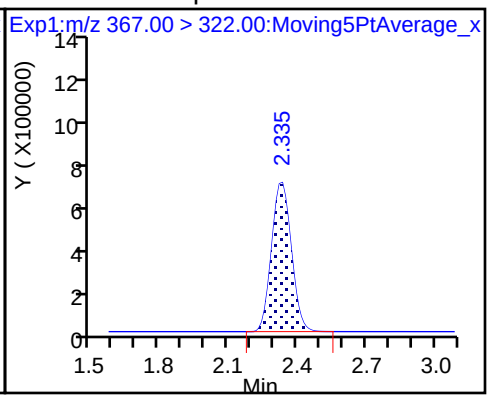
6 Perfluorohexanoic acid



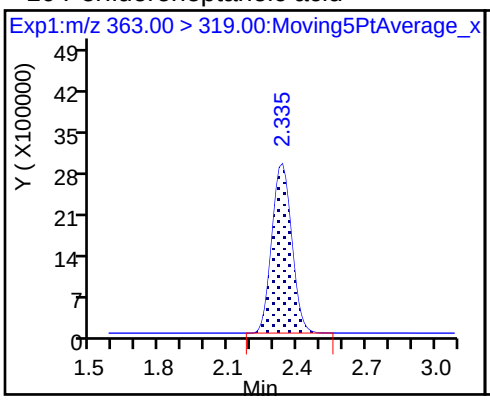
6 Perfluorohexanoic acid



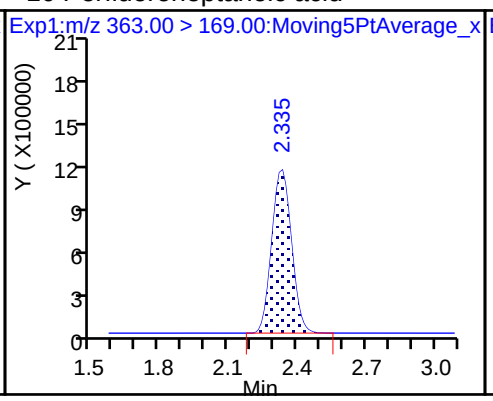
D 9 13C4-PFHpA



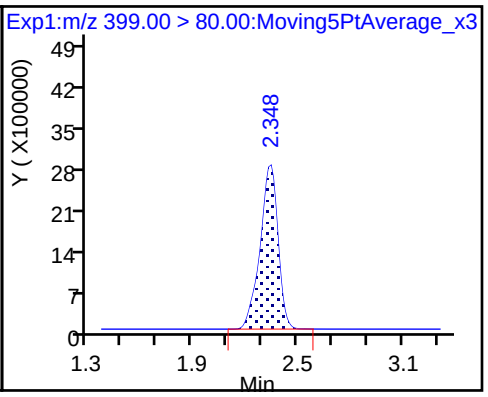
10 Perfluoroheptanoic acid



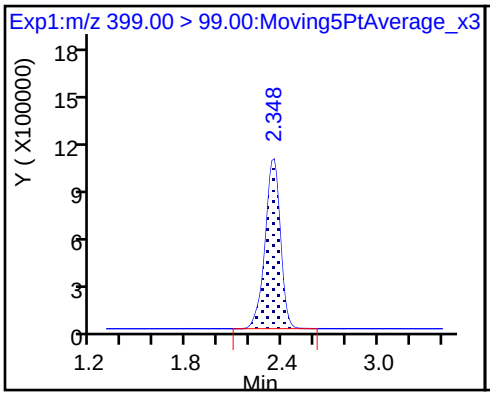
10 Perfluoroheptanoic acid



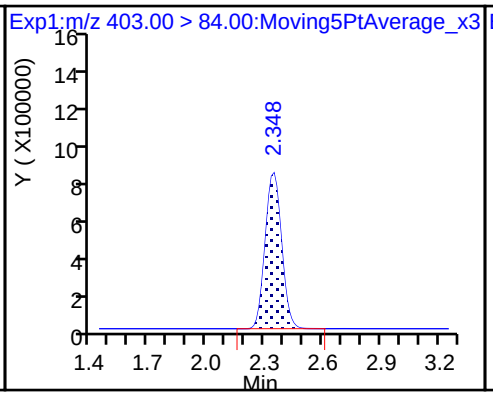
8 Perfluorohexanesulfonic acid



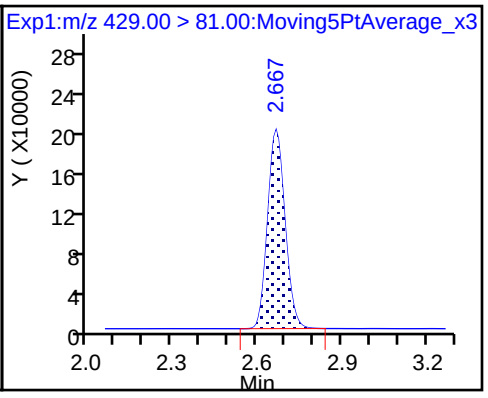
8 Perfluorohexanesulfonic acid



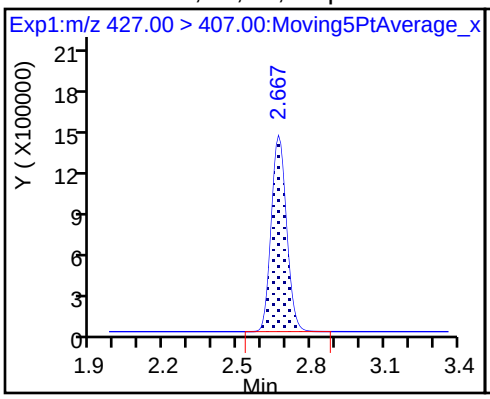
D 11 18O2 PFHxS



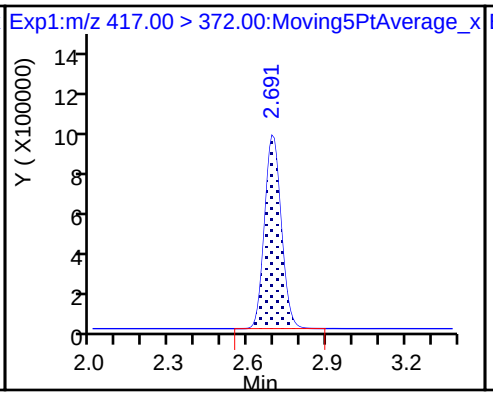
D 12 M2-6:2FTS



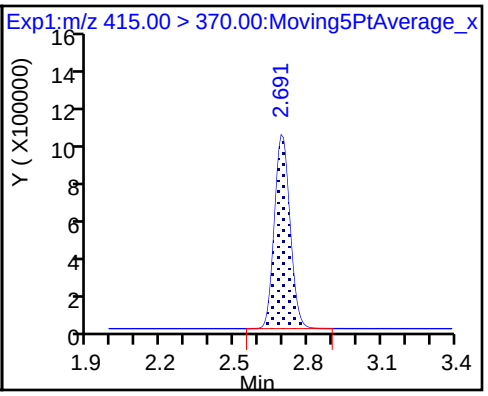
13 Sodium 1H,1H,2H,2H-perfluorooctane



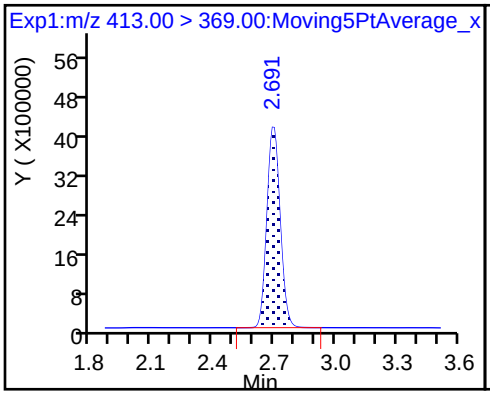
D 14 13C4 PFOA



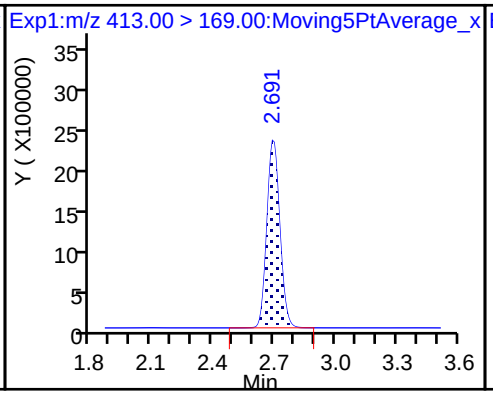
* 62 13C2-PFOA



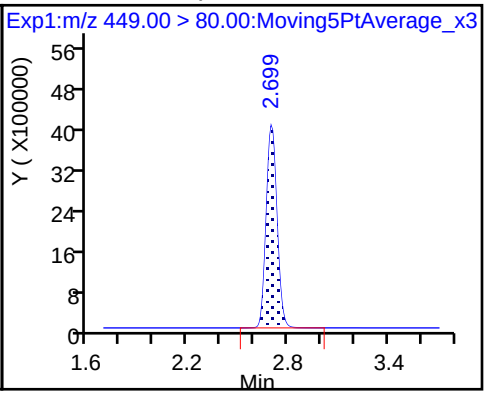
15 Perfluorooctanoic acid



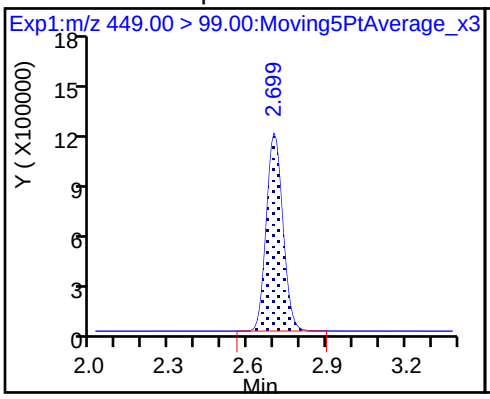
15 Perfluorooctanoic acid



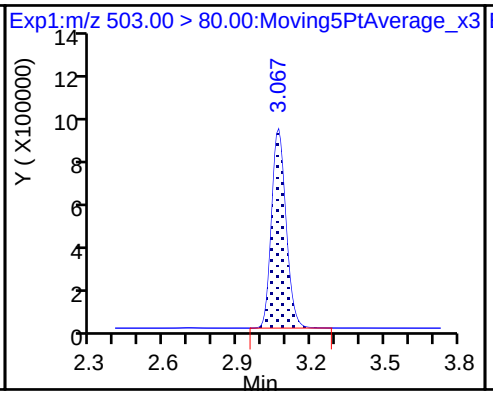
16 Perfluoroheptanesulfonic acid



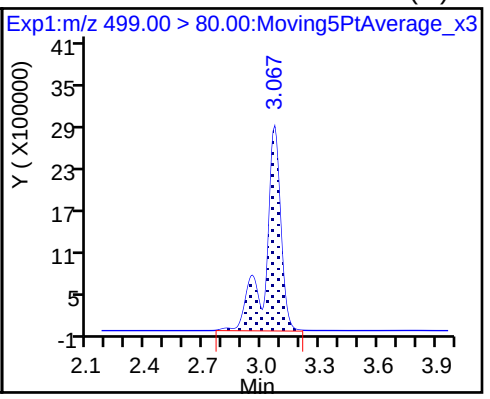
16 Perfluoroheptanesulfonic acid



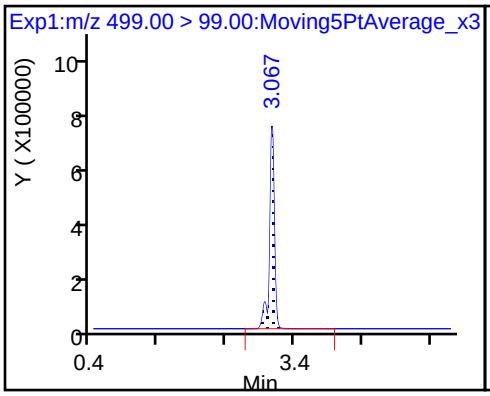
D 18 13C4 PFOS



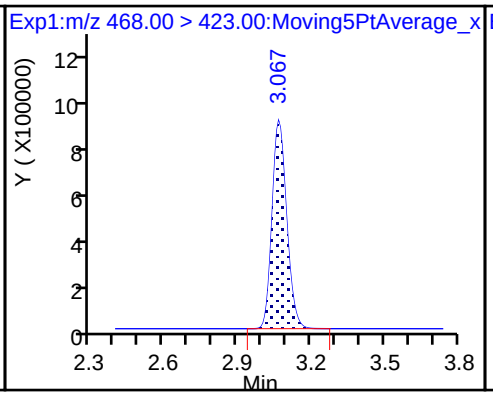
17 Perfluorooctane sulfonic acid (M)



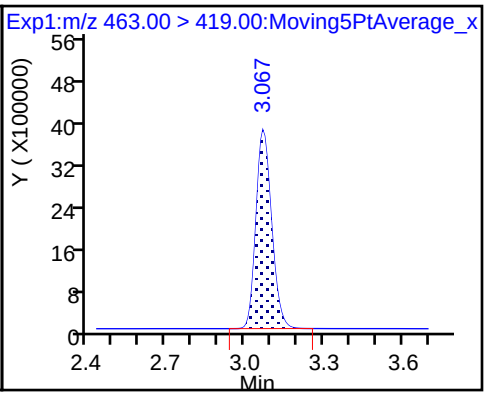
17 Perfluorooctane sulfonic acid



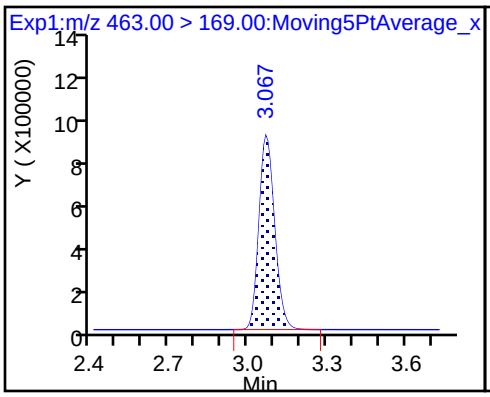
D 19 13C5 PFNA



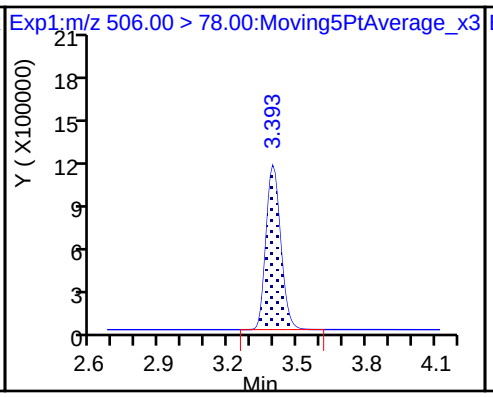
20 Perfluorononanoic acid



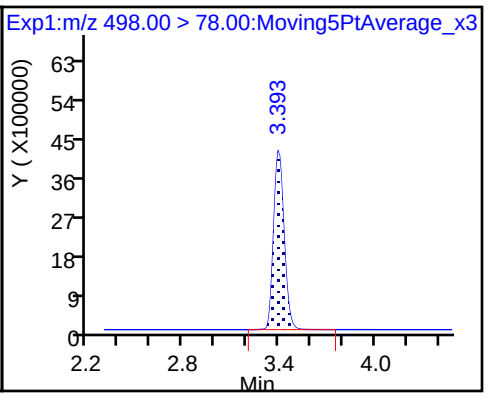
20 Perfluorononanoic acid



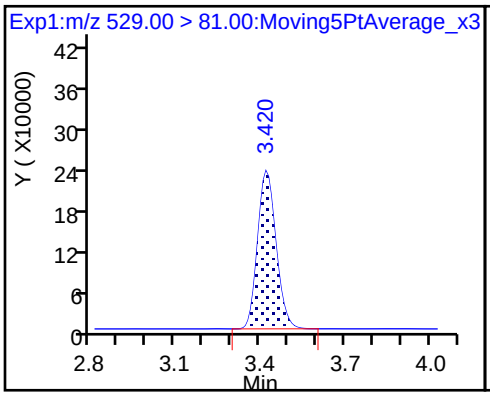
D 21 13C8 FOSA



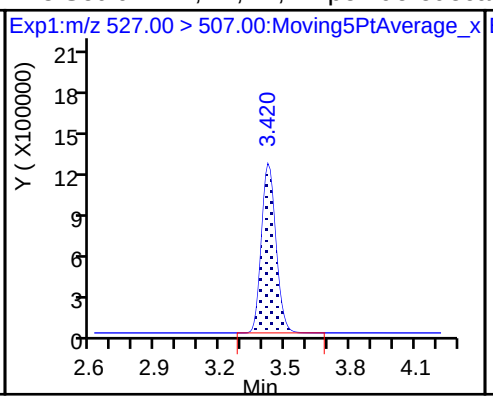
22 Perfluorooctane Sulfonamide



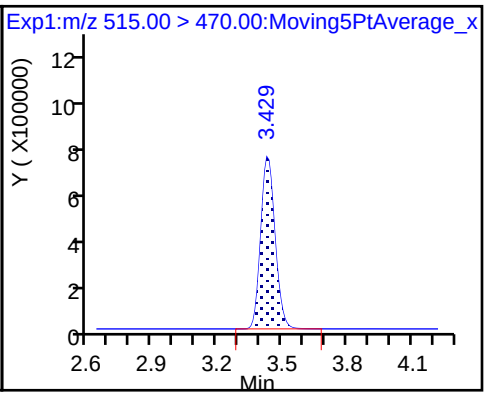
D 26 M2-8:2FTS



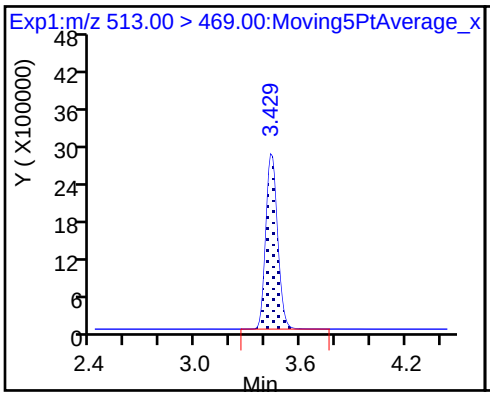
25 Sodium 1H,1H,2H,2H-perfluorodecane



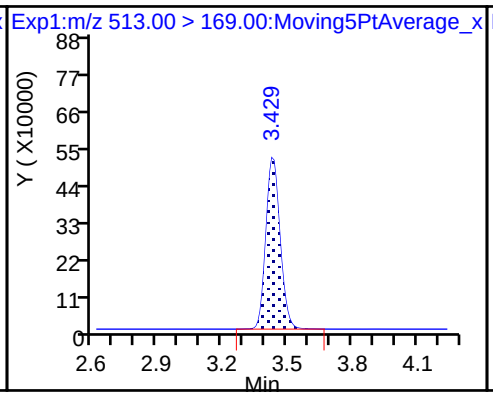
D 23 13C2 PFDA



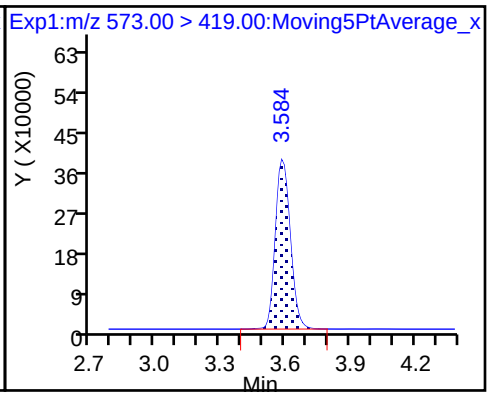
24 Perfluorodecanoic acid



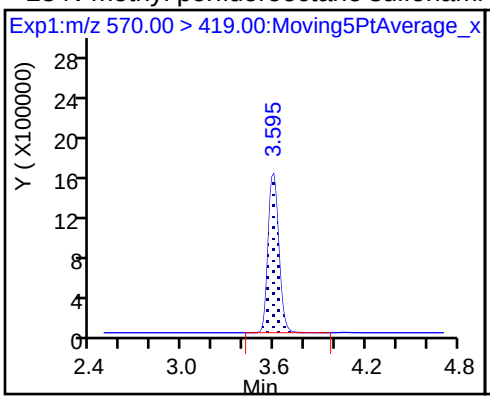
24 Perfluorodecanoic acid



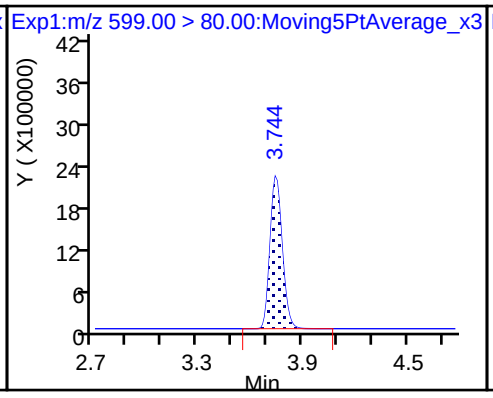
D 27 d3-NMeFOSAA



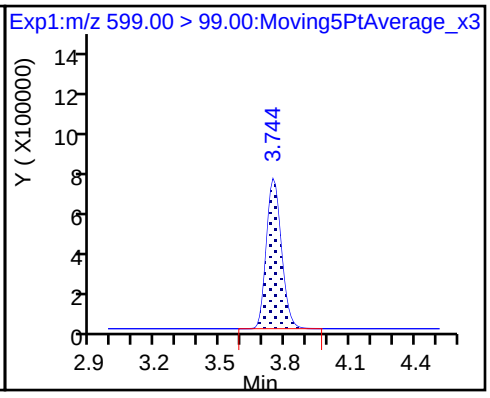
28 N-methyl perfluorooctane sulfonami



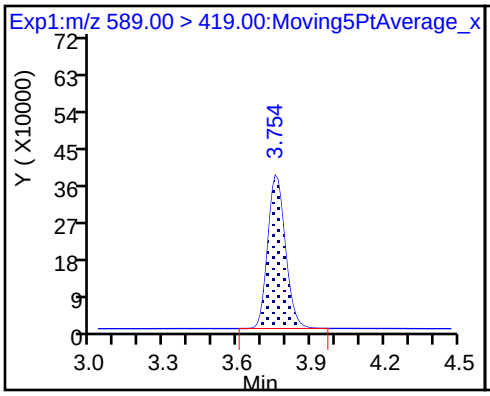
29 Perfluorodecane Sulfonic acid



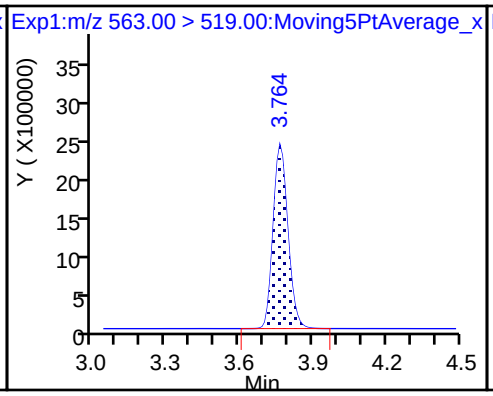
29 Perfluorodecane Sulfonic acid



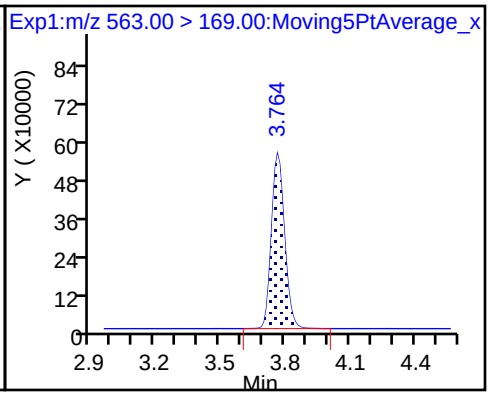
D 32 d5-NEtFOSAA



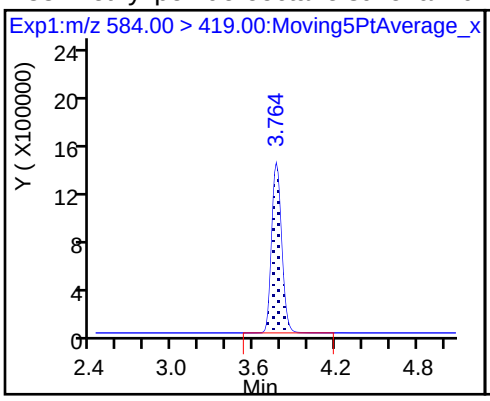
31 Perfluoroundecanoic acid



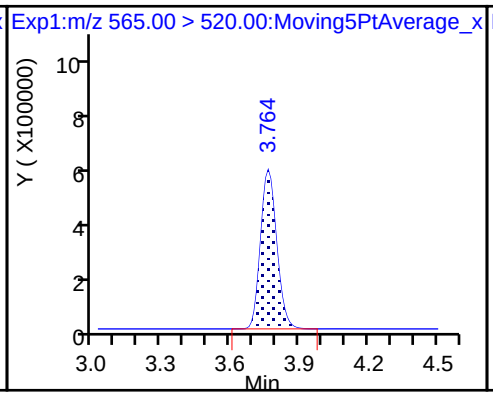
31 Perfluoroundecanoic acid



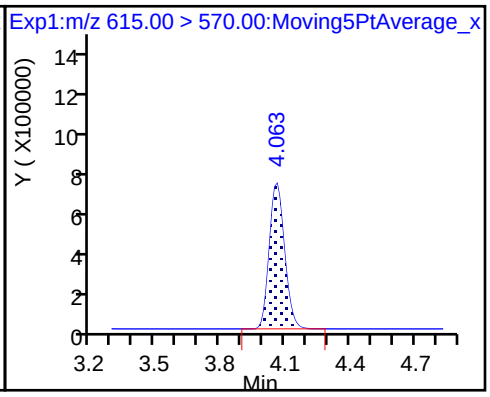
33 N-ethyl perfluorooctane sulfonamid



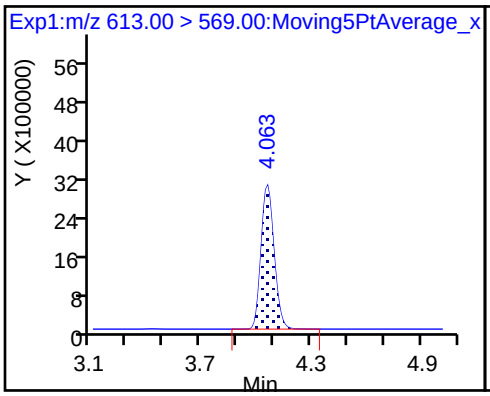
D 30 13C2 PFUnA



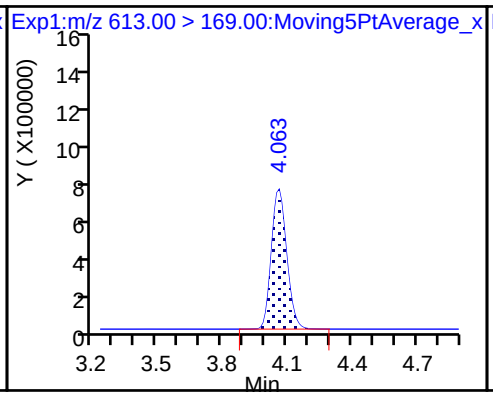
D 36 13C2 PFDoA



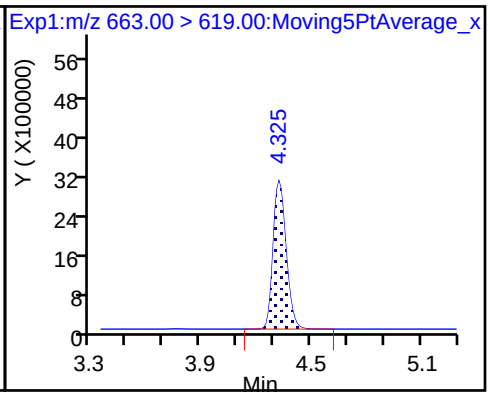
37 Perfluorododecanoic acid



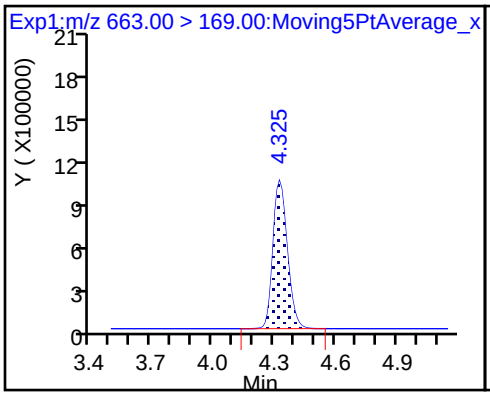
37 Perfluorododecanoic acid



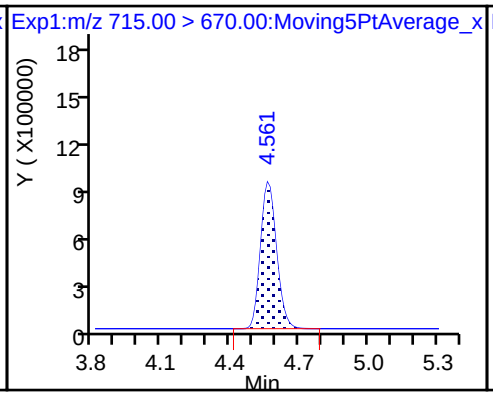
41 Perfluorotridecanoic acid



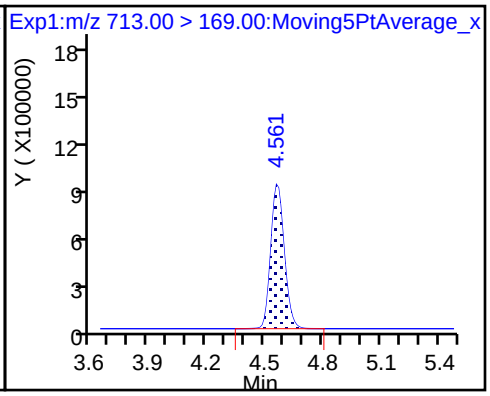
41 Perfluorotridecanoic acid



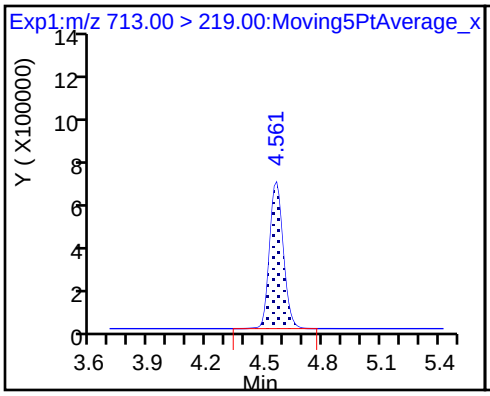
D 43 13C2-PFTeDA



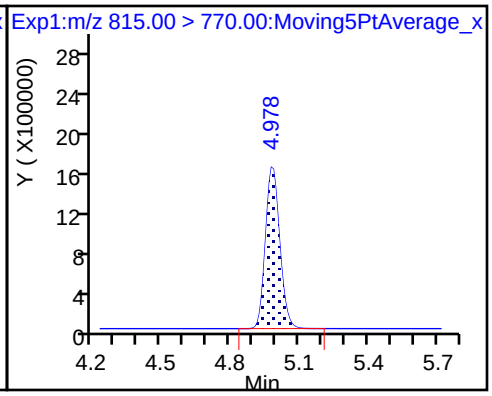
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

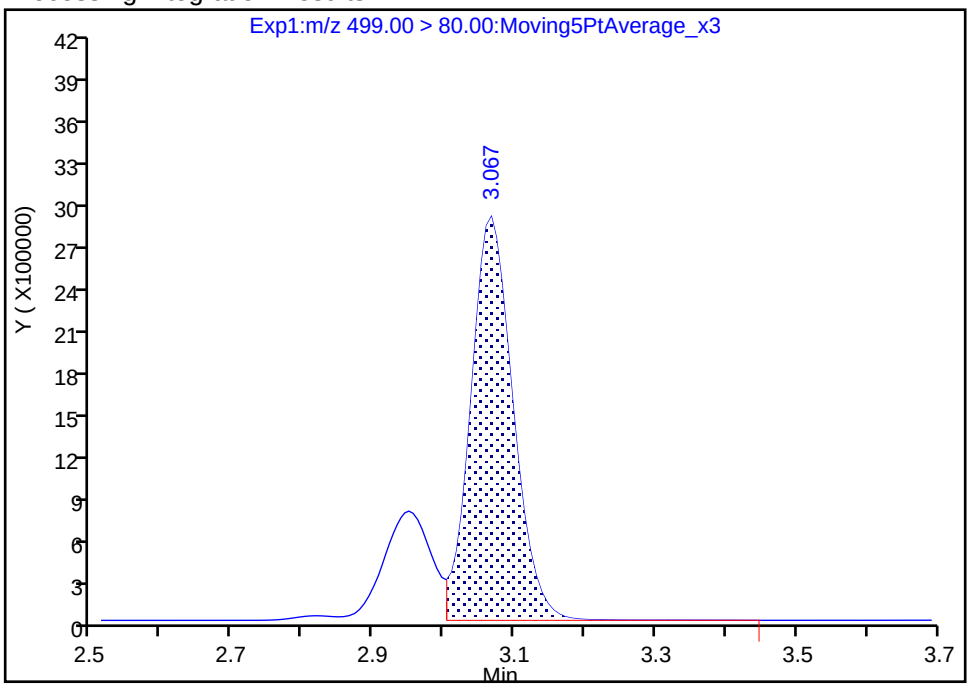
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d
Injection Date: 21-Mar-2018 19:11:19 Instrument ID: A8_N
Lims ID: IC L7 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

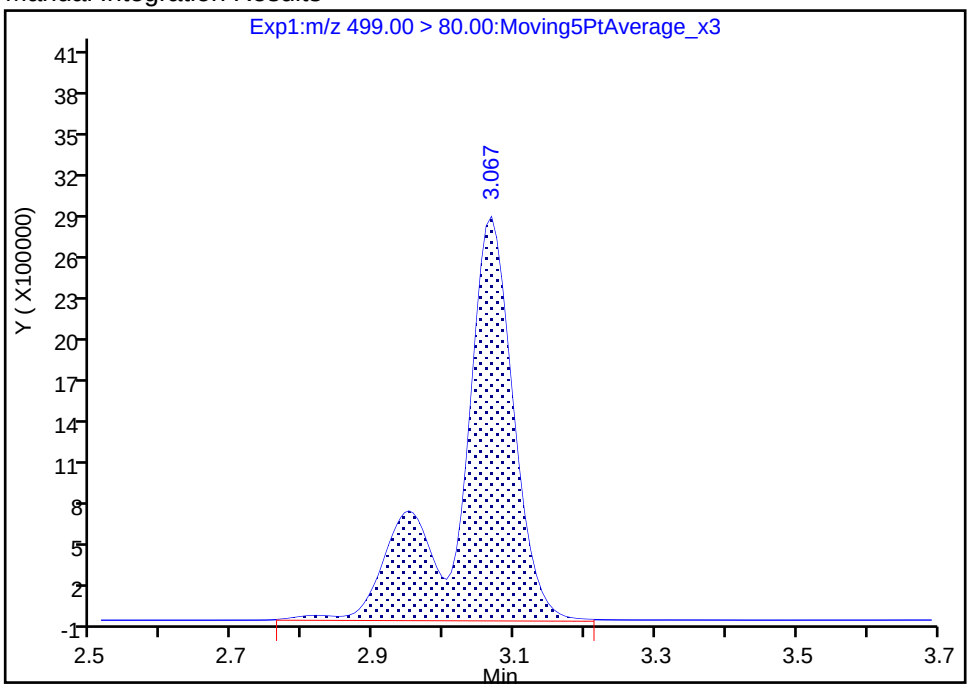
Processing Integration Results

RT: 3.07
Area: 12038170
Amount: 7.385381
Amount Units: ng/ml



Manual Integration Results

RT: 3.07
Area: 15932478
Amount: 9.427786
Amount Units: ng/ml



Reviewer: phomsophat, 21-Mar-2018 19:25:51
Audit Action: Manually Integrated Audit Reason: Isomers

Calibration / Perfluorobutyric acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

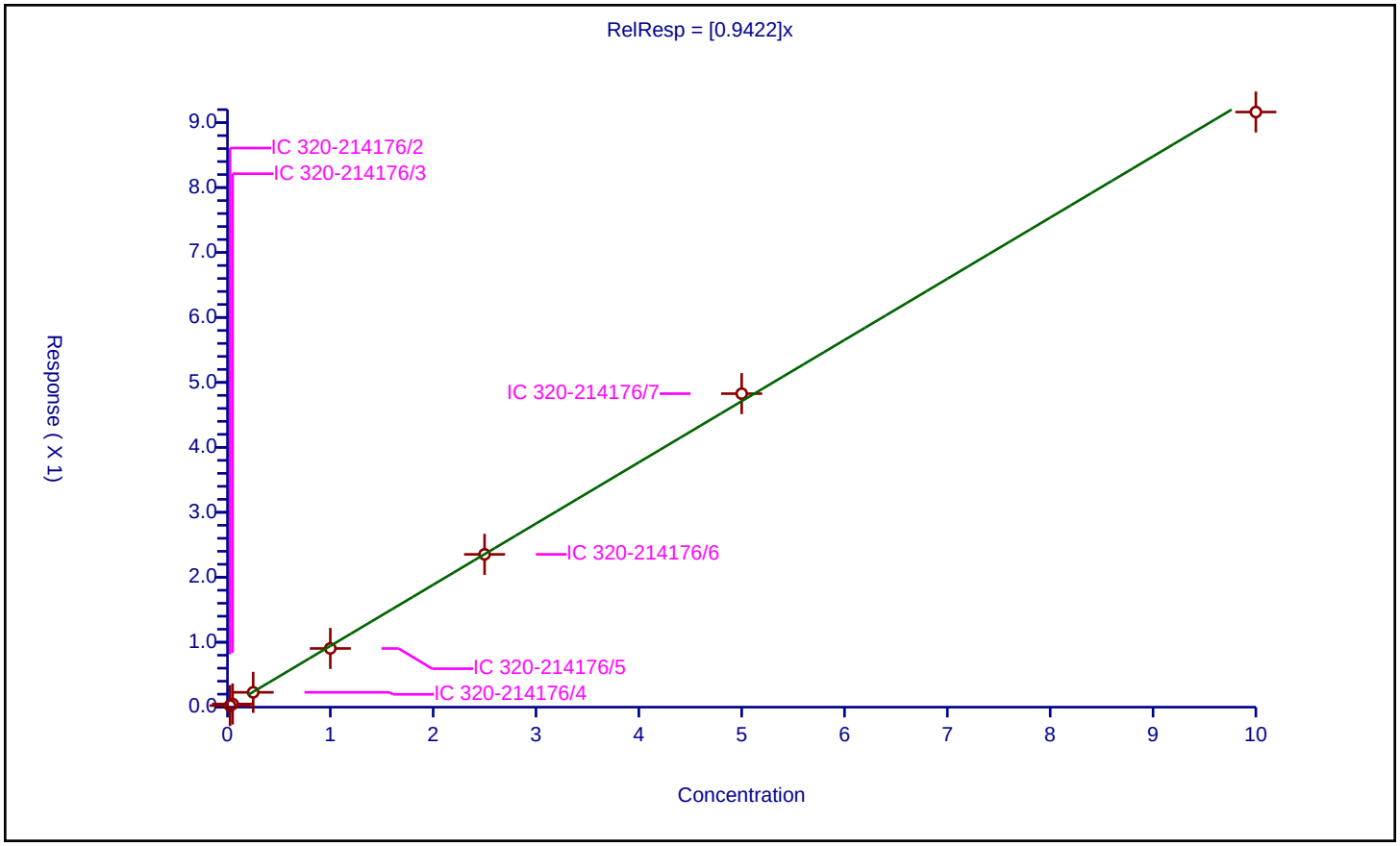
Curve Coefficients

Intercept:	0
Slope:	0.9422

Error Coefficients

Standard Error:	10800000
Relative Standard Error:	3.4
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.024424	2.5	6564034.0	0.97696	Y
2	IC 320-214176/3	0.05	0.048911	2.5	6712910.0	0.97822	Y
3	IC 320-214176/4	0.25	0.22843	2.5	6702182.0	0.913722	Y
4	IC 320-214176/5	1.0	0.903902	2.5	6677108.0	0.903902	Y
5	IC 320-214176/6	2.5	2.352623	2.5	6188661.0	0.941049	Y
6	IC 320-214176/7	5.0	4.826831	2.5	6477851.0	0.965366	Y
7	IC 320-214176/8	10.0	9.162699	2.5	6100844.0	0.91627	Y



Calibration / Perfluoropentanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

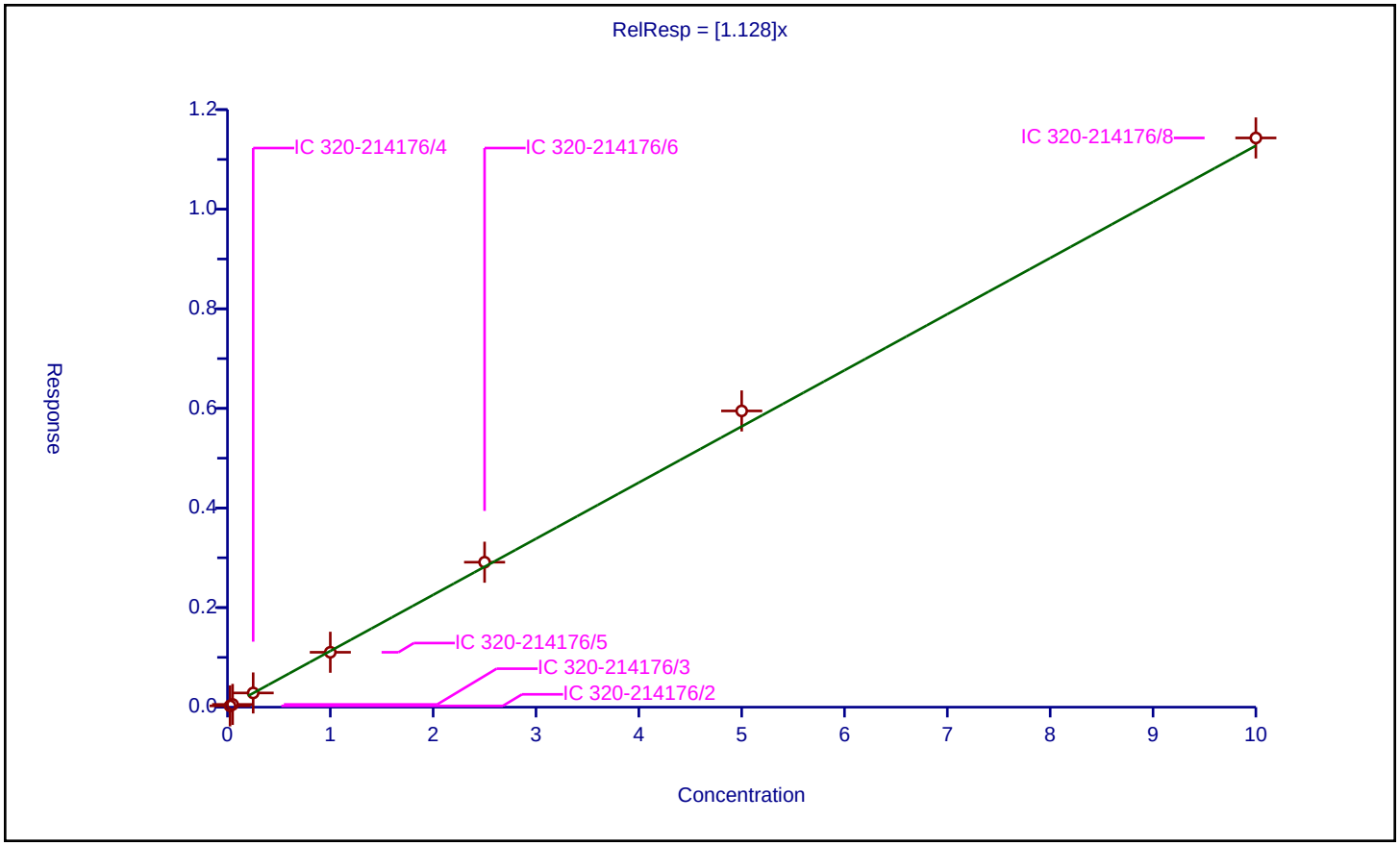
Curve Coefficients

Intercept:	0
Slope:	1.128

Error Coefficients

Standard Error:	8850000
Relative Standard Error:	4.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.025995	2.5	4366350.0	1.039793	Y
2	IC 320-214176/3	0.05	0.05559	2.5	4463093.0	1.111807	Y
3	IC 320-214176/4	0.25	0.285362	2.5	4509425.0	1.141447	Y
4	IC 320-214176/5	1.0	1.102378	2.5	4434133.0	1.102378	Y
5	IC 320-214176/6	2.5	2.91087	2.5	4090438.0	1.164348	Y
6	IC 320-214176/7	5.0	5.948922	2.5	4228437.0	1.189784	Y
7	IC 320-214176/8	10.0	11.430862	2.5	4046135.0	1.143086	Y



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

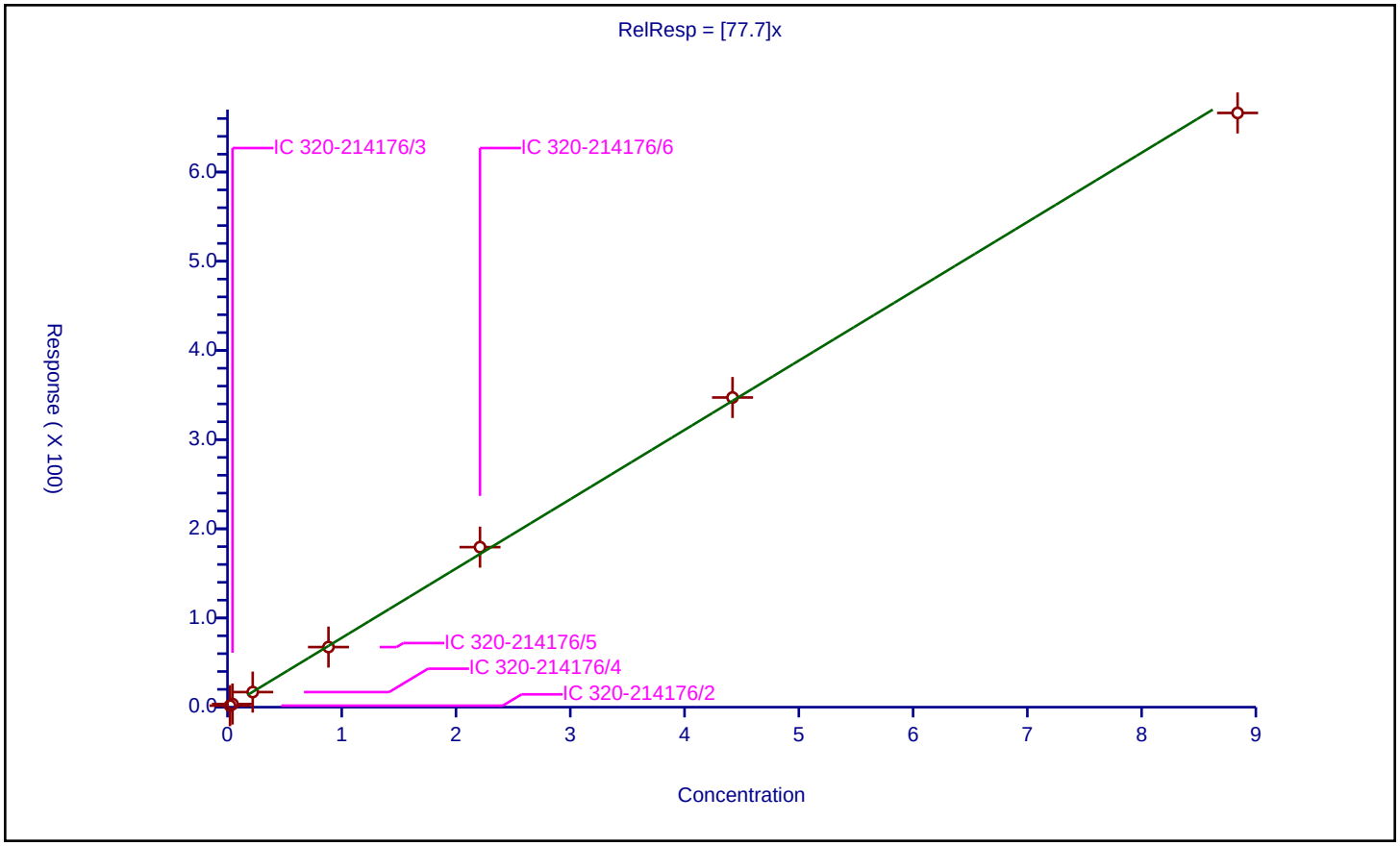
Curve Coefficients

Intercept:	0
Slope:	77.7

Error Coefficients

Standard Error:	11700000
Relative Standard Error:	2.5
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.0221	1.708011	2.325	90718.0	77.285545	Y
2	IC 320-214176/3	0.0442	3.483574	2.325	95045.0	78.813888	Y
3	IC 320-214176/4	0.221	16.902138	2.325	96305.0	76.480262	Y
4	IC 320-214176/5	0.884	67.382909	2.325	94733.0	76.225011	Y
5	IC 320-214176/6	2.21	179.449579	2.325	87868.0	81.198905	Y
6	IC 320-214176/7	4.42	347.206044	2.325	91170.0	78.553404	Y
7	IC 320-214176/8	8.84	666.237145	2.325	84106.0	75.366193	Y



Calibration / Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

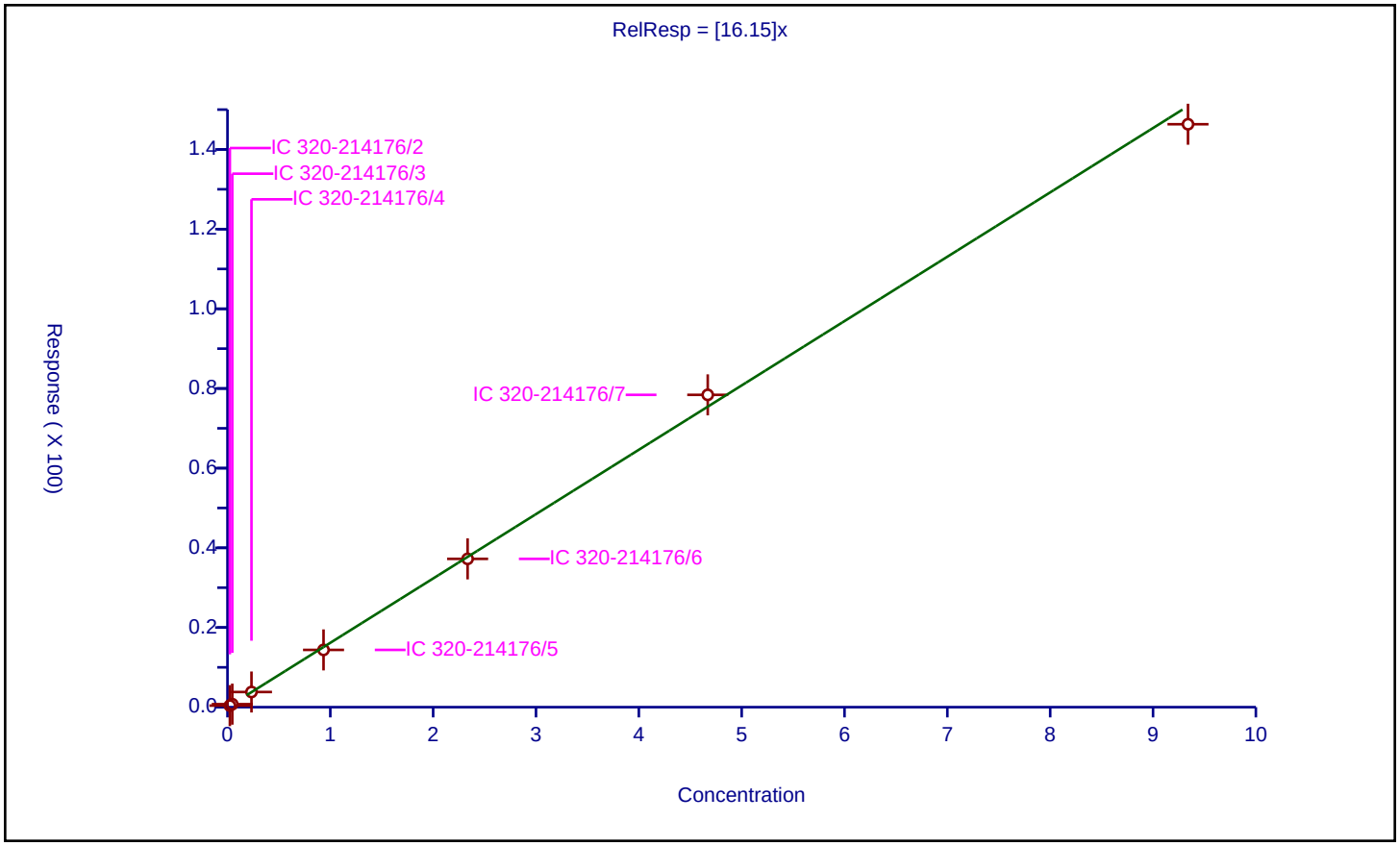
Curve Coefficients

Intercept:	0
Slope:	16.15

Error Coefficients

Standard Error:	2580000
Relative Standard Error:	3.3
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.02335	0.392378	2.325	90718.0	16.804198	Y
2	IC 320-214176/3	0.0467	0.75512	2.325	95045.0	16.169603	Y
3	IC 320-214176/4	0.2335	3.808456	2.325	96305.0	16.310306	Y
4	IC 320-214176/5	0.934	14.373999	2.325	94733.0	15.389721	Y
5	IC 320-214176/6	2.335	37.222597	2.325	87868.0	15.941155	Y
6	IC 320-214176/7	4.67	78.399474	2.325	91170.0	16.787896	Y
7	IC 320-214176/8	9.34	146.325503	2.325	84106.0	15.666542	Y



Calibration / Perfluorohexanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

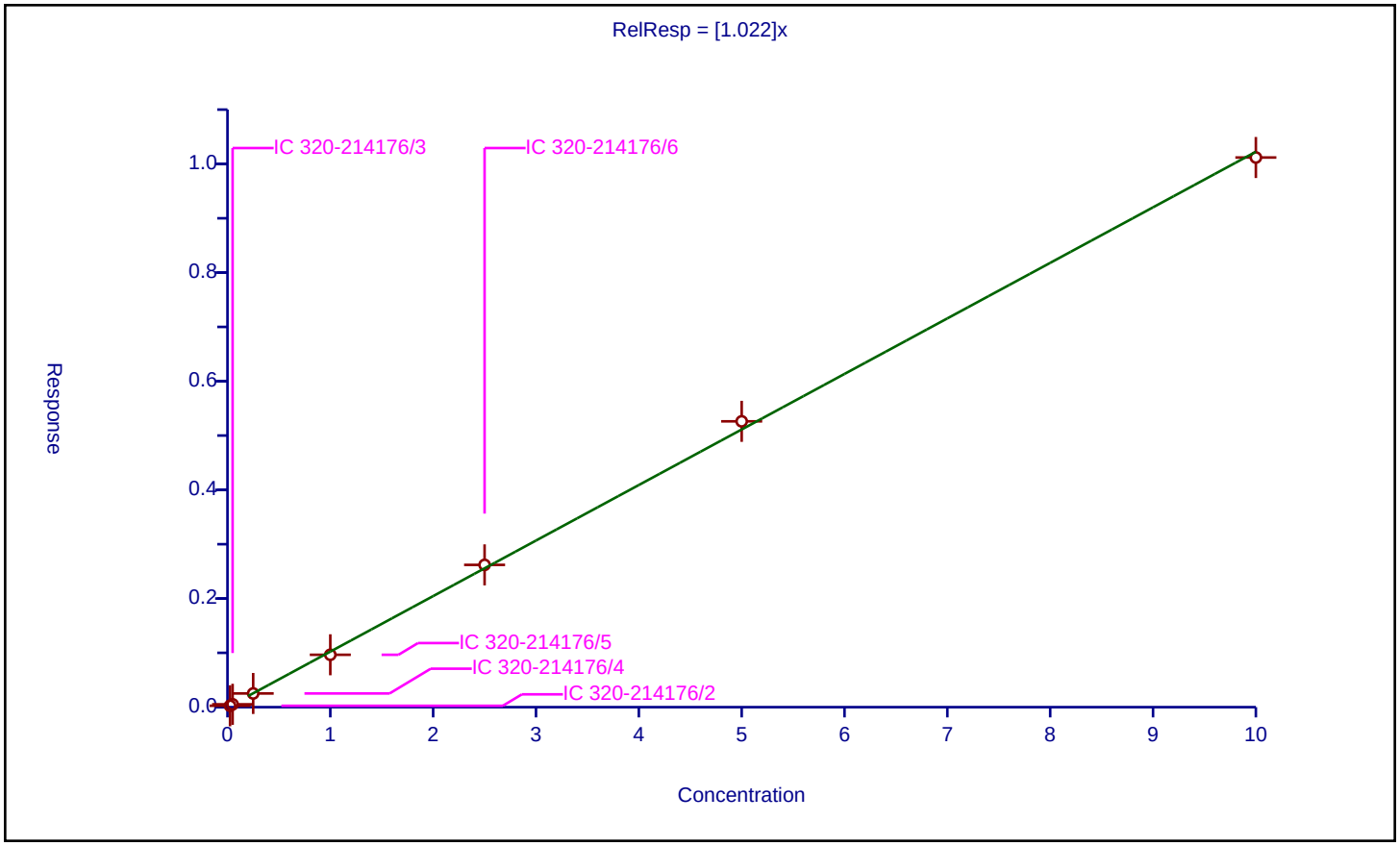
Curve Coefficients

Intercept:	0
Slope:	1.022

Error Coefficients

Standard Error:	8350000
Relative Standard Error:	3.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.025489	2.5	4874041.0	1.019565	Y
2	IC 320-214176/3	0.05	0.052592	2.5	5181558.0	1.051846	Y
3	IC 320-214176/4	0.25	0.252123	2.5	4935175.0	1.008493	Y
4	IC 320-214176/5	1.0	0.96453	2.5	4912134.0	0.96453	Y
5	IC 320-214176/6	2.5	2.619528	2.5	4600880.0	1.047811	Y
6	IC 320-214176/7	5.0	5.261841	2.5	4608558.0	1.052368	Y
7	IC 320-214176/8	10.0	10.118263	2.5	4257747.0	1.011826	Y



Calibration / Perfluoroheptanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

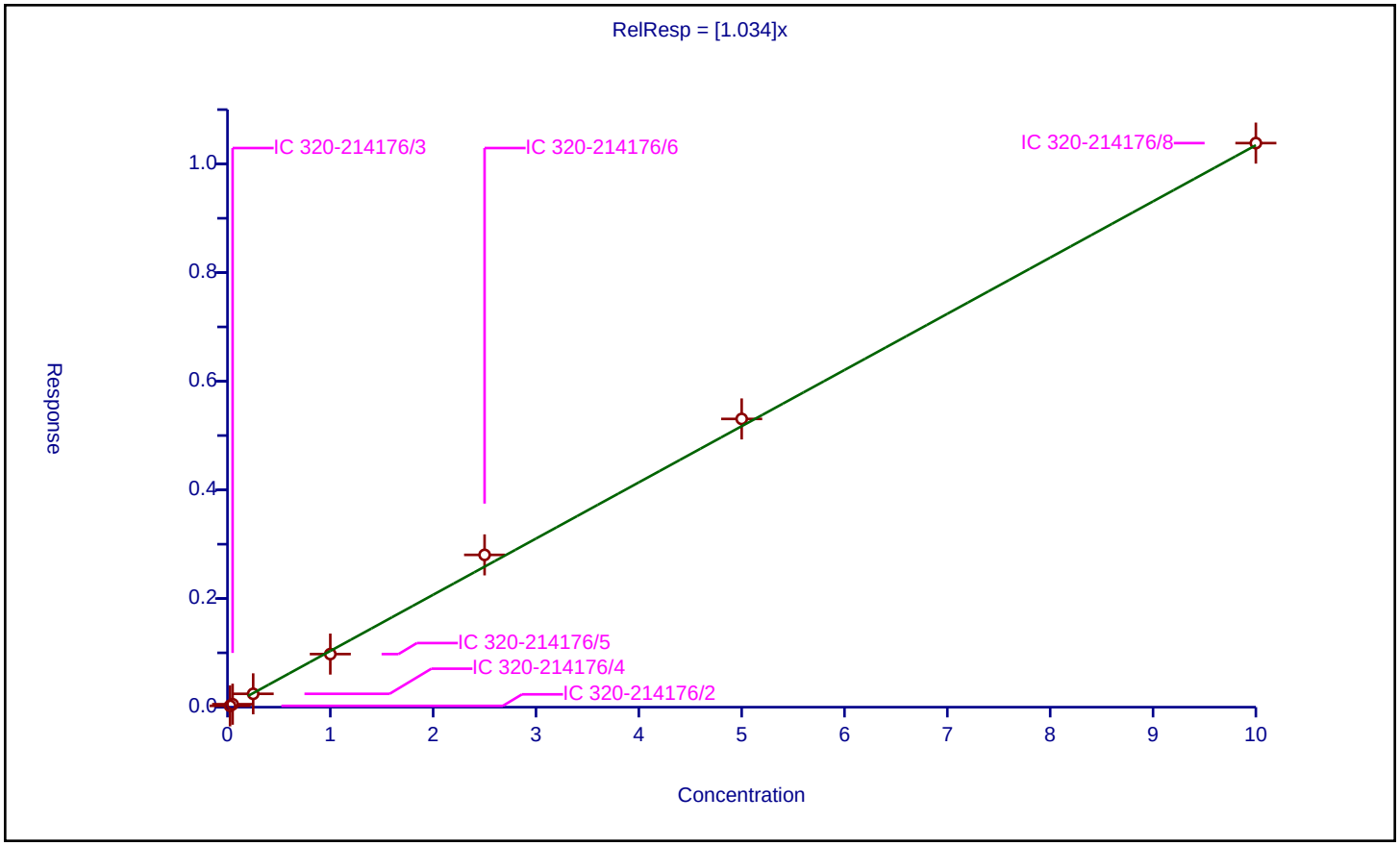
Curve Coefficients

Intercept:	0
Slope:	1.034

Error Coefficients

Standard Error:	8330000
Relative Standard Error:	5.9
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.024223	2.5	4984623.0	0.96892	Y
2	IC 320-214176/3	0.05	0.054634	2.5	4767222.0	1.09268	Y
3	IC 320-214176/4	0.25	0.245404	2.5	5071076.0	0.981614	Y
4	IC 320-214176/5	1.0	0.977101	2.5	4906862.0	0.977101	Y
5	IC 320-214176/6	2.5	2.80363	2.5	4537445.0	1.121452	Y
6	IC 320-214176/7	5.0	5.306022	2.5	4533044.0	1.061204	Y
7	IC 320-214176/8	10.0	10.38341	2.5	4129064.0	1.038341	Y



Calibration / Perfluorohexanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

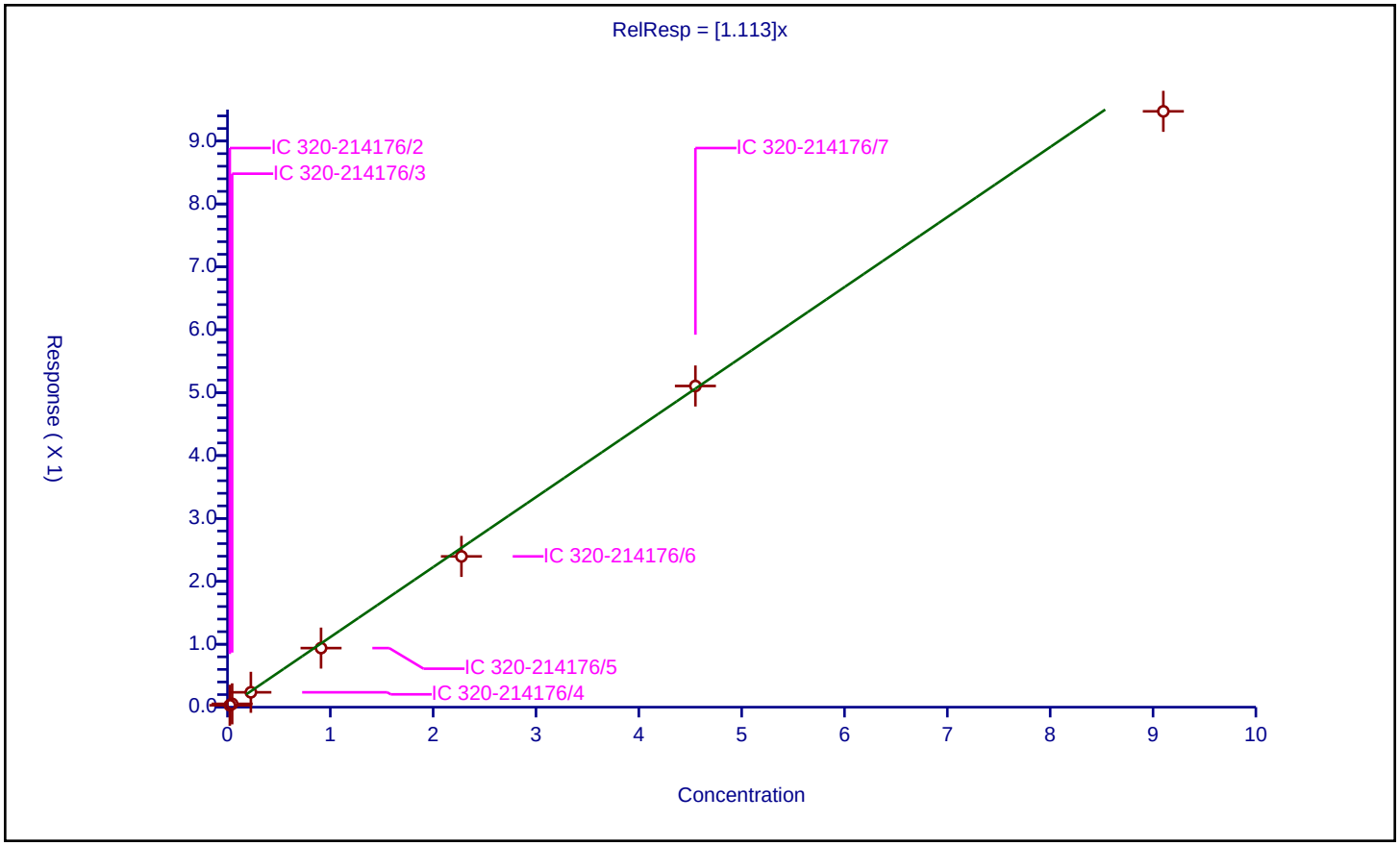
Curve Coefficients

Intercept:	0
Slope:	1.113

Error Coefficients

Standard Error:	9570000
Relative Standard Error:	10.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.986

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.02275	0.030494	2.365	5519750.0	1.340397	Y
2	IC 320-214176/3	0.0455	0.052957	2.365	5886251.0	1.163884	Y
3	IC 320-214176/4	0.2275	0.236254	2.365	5874354.0	1.038478	Y
4	IC 320-214176/5	0.91	0.939043	2.365	5679886.0	1.031915	Y
5	IC 320-214176/6	2.275	2.396645	2.365	5368855.0	1.05347	Y
6	IC 320-214176/7	4.55	5.106252	2.365	5161589.0	1.122253	Y
7	IC 320-214176/8	9.1	9.472611	2.365	4928998.0	1.040946	Y



Calibration / Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

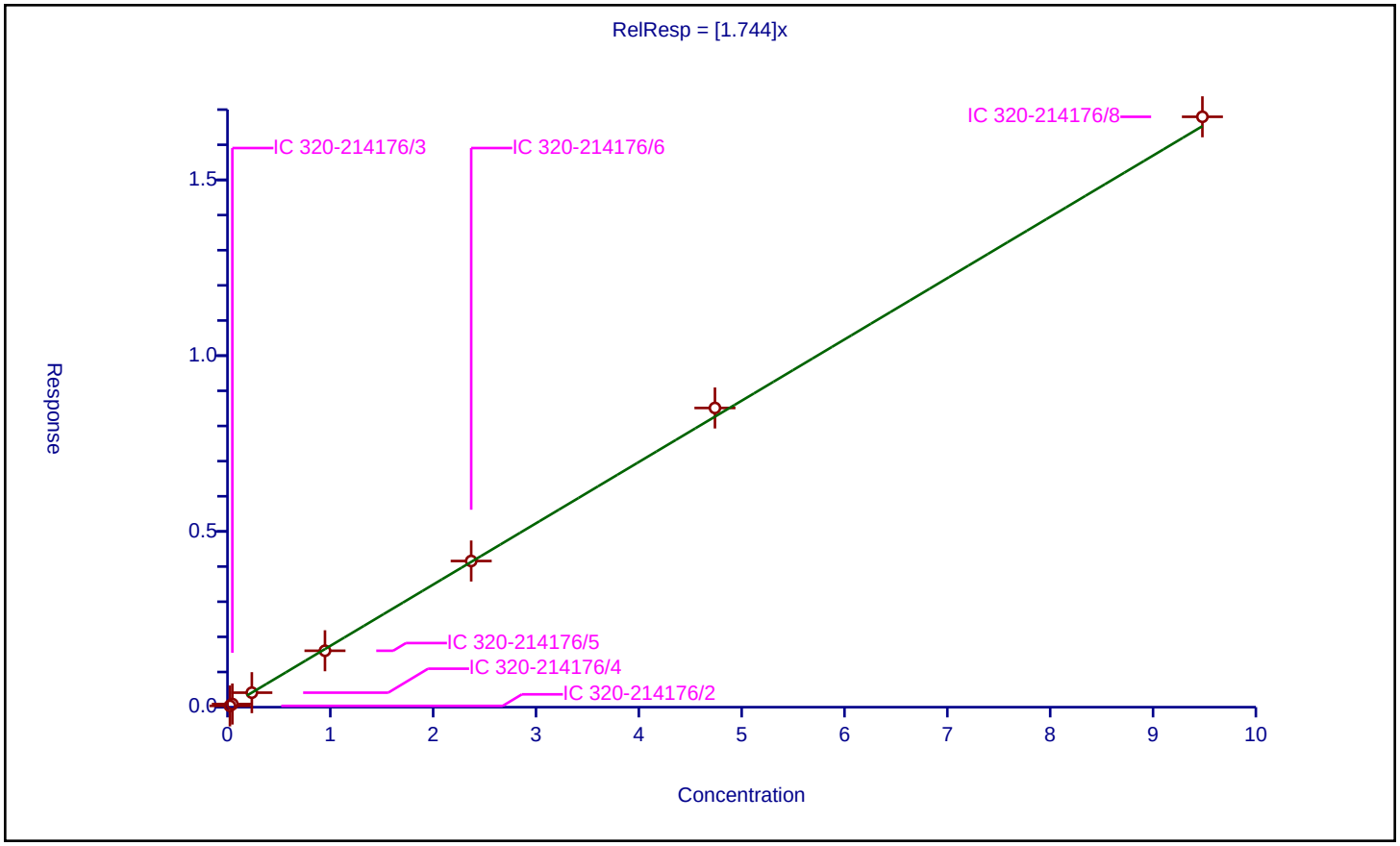
Curve Coefficients

Intercept:	0
Slope:	1.744

Error Coefficients

Standard Error:	2840000
Relative Standard Error:	5.9
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.0237	0.036915	2.375	938472.0	1.557614	Y
2	IC 320-214176/3	0.0474	0.089639	2.375	999800.0	1.891109	Y
3	IC 320-214176/4	0.237	0.412655	2.375	956838.0	1.741159	Y
4	IC 320-214176/5	0.948	1.605232	2.375	974611.0	1.693283	Y
5	IC 320-214176/6	2.37	4.158567	2.375	908164.0	1.75467	Y
6	IC 320-214176/7	4.74	8.511709	2.375	859398.0	1.795719	Y
7	IC 320-214176/8	9.48	16.795675	2.375	845912.0	1.771696	Y



Calibration / Perfluorooctanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

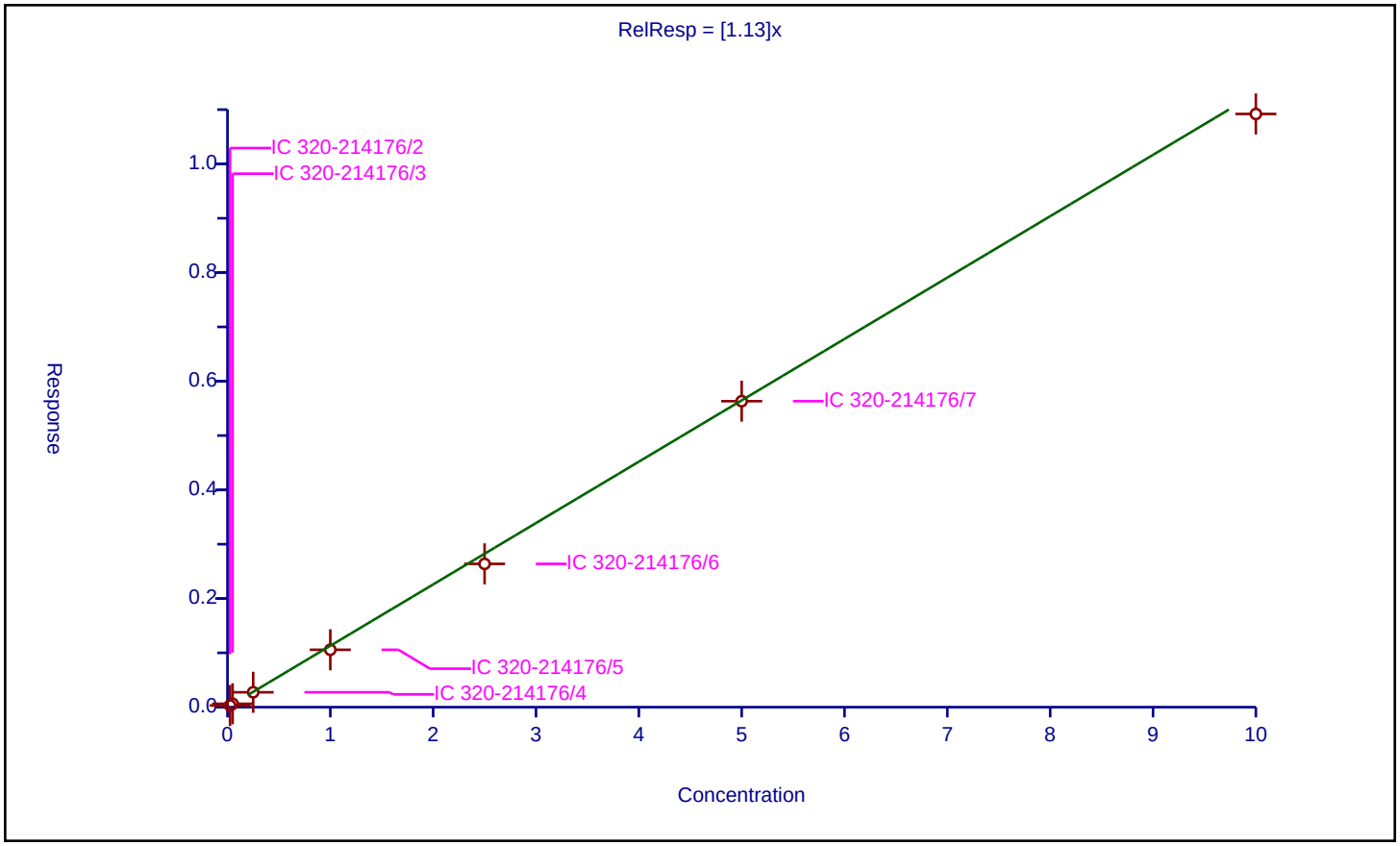
Curve Coefficients

Intercept:	0
Slope:	1.13

Error Coefficients

Standard Error:	8840000
Relative Standard Error:	7.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.030694	2.5	4941609.0	1.227758	Y
2	IC 320-214176/3	0.05	0.062677	2.5	5069957.0	1.253541	Y
3	IC 320-214176/4	0.25	0.274111	2.5	5033130.0	1.096445	Y
4	IC 320-214176/5	1.0	1.056476	2.5	5161114.0	1.056476	Y
5	IC 320-214176/6	2.5	2.637618	2.5	4742395.0	1.055047	Y
6	IC 320-214176/7	5.0	5.632516	2.5	4582778.0	1.126503	Y
7	IC 320-214176/8	10.0	10.919459	2.5	4169807.0	1.091946	Y



Calibration / Perfluoroheptanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

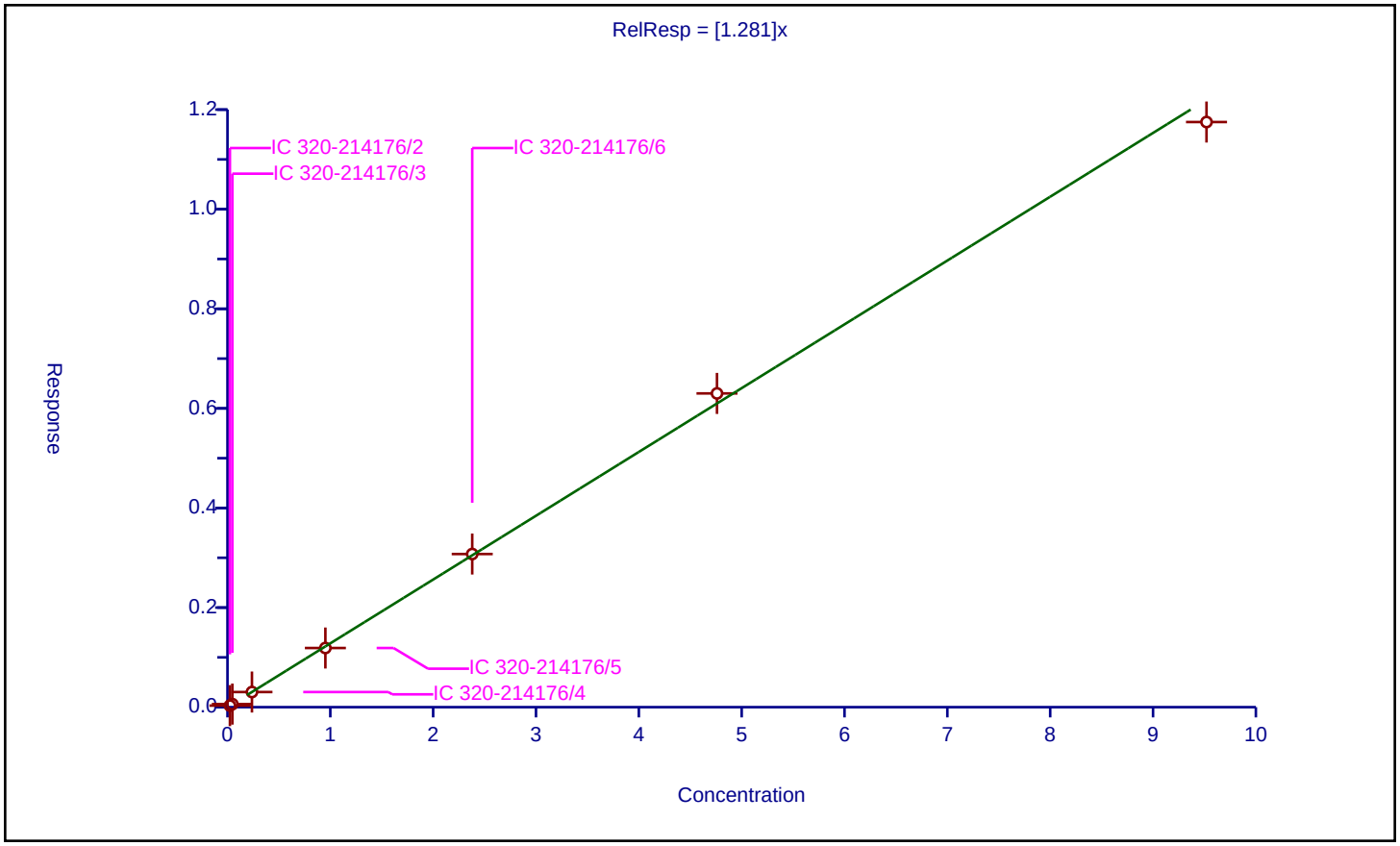
Curve Coefficients

Intercept:	0
Slope:	1.281

Error Coefficients

Standard Error:	8700000
Relative Standard Error:	2.4
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.0238	0.030944	2.39	4052357.0	1.300168	Y
2	IC 320-214176/3	0.0476	0.061567	2.39	4256604.0	1.293434	Y
3	IC 320-214176/4	0.238	0.30398	2.39	4237867.0	1.277227	Y
4	IC 320-214176/5	0.952	1.188008	2.39	4212796.0	1.247907	Y
5	IC 320-214176/6	2.38	3.075407	2.39	3973858.0	1.292188	Y
6	IC 320-214176/7	4.76	6.300618	2.39	3887079.0	1.323659	Y
7	IC 320-214176/8	9.52	11.750369	2.39	3625826.0	1.234282	Y



Calibration / Perfluorononanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

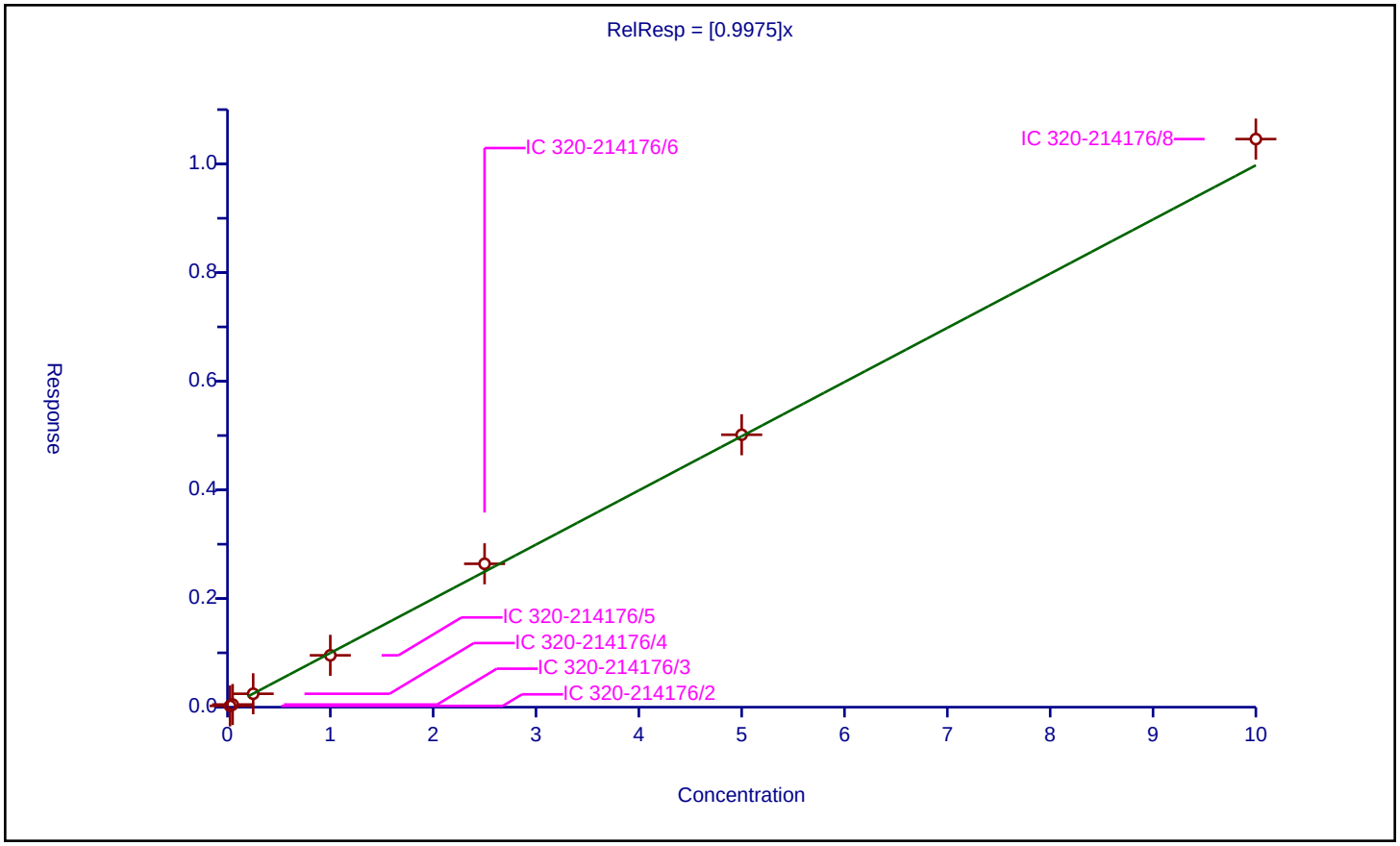
Curve Coefficients

Intercept:	0
Slope:	0.9975

Error Coefficients

Standard Error:	7480000
Relative Standard Error:	4.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.024025	2.5	4278627.0	0.960986	Y
2	IC 320-214176/3	0.05	0.048826	2.5	4474026.0	0.976525	Y
3	IC 320-214176/4	0.25	0.246621	2.5	4472333.0	0.986483	Y
4	IC 320-214176/5	1.0	0.954269	2.5	4473666.0	0.954269	Y
5	IC 320-214176/6	2.5	2.63904	2.5	4084349.0	1.055616	Y
6	IC 320-214176/7	5.0	5.014775	2.5	4190429.0	1.002955	Y
7	IC 320-214176/8	10.0	10.457399	2.5	3729104.0	1.04574	Y



Calibration / Perfluorooctane sulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

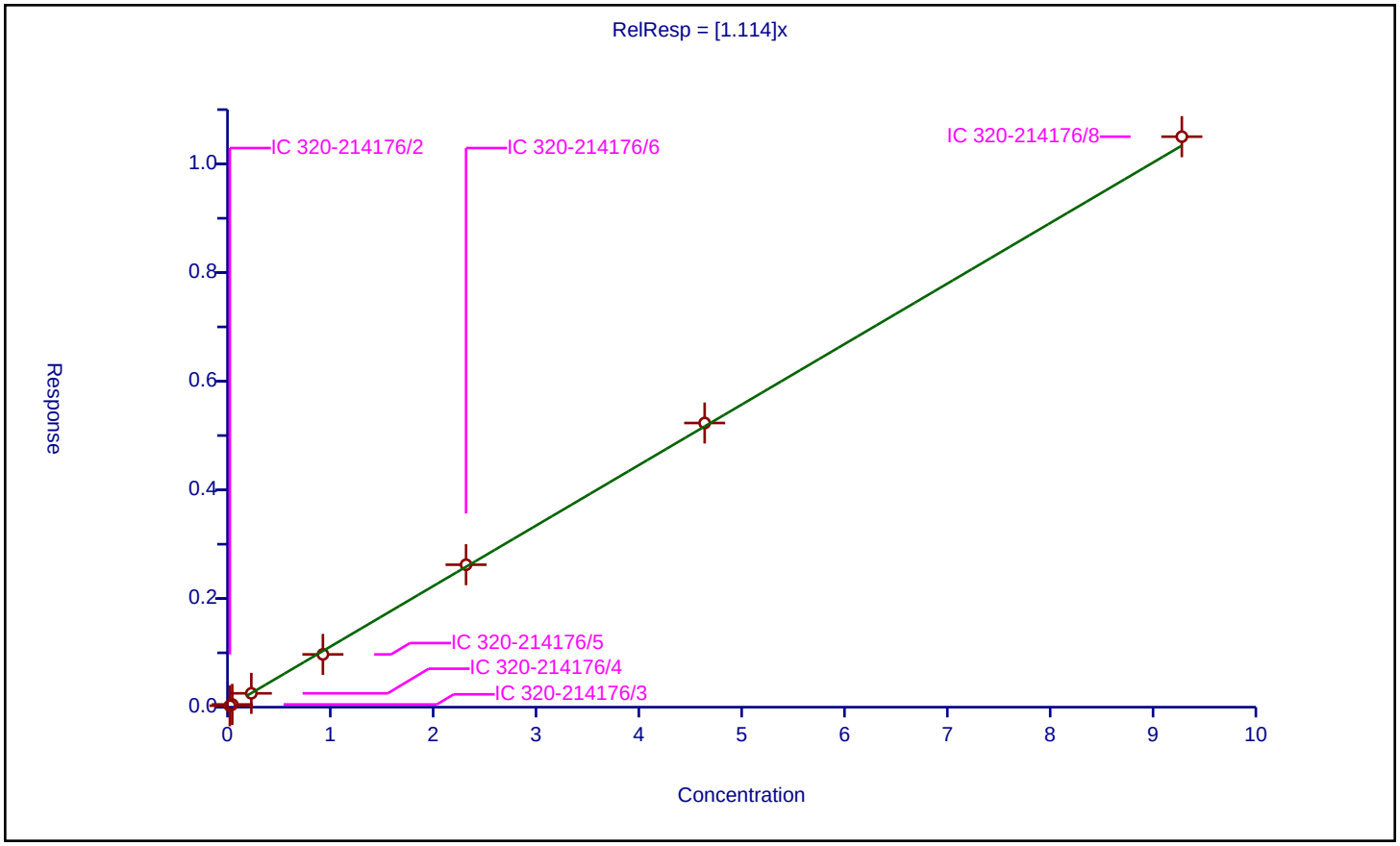
Curve Coefficients

Intercept:	0
Slope:	1.114

Error Coefficients

Standard Error:	7620000
Relative Standard Error:	3.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.0232	0.027349	2.39	4052357.0	1.178823	Y
2	IC 320-214176/3	0.0464	0.050361	2.39	4256604.0	1.085376	Y
3	IC 320-214176/4	0.232	0.254588	2.39	4237867.0	1.097363	Y
4	IC 320-214176/5	0.928	0.971313	2.39	4212796.0	1.046673	Y
5	IC 320-214176/6	2.32	2.622315	2.39	3973858.0	1.130308	Y
6	IC 320-214176/7	4.64	5.231135	2.39	3887079.0	1.1274	Y
7	IC 320-214176/8	9.28	10.502055	2.39	3625826.0	1.131687	Y



Calibration / Perfluorooctane Sulfonamide

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

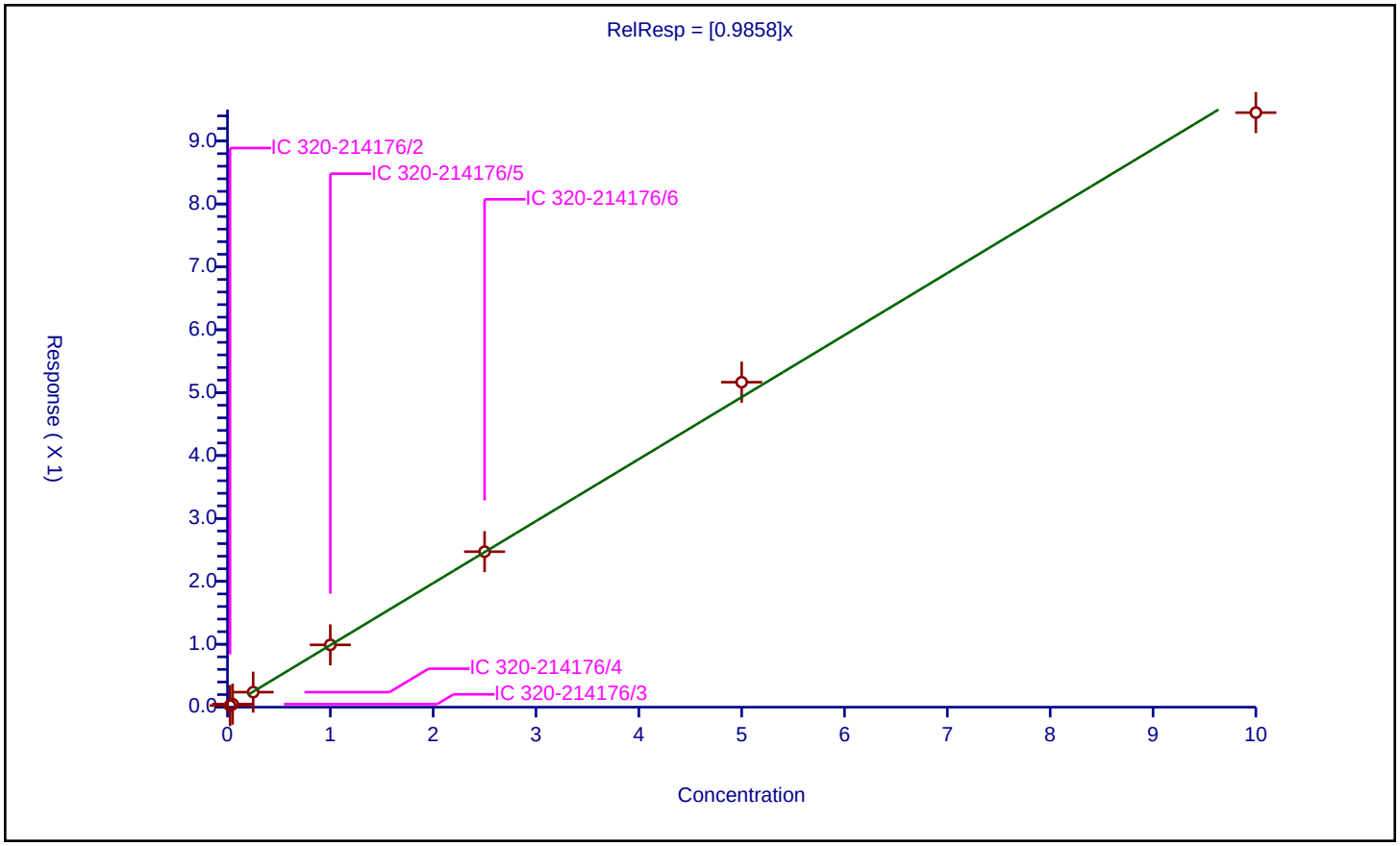
Curve Coefficients

Intercept:	0
Slope:	0.9858

Error Coefficients

Standard Error:	9300000
Relative Standard Error:	3.4
Correlation Coefficient:	0.989
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.025542	2.5	5746202.0	1.021684	Y
2	IC 320-214176/3	0.05	0.048314	2.5	5839734.0	0.966285	Y
3	IC 320-214176/4	0.25	0.238657	2.5	6203337.0	0.954628	Y
4	IC 320-214176/5	1.0	0.990776	2.5	5926892.0	0.990776	Y
5	IC 320-214176/6	2.5	2.471927	2.5	5666432.0	0.988771	Y
6	IC 320-214176/7	5.0	5.166626	2.5	5524474.0	1.033325	Y
7	IC 320-214176/8	10.0	9.452109	2.5	4957065.0	0.945211	Y



Calibration / Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

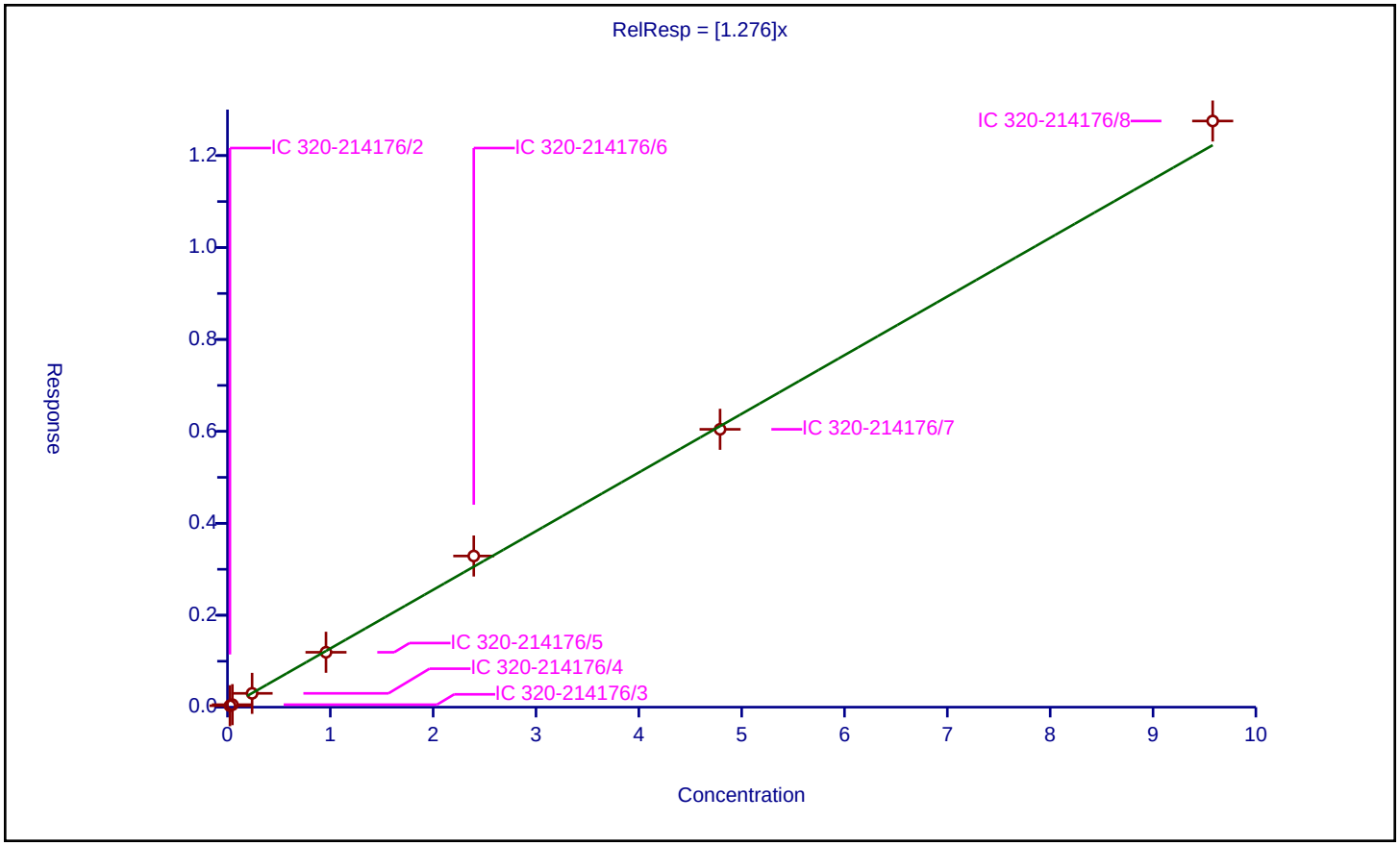
Curve Coefficients

Intercept:	0
Slope:	1.276

Error Coefficients

Standard Error:	2690000
Relative Standard Error:	5.9
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.02395	0.031738	2.395	1345013.0	1.325192	Y
2	IC 320-214176/3	0.0479	0.054693	2.395	1399775.0	1.141826	Y
3	IC 320-214176/4	0.2395	0.300396	2.395	1407067.0	1.254262	Y
4	IC 320-214176/5	0.958	1.194225	2.395	1259787.0	1.246582	Y
5	IC 320-214176/6	2.395	3.288646	2.395	1157021.0	1.37313	Y
6	IC 320-214176/7	4.79	6.044664	2.395	1232595.0	1.261934	Y
7	IC 320-214176/8	9.58	12.752324	2.395	1040808.0	1.33114	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

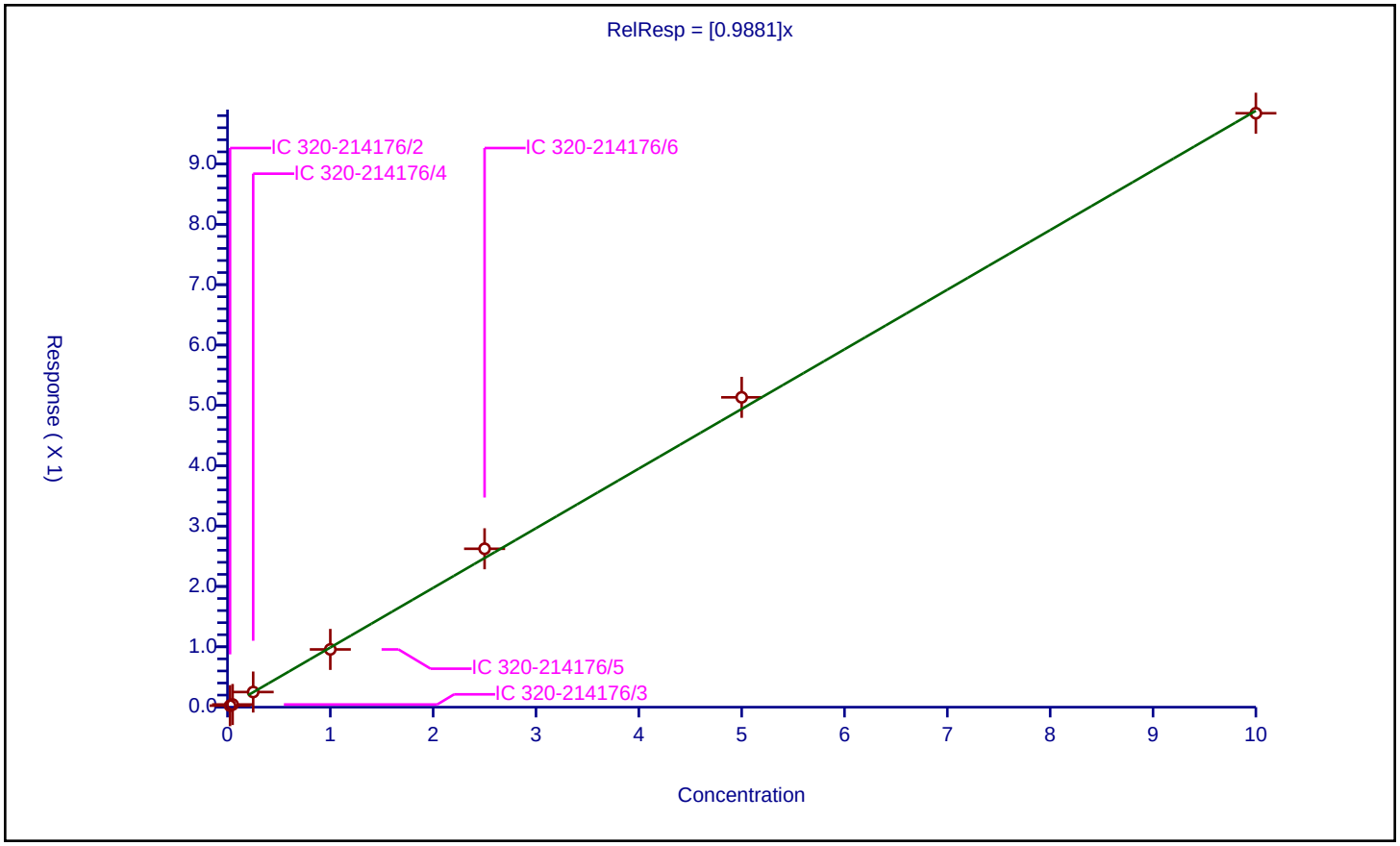
Curve Coefficients

Intercept:	0
Slope:	0.9881

Error Coefficients

Standard Error:	6250000
Relative Standard Error:	5.4
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.025244	2.5	3878963.0	1.009754	Y
2	IC 320-214176/3	0.05	0.044365	2.5	4053733.0	0.887293	Y
3	IC 320-214176/4	0.25	0.250613	2.5	3933118.0	1.002451	Y
4	IC 320-214176/5	1.0	0.956697	2.5	3787833.0	0.956697	Y
5	IC 320-214176/6	2.5	2.624205	2.5	3515629.0	1.049682	Y
6	IC 320-214176/7	5.0	5.133109	2.5	3620699.0	1.026622	Y
7	IC 320-214176/8	10.0	9.839868	2.5	3248595.0	0.983987	Y



Calibration / N-methyl perfluorooctane sulfonamidoacetic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

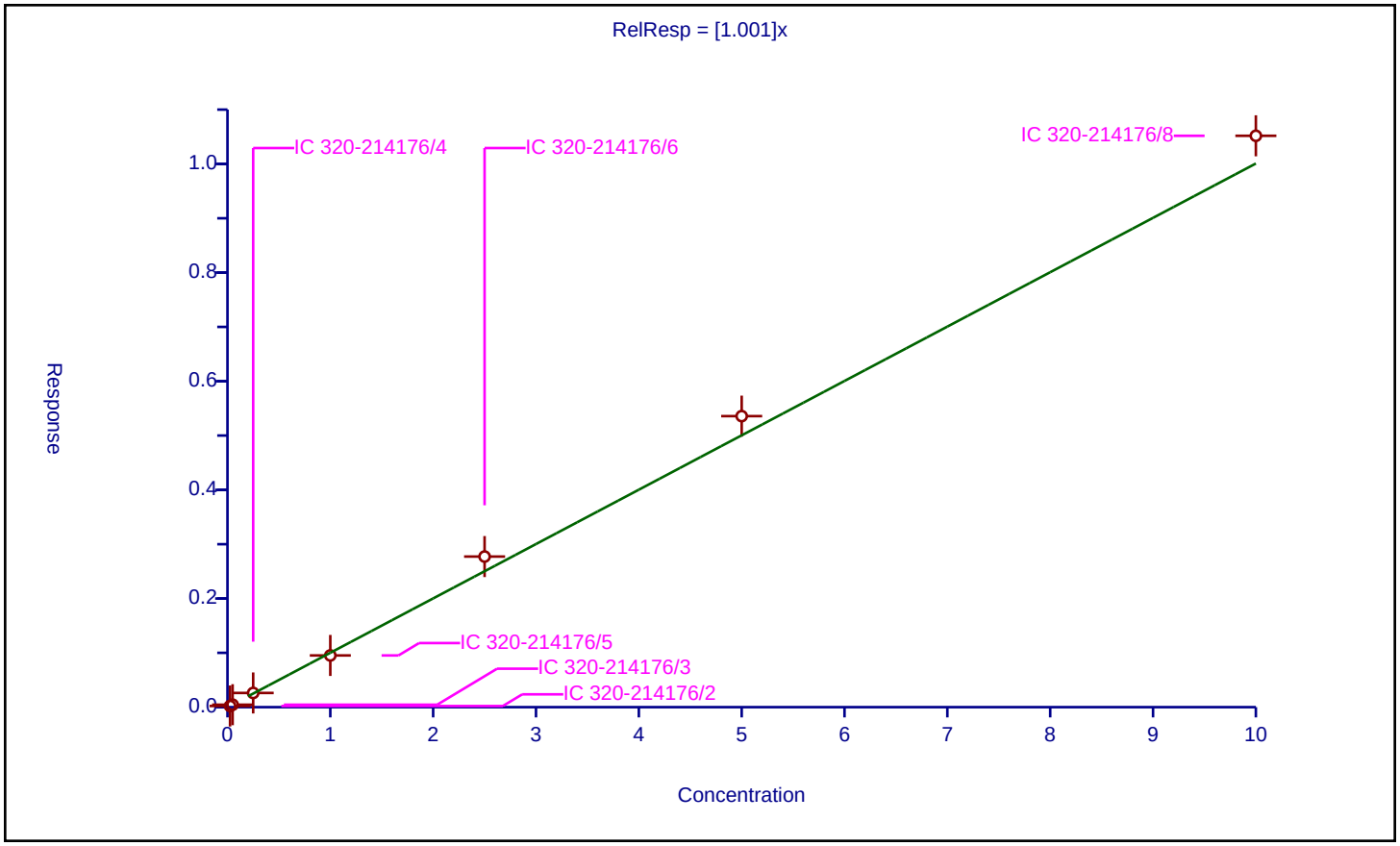
Curve Coefficients

Intercept:	0
Slope:	1.001

Error Coefficients

Standard Error:	3690000
Relative Standard Error:	9.2
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.021559	2.5	1979468.0	0.862353	Y
2	IC 320-214176/3	0.05	0.045615	2.5	1933236.0	0.912305	Y
3	IC 320-214176/4	0.25	0.261617	2.5	2099631.0	1.04647	Y
4	IC 320-214176/5	1.0	0.952269	2.5	2005802.0	0.952269	Y
5	IC 320-214176/6	2.5	2.772094	2.5	1848322.0	1.108838	Y
6	IC 320-214176/7	5.0	5.357642	2.5	1999896.0	1.071528	Y
7	IC 320-214176/8	10.0	10.517708	2.5	1816501.0	1.051771	Y



Calibration / Perfluorodecane Sulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

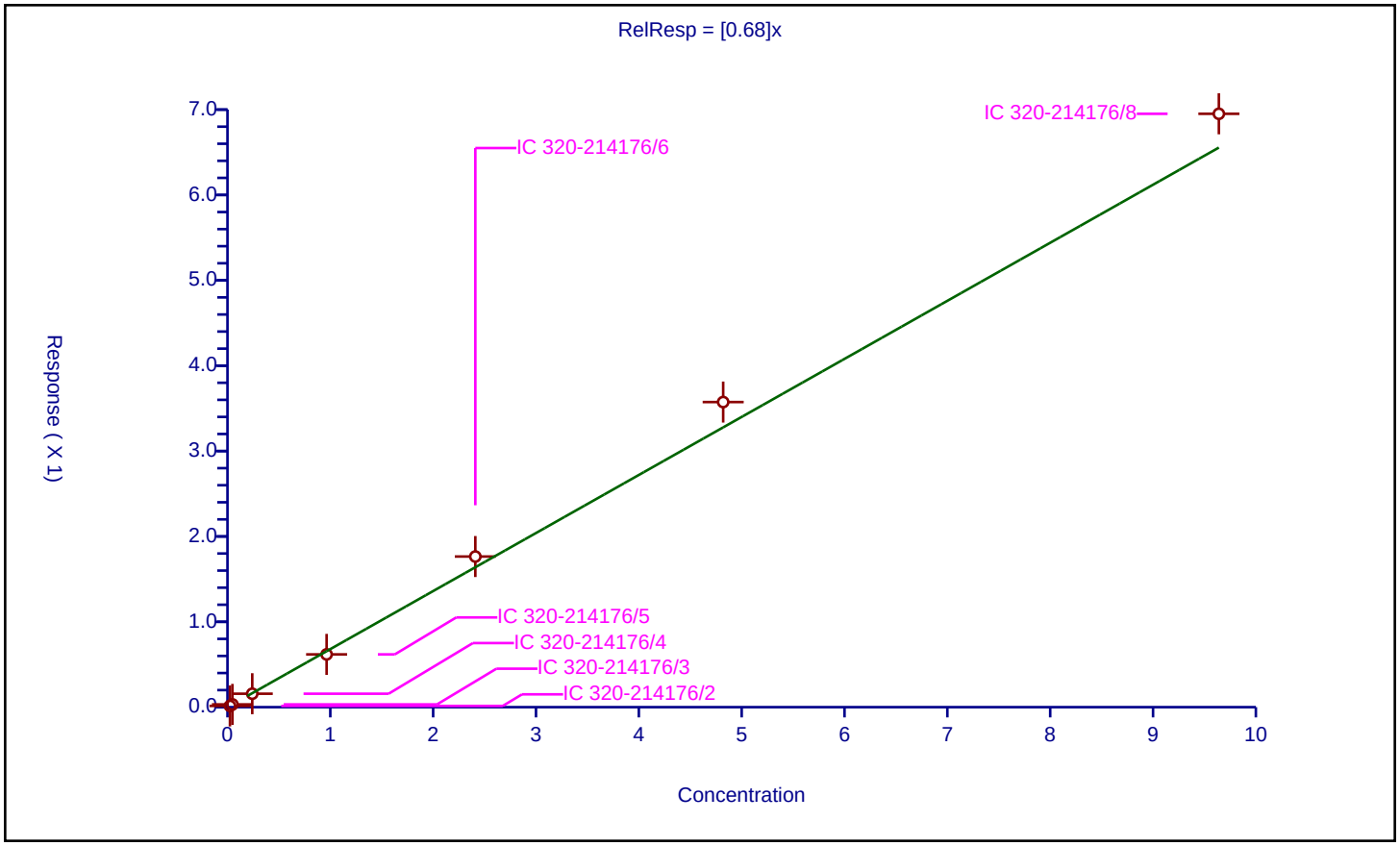
Curve Coefficients

Intercept:	0
Slope:	0.68

Error Coefficients

Standard Error:	5080000
Relative Standard Error:	7.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.0241	0.014499	2.39	4052357.0	0.6016	Y
2	IC 320-214176/3	0.0482	0.032266	2.39	4256604.0	0.66942	Y
3	IC 320-214176/4	0.241	0.157368	2.39	4237867.0	0.65298	Y
4	IC 320-214176/5	0.964	0.618107	2.39	4212796.0	0.64119	Y
5	IC 320-214176/6	2.41	1.764604	2.39	3973858.0	0.732201	Y
6	IC 320-214176/7	4.82	3.574159	2.39	3887079.0	0.741527	Y
7	IC 320-214176/8	9.64	6.951018	2.39	3625826.0	0.72106	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

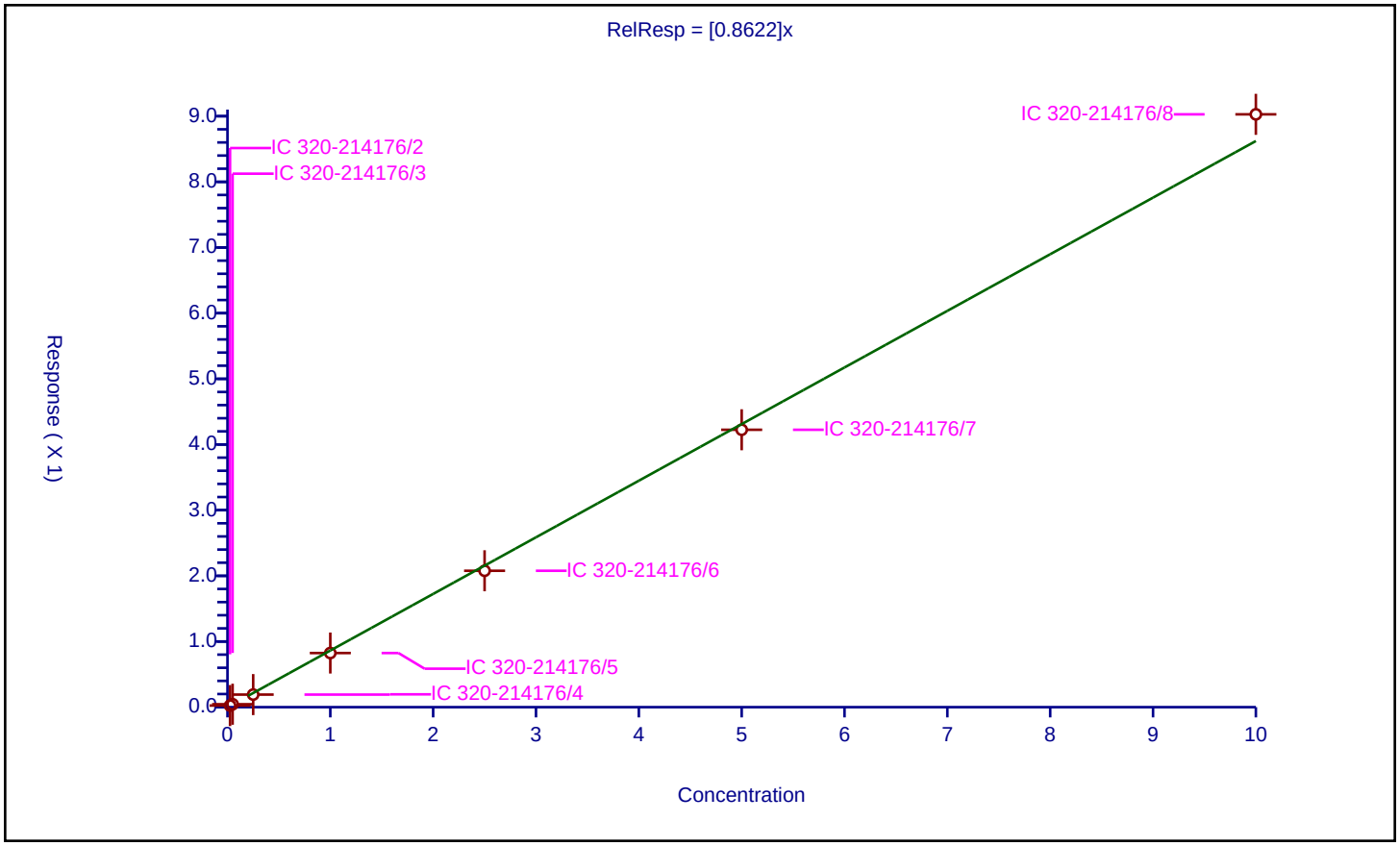
Curve Coefficients

Intercept:	0
Slope:	0.8622

Error Coefficients

Standard Error:	4840000
Relative Standard Error:	7.7
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.024236	2.5	3409956.0	0.969455	Y
2	IC 320-214176/3	0.05	0.044837	2.5	3500228.0	0.896742	Y
3	IC 320-214176/4	0.25	0.191514	2.5	3737470.0	0.766056	Y
4	IC 320-214176/5	1.0	0.824342	2.5	3376806.0	0.824342	Y
5	IC 320-214176/6	2.5	2.077142	2.5	3209638.0	0.830857	Y
6	IC 320-214176/7	5.0	4.224566	2.5	3287781.0	0.844913	Y
7	IC 320-214176/8	10.0	9.028109	2.5	2787354.0	0.902811	Y



Calibration / N-ethyl perfluorooctane sulfonamidoacetic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

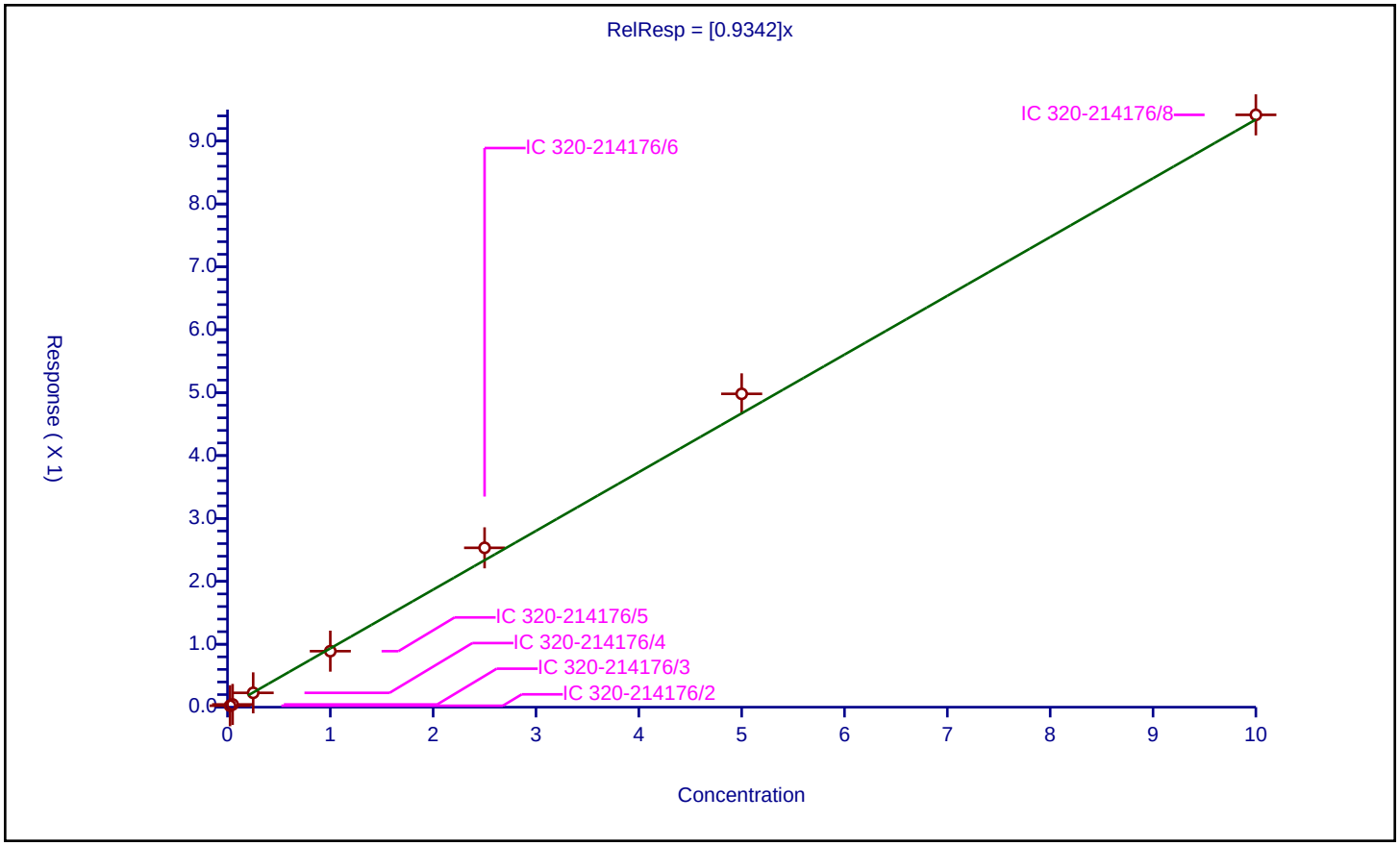
Curve Coefficients

Intercept:	0
Slope:	0.9342

Error Coefficients

Standard Error:	3410000
Relative Standard Error:	5.8
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.023061	2.5	2392883.0	0.922444	Y
2	IC 320-214176/3	0.05	0.043228	2.5	2436559.0	0.864559	Y
3	IC 320-214176/4	0.25	0.227793	2.5	2467789.0	0.911172	Y
4	IC 320-214176/5	1.0	0.890279	2.5	2399407.0	0.890279	Y
5	IC 320-214176/6	2.5	2.533393	2.5	2051910.0	1.013357	Y
6	IC 320-214176/7	5.0	4.980969	2.5	2049207.0	0.996194	Y
7	IC 320-214176/8	10.0	9.416509	2.5	1842170.0	0.941651	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

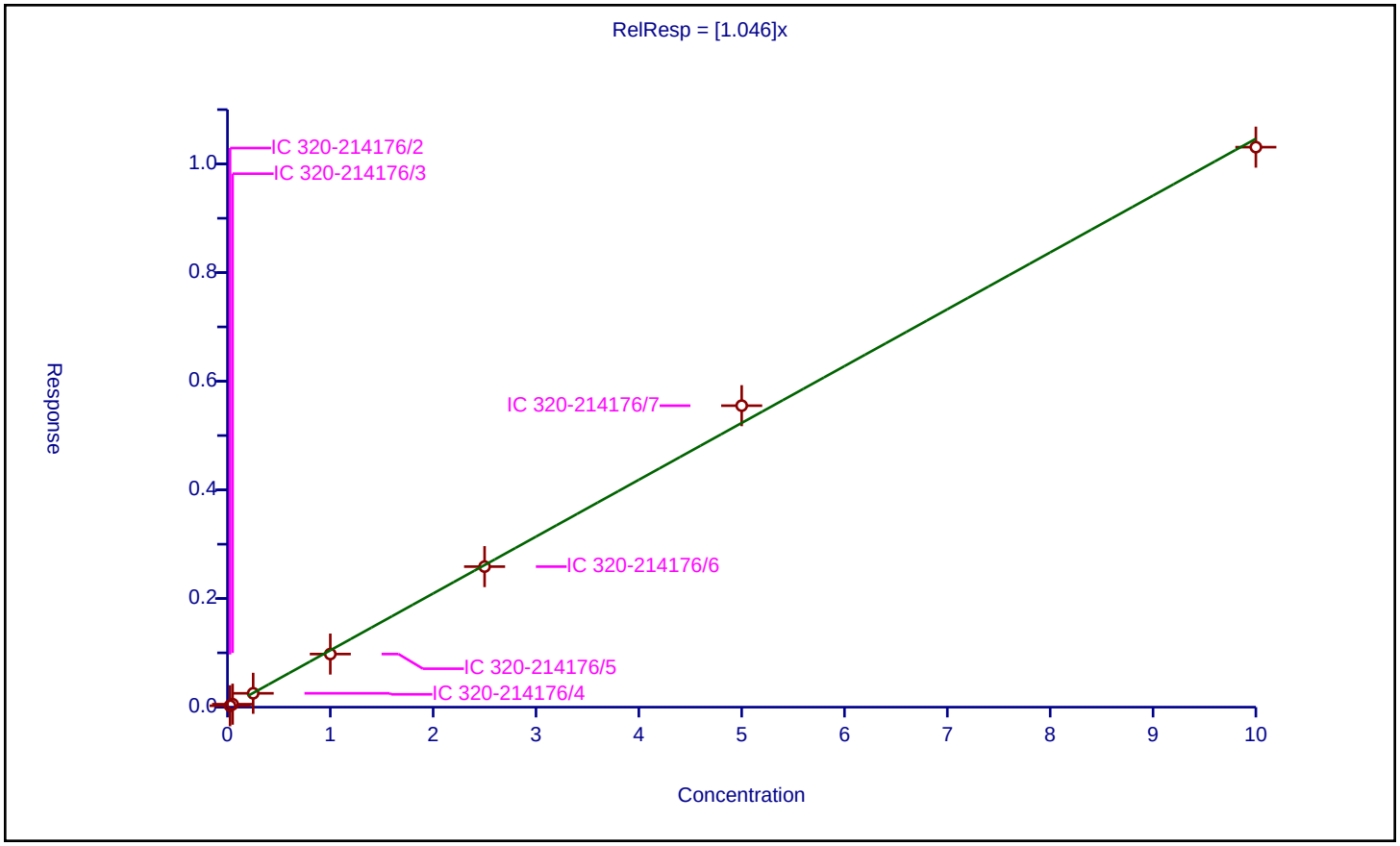
Curve Coefficients

Intercept:	0
Slope:	1.046

Error Coefficients

Standard Error:	6980000
Relative Standard Error:	4.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.026258	2.5	3864207.0	1.050306	Y
2	IC 320-214176/3	0.05	0.054991	2.5	3780852.0	1.099818	Y
3	IC 320-214176/4	0.25	0.255261	2.5	3986883.0	1.021046	Y
4	IC 320-214176/5	1.0	0.977578	2.5	3947765.0	0.977578	Y
5	IC 320-214176/6	2.5	2.587318	2.5	3715622.0	1.034927	Y
6	IC 320-214176/7	5.0	5.550246	2.5	3576857.0	1.110049	Y
7	IC 320-214176/8	10.0	10.308855	2.5	3528118.0	1.030886	Y



Calibration / Perfluorotridecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

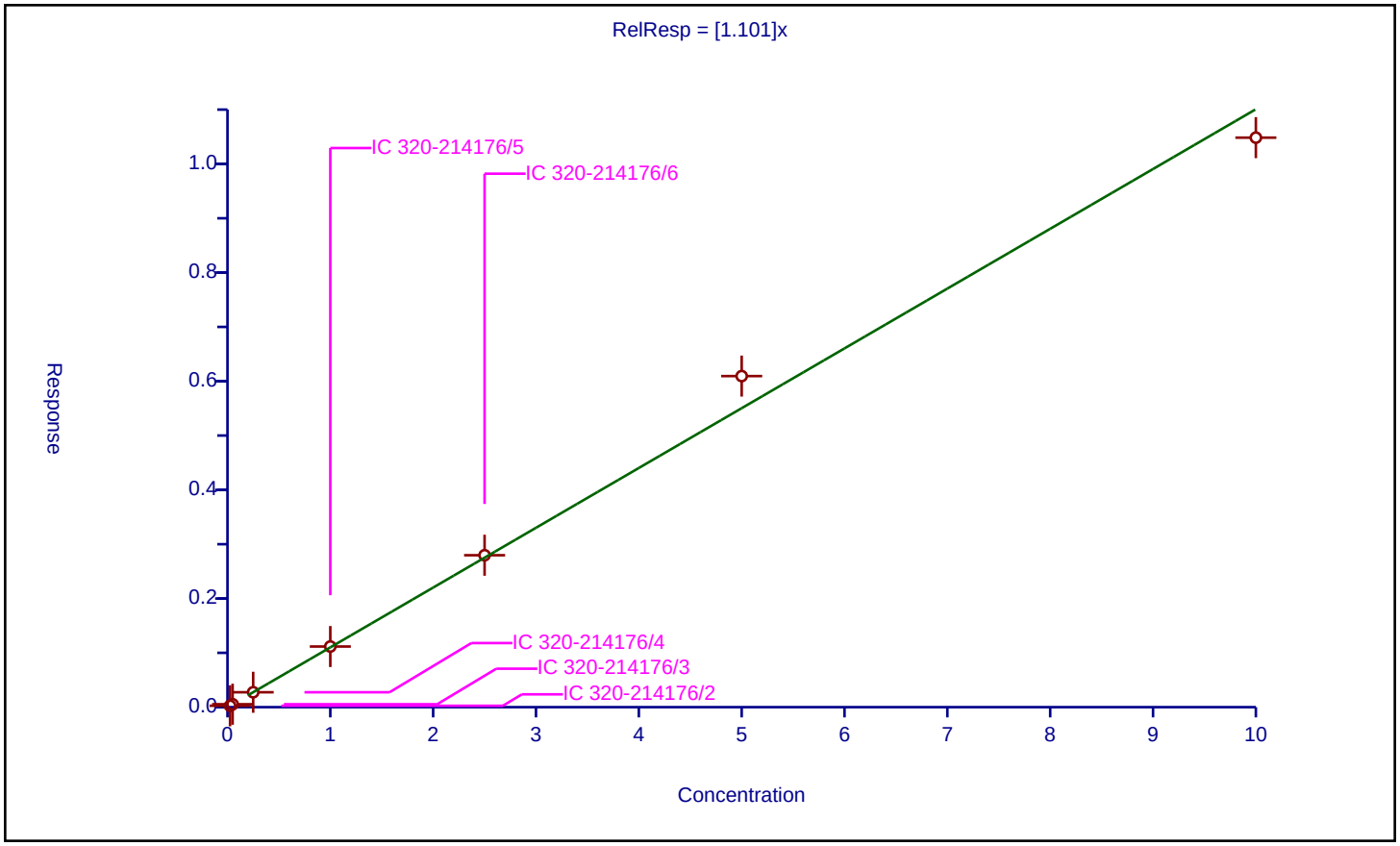
Curve Coefficients

Intercept:	0
Slope:	1.101

Error Coefficients

Standard Error:	7250000
Relative Standard Error:	5.7
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.025604	2.5	3864207.0	1.024169	Y
2	IC 320-214176/3	0.05	0.054028	2.5	3780852.0	1.08055	Y
3	IC 320-214176/4	0.25	0.274481	2.5	3986883.0	1.097923	Y
4	IC 320-214176/5	1.0	1.116401	2.5	3947765.0	1.116401	Y
5	IC 320-214176/6	2.5	2.796884	2.5	3715622.0	1.118753	Y
6	IC 320-214176/7	5.0	6.094462	2.5	3576857.0	1.218892	Y
7	IC 320-214176/8	10.0	10.483878	2.5	3528118.0	1.048388	Y



Calibration / Perfluorotetradecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

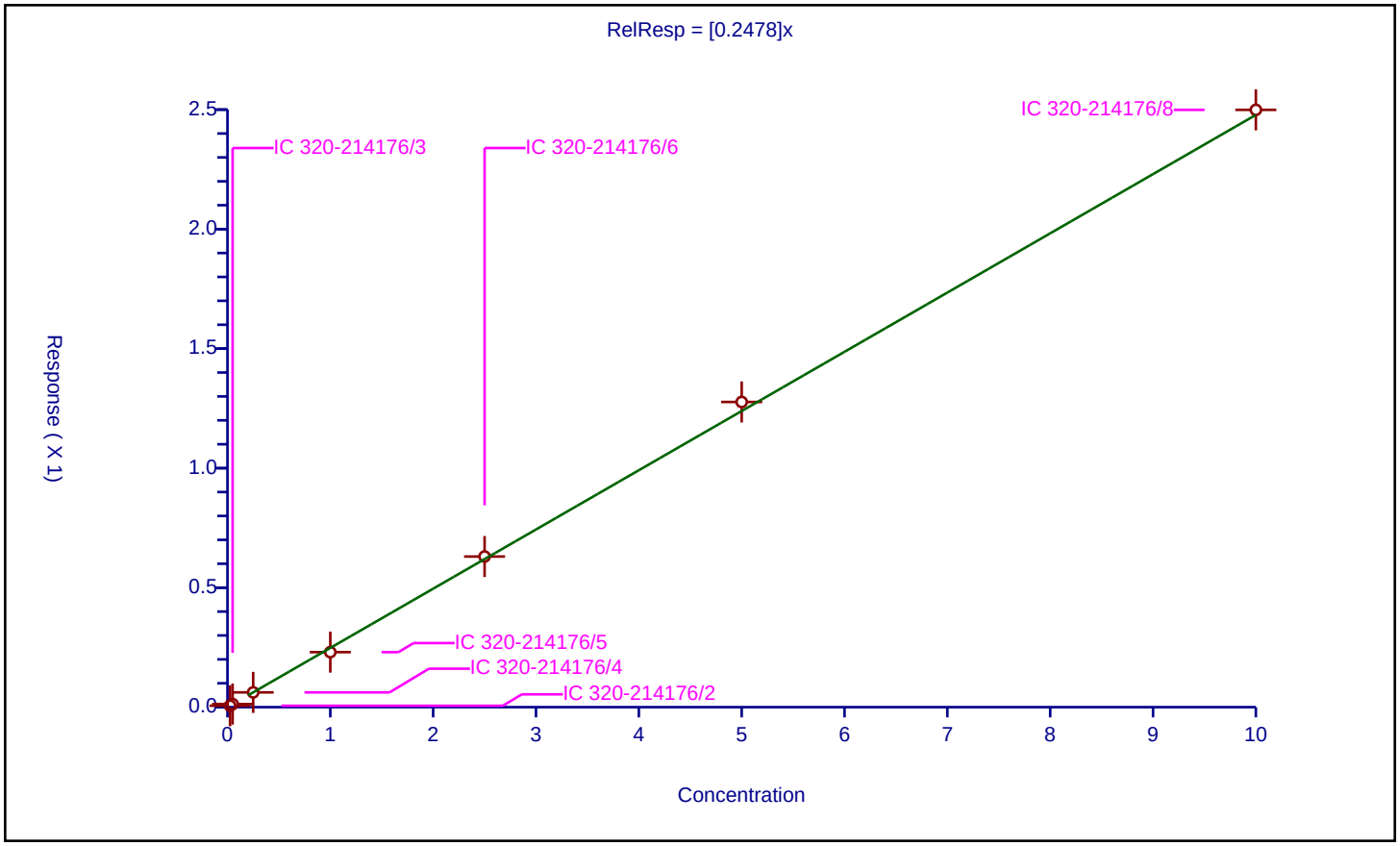
Curve Coefficients

Intercept:	0
Slope:	0.2478

Error Coefficients

Standard Error:	2050000
Relative Standard Error:	4.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-214176/2	0.025	0.005999	2.5	4813878.0	0.239973	Y
2	IC 320-214176/3	0.05	0.012971	2.5	4389855.0	0.259416	Y
3	IC 320-214176/4	0.25	0.061879	2.5	4783571.0	0.247516	Y
4	IC 320-214176/5	1.0	0.230253	2.5	5036200.0	0.230253	Y
5	IC 320-214176/6	2.5	0.63022	2.5	4471429.0	0.252088	Y
6	IC 320-214176/7	5.0	1.276799	2.5	4422729.0	0.25536	Y
7	IC 320-214176/8	10.0	2.499007	2.5	4321269.0	0.249901	Y



FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 215538

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/29/2018 17:27 Calibration End Date: 03/29/2018 18:14 Calibration ID: 38354

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-215538/2	2018.03.29A_ICALB_002.d
Level 2	IC 320-215538/3	2018.03.29A_ICALB_003.d
Level 3	IC 320-215538/4	2018.03.29A_ICALB_004.d
Level 4	IC 320-215538/5	2018.03.29A_ICALB_005.d
Level 5	IC 320-215538/6	2018.03.29A_ICALB_006.d
Level 6	IC 320-215538/7	2018.03.29A_ICALB_007.d
Level 7	IC 320-215538/8	2018.03.29A_ICALB_008.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 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.8915 0.9577	0.9023 0.9406	0.9140	0.9051	0.9581	AveID		0.9242				3.0		20.0			
Perfluoropentanoic acid (PFPeA)	1.2220 1.2408	1.2225 1.1629	1.1904	1.1561	1.1836	AveID		1.1969				2.7		20.0			
Perfluorobutanesulfonic acid (PFBS)	77.330 79.402	79.922 76.189	78.392	76.753	84.255	AveID		78.892				3.5		20.0			
4:2 FTS	17.852 17.231	19.686 16.075	16.275	15.644	18.025	AveID		17.255				8.1		20.0			
Perfluorohexanoic acid (PFHxA)	1.0295 1.0138	1.0079 1.0621	1.0176	0.9811	1.0511	AveID		1.0233				2.7		20.0			
Perfluoropentanesulfonic acid	73.648 73.909	67.432 67.079	68.106	70.202	78.033	AveID		71.201				5.8		20.0			
Perfluoroheptanoic acid (PFHpA)	1.2984 1.0384	0.9988 1.0329	1.0376	1.0673	1.1322	AveID		1.0865				9.4		20.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3241 1.0655	1.1881 1.0827	1.0477	0.9728	1.1375	AveID		1.1169				10.2		20.0			
6:2FTS	2.3438 1.7979	2.0189 1.8129	1.7183	1.6359	1.7453	AveID		1.8676				12.9		20.0			
Perfluorooctanoic acid (PFOA)	1.2974 1.2077	1.3221 1.1286	1.1178	1.0855	1.1415	AveID		1.1858				7.8		20.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3460 1.4008	1.2410 1.2764	1.3969	1.2914	1.3764	AveID		1.3327				4.8		20.0			
Perfluorooctanesulfonic acid (PFOS)	1.0668 1.1855	1.4058 1.1086	1.0916	1.0163	1.1239	AveID		1.1426				11.1		20.0			
Perfluorononanoic acid (PFNA)	1.0412 1.0598	0.9957 1.0389	1.0105	1.0188	1.0382	AveID		1.0290				2.1		20.0			
Perfluorooctane Sulfonamide (PFOSA)	0.9593 0.9958	0.9707 0.9722	1.0050	0.9840	1.0271	AveID		0.9877				2.4		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 215538

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/29/2018 17:27 Calibration End Date: 03/29/2018 18:14 Calibration ID: 38354

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 4	LVL 5		B	M1	M2								
Perfluorononanesulfonic acid	0.8034 0.8395	0.8351 0.7725	0.7909	0.7579	0.8131	AveID		0.8018				3.8		20.0			
8:2FTS	1.5521 1.3396	1.3434 1.3264	1.2292	1.3193	1.3317	AveID		1.3488				7.3		20.0			
Perfluorodecanoic acid (PFDA)	0.8917 1.0092	0.9828 1.0289	1.0404	0.9695	1.0022	AveID		0.9893				5.0		20.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.9703 1.1179	1.1967 1.0681	1.0177	0.9690	1.0392	AveID		1.0541				7.8		20.0			
Perfluorodecanesulfonic acid (PFDS)	0.7021 0.7404	0.7150 0.6562	0.6887	0.6714	0.6827	AveID		0.6938				4.1		20.0			
Perfluoroundecanoic acid (PFUnA)	0.7928 0.8564	0.8601 0.8106	0.7503	0.7569	0.7893	AveID		0.8023				5.4		20.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.8147 0.9883	0.9741 0.9090	0.9478	0.8654	0.9206	AveID		0.9171				6.7		20.0			
Perfluorododecanoic acid (PFDoA)	1.2686 1.1003	1.0370 1.0802	0.9877	1.0013	1.0904	AveID		1.0808				8.7		20.0			
Perfluorotridecanoic Acid (PFTriA)	1.1081 1.2301	1.0821 1.2394	1.1038	1.1196	1.2088	AveID		1.1560				5.8		20.0			
Perfluorotetradecanoic acid (PFTeA)	0.2350 0.2635	0.2284 0.2529	0.2585	0.2561	0.2538	AveID		0.2497				5.2		20.0			
13C4 PFBA	1.3443 1.4161	1.3814 1.4288	1.3330	1.4005	1.3694	Ave		1.3819				2.6		20.0			
13C5-PFPeA	0.8934 0.8816	0.8827 0.9186	0.8869	0.9245	0.9080	Ave		0.8994				2.0		20.0			
13C3-PFBS	0.0196 0.0210	0.0203 0.0210	0.0208	0.0215	0.0201	Ave		0.0206				3.1		20.0			
13C2 PFHxA	0.9740 1.0498	0.9825 0.9580	0.9718	0.9949	1.0104	Ave		0.9916				3.1		20.0			
13C4-PFHpA	0.9616 1.0017	0.9462 0.9550	0.9331	0.9376	0.9381	Ave		0.9533				2.5		20.0			
18O2 PFHxS	1.2098 1.2100	1.1723 1.1489	1.1820	1.2367	1.1603	Ave		1.1886				2.6		20.0			
M2-6:2FTS	0.2228 0.2146	0.2271 0.2099	0.2360	0.2204	0.2114	Ave		0.2203				4.2		20.0			
13C4 PFOA	0.9390 0.9042	0.9446 0.9340	0.9398	0.9524	0.9466	Ave		0.9372				1.7		20.0			
13C4 PFOS	0.8082 0.8127	0.8347 0.8617	0.7901	0.8588	0.8139	Ave		0.8257				3.3		20.0			
13C5 PFNA	0.7800 0.7950	0.8035 0.7975	0.7751	0.7957	0.8039	Ave		0.7930				1.4		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 215538

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/29/2018 17:27 Calibration End Date: 03/29/2018 18:14 Calibration ID: 38354

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 4	LVL 5		B	M1	M2								
13C8 FOSA	1.1429 1.1665	1.1806 1.1851	1.1447	1.1790	1.1660	Ave		1.1664				1.5		20.0			
M2-8:2FTS	0.2568 0.2599	0.2742 0.2425	0.2627	0.2471	0.2500	Ave		0.2562				4.2		20.0			
13C2 PFDA	0.6810 0.6901	0.6652 0.6633	0.6388	0.6714	0.6787	Ave		0.6698				2.5		20.0			
d3-NMeFOSAA	0.3500 0.3525	0.3448 0.3896	0.3473	0.3638	0.3600	Ave		0.3583				4.3		20.0			
d5-NEtFOSAA	0.3723 0.3641	0.3815 0.3697	0.3668	0.3972	0.3805	Ave		0.3760				3.0		20.0			
13C2 PFUnA	0.5415 0.5224	0.5653 0.5618	0.5325	0.5567	0.5471	Ave		0.5468				2.9		20.0			
13C2 PFDoA	0.6018 0.5961	0.5995 0.6273	0.6006	0.6258	0.6097	Ave		0.6087				2.1		20.0			
13C2-PFTeDA	0.7165 0.7795	0.7698 0.8064	0.7572	0.7919	0.7914	Ave		0.7733				3.8		20.0			
13C2-PFHxDA	1.1423 1.2360	1.1704 1.2118	1.1297	1.2003	1.2668	Ave		1.1939				4.2		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 215538

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/29/2018 17:27 Calibration End Date: 03/29/2018 18:14 Calibration ID: 38354

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-215538/2	2018.03.29A_ICALB_002.d
Level 2	IC 320-215538/3	2018.03.29A_ICALB_003.d
Level 3	IC 320-215538/4	2018.03.29A_ICALB_004.d
Level 4	IC 320-215538/5	2018.03.29A_ICALB_005.d
Level 5	IC 320-215538/6	2018.03.29A_ICALB_006.d
Level 6	IC 320-215538/7	2018.03.29A_ICALB_007.d
Level 7	IC 320-215538/8	2018.03.29A_ICALB_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	54978 12187200	114587 21580046	553955	2290620	5777307	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	50084 9830479	99196 17152403	480043	1931372	4732902	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	61417 13230767	131921 22689760	655502	2631669	6580985	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	14980 3033560	34332 5058050	143786	566727	1487518	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	45998 9564151	91036 16338328	449634	1763768	4676733	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanesulfonic acid		AveID	62066 13067667	118105 21196987	604278	2554091	6467251	0.0235 4.69	0.0469 9.38	0.235	0.938	2.35
Perfluoroheptanoic acid (PFHpA)		AveID	57274 9347366	86879 15839255	440174	1808460	4677284	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	66874 10543701	116520 18176626	512387	1978319	5288566	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2FTS		AveID	22713 3287357	39956 5791627	174781	617577	1539946	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	55886 9813194	114806 16926232	477643	1868120	4758293	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	47511 9738630	90656 16813478	477719	1907896	4696005	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	36705 8034226	100111 14234234	363900	1463610	3738022	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	37255 7571474	73551 13303148	356101	1464985	3675243	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (PFOSA)		AveID	50297 10438342	105346 18498081	523091	2096455	5273555	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorononanesulfonic acid		AveID	28595 5885424	61518 10261449	272737	1129121	2797665	0.0240 4.80	0.0480 9.60	0.240	0.960	2.40

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 215538

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/29/2018 17:27 Calibration End Date: 03/29/2018 18:14 Calibration ID: 38354

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
8:2FTS		AveID	17515 2997433	32444 4947631	140627	564315	1404701	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	27858 6258242	60106 10958309	302194	1176291	2995028	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	15580 3541055	37929 6681300	160694	637079	1647643	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	25096 5212375	52893 8752766	238488	1004519	2358750	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
Perfluoroundecanoic acid (PFUnA)		AveID	19693 4020256	44699 7311434	181675	761440	1901518	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	13913 3233549	34166 5395434	158064	621160	1542349	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	35020 5893687	57155 10879941	269716	1132386	2927481	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	30591 6588893	59640 12483957	301420	1266253	3245349	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	7726 1845416	16166 3274341	88991	366508	884583	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	6166712 6363039	6349810 5735604	6060888	6326878	6030203	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5-PFPeA	13PF OA	Ave	4098537 3961451	4057226 3687266	4032497	4176477	3998575	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	83555 87650	86826 78326	87970	90179	82172	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4468019 4716939	4516262 3845737	4418534	4494490	4449369	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	4411051 4500718	4349189 3833624	4242345	4235886	4131012	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5250229 5143358	5097412 4362929	5084038	5285294	4833301	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	971099 916140	991613 800357	1019321	945777	884202	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	4307414 4062703	4341966 3749304	4272950	4302583	4168394	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3544609 3490802	3668029 3306882	3434108	3709075	3426212	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3578216 3572058	3693528 3201114	3523980	3594883	3540108	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5242954 5241388	5426551 4756992	5204720	5326321	5134426	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1128441 1118796	1207568 932507	1144081	1069323	1054813	2.40 2.40	2.40 2.40	2.40	2.40	2.40

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 215538

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/29/2018 17:27 Calibration End Date: 03/29/2018 18:14 Calibration ID: 38354

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C2 PFDA	13PF OA	Ave	3124013 3100672	3057872 2662530	2904523	3033191	2988519	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	1605692 1583848	1584763 1563764	1579046	1643657	1585449	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	13PF OA	Ave	1707772 1635848	1753746 1483924	1667774	1794427	1675412	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	2484047 2347134	2598573 2255059	2421277	2514905	2409033	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	2760551 2678243	2755722 2518124	2730672	2827344	2684707	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	3287077 3502295	3538364 3237082	3442831	3577558	3484985	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	5240268 5553497	5380000 4864202	5136479	5422645	5578235	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:
Ave = Average ISTD
AveID = Average isotope dilution

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 215538

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/29/2018 17:27 Calibration End Date: 03/29/2018 18:14 Calibration ID: 38354

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-215538/2	2018.03.29A_ICALB_002.d
Level 2	IC 320-215538/3	2018.03.29A_ICALB_003.d
Level 3	IC 320-215538/4	2018.03.29A_ICALB_004.d
Level 4	IC 320-215538/5	2018.03.29A_ICALB_005.d
Level 5	IC 320-215538/6	2018.03.29A_ICALB_006.d
Level 6	IC 320-215538/7	2018.03.29A_ICALB_007.d
Level 7	IC 320-215538/8	2018.03.29A_ICALB_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	-3.5 1.8	-2.4	-1.1	-2.1	3.7	3.6	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	2.1 -2.8	2.1	-0.5	-3.4	-1.1	3.7	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	-2.0 -3.4	1.3	-0.6	-2.7	6.8	0.6	30 30	30	30	30	30	30
4:2 FTS	3.5 -6.8	14.1	-5.7	-9.3	4.5	-0.1	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	0.6 3.8	-1.5	-0.6	-4.1	2.7	-0.9	30 30	30	30	30	30	30
Perfluoropentanesulfonic acid	3.4 -5.8	-5.3	-4.3	-1.4	9.6	3.8	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	19.5 -4.9	-8.1	-4.5	-1.8	4.2	-4.4	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	18.6 -3.1	6.4	-6.2	-12.9	1.8	-4.6	30 30	30	30	30	30	30
6:2FTS	25.5 -2.9	8.1	-8.0	-12.4	-6.5	-3.7	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	9.4 -4.8	11.5	-5.7	-8.5	-3.7	1.8	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	1.0 -4.2	-6.9	4.8	-3.1	3.3	5.1	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-6.6 -3.0	23.0	-4.5	-11.1	-1.6	3.8	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	1.2 1.0	-3.2	-1.8	-1.0	0.9	3.0	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (PFOSA)	-2.9 -1.6	-1.7	1.8	-0.4	4.0	0.8	30 30	30	30	30	30	30
Perfluorononanesulfonic acid	0.2 -3.6	4.2	-1.4	-5.5	1.4	4.7	30 30	30	30	30	30	30

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1 Analy Batch No.: 215538

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/29/2018 17:27 Calibration End Date: 03/29/2018 18:14 Calibration ID: 38354

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
8:2FTS	15.1 -1.7	-0.4	-8.9	-2.2	-1.3	-0.7	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	-9.9 4.0	-0.7	5.2	-2.0	1.3	2.0	30 30	30	30	30	30	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	-8.0 1.3	13.5	-3.5	-8.1	-1.4	6.0	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	1.2 -5.4	3.1	-0.7	-3.2	-1.6	6.7	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	-1.2 1.0	7.2	-6.5	-5.7	-1.6	6.7	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	-11.2 -0.9	6.2	3.3	-5.6	0.4	7.8	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	17.4 -0.1	-4.0	-8.6	-7.4	0.9	1.8	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	-4.1 7.2	-6.4	-4.5	-3.1	4.6	6.4	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	-5.9 1.3	-8.5	3.5	2.5	1.6	5.5	30 30	30	30	30	30	30

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_002.d
Lims ID: IC L1 Full
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 29-Mar-2018 17:27:24 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:47:22 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

First Level Reviewer: westendorfc Date: 30-Mar-2018 11:46:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.436	-0.006	1.000	6166712	2.43		97.3	50338	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.437	-0.007	1.000	54978	0.0241		96.5	19.5	
D 3 13C5-PFPeA										
267.90 > 223.00	1.702	1.702	0.0	0.556	4098537	2.48		99.3	99404	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.702	1.706	-0.004	1.000	50084	0.0255		102	18.1	
D 47 13C3-PFBS										
301.90 > 83.00	1.738	1.738	0.0	1.000	83555	2.21		95.1	487	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.738	1.742	-0.004	1.000	61417	0.0217		98.0	42.6	
298.90 > 99.00	1.738	1.742	-0.004	1.000	27306		2.25(1.25-3.74)	98.0	43.5	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.948	1.955	-0.007	1.000	14980	0.0242		103	890	
D 60 M2-4:2FTS										
329.00 > 81.00	1.948	1.955	-0.007	1.000	670675	NC			10023	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.991	0.001	1.000	4468019	2.46		98.2	159424	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.991	1.992	-0.001	1.000	45998	0.0252		101	64.0	
313.00 > 119.00	1.991	1.992	-0.001	1.000	6508		7.07(5.03-15.10)	101	86.2	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.014	2.013	0.001	1.000	62066	0.0243		103	2728	
349.00 > 99.00	2.014	2.013	0.001	1.000	19424		3.20(1.36-4.07)	103	499	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.092	0.001	1.000	230803	NC			3834	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.092	0.001	1.000	7478	NC			65.5	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.326	-0.007	1.000	4411051	2.52		101	104151	
10 Perfluoroheptanoic acid										R
363.00 > 319.00	2.332	2.327	0.005	1.006	57274	0.0299		120	43.4	R
363.00 > 169.00	2.319	2.327	-0.008	1.000	14474		3.96(1.13-3.40)	120	39.5	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.339	-0.007	0.994	66874	0.0270		119	321	
399.00 > 99.00	2.345	2.339	0.006	1.000	24503		2.73(1.50-4.49)	119	141	
D 11 18O2 PFHxS										
403.00 > 84.00	2.345	2.340	0.005	1.000	5250229	2.41		102	72933	
65 Adona										
377.00 > 251.00	2.372	2.372	0.0	1.000	131706	NC			3848	
377.00 > 85.00	2.372	2.372	0.0	1.000	78395		1.68(0.84-2.53)		1353	
D 12 M2-6:2FTS										
429.00 > 81.00	2.667	2.664	0.003	1.000	971099	2.40		101	36585	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.667	2.664	0.003	1.000	22713	0.0297		126	103	
D 14 13C4 PFOA										
417.00 > 372.00	2.690	2.688	0.002	1.000	4307414	2.50		100	62635	
* 62 13C2-PFOA										
415.00 > 370.00	2.690	2.689	0.001		4587408	2.50			82099	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.690	2.690	0.0	1.000	55886	0.0274		109	15.6	
413.00 > 169.00	2.690	2.690	0.0	1.000	29511		1.89(0.84-2.52)	109	137	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.697	2.695	0.002	1.000	47511	0.0240		101	2228	
449.00 > 99.00	2.690	2.695	-0.005	0.997	13527		3.51(1.94-5.82)	101	344	
D 18 13C4 PFOS										
503.00 > 80.00	3.063	3.060	0.003	1.000	3544609	2.34		97.9	57925	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.063	3.060	0.003	1.000	36705	0.0217		93.4	95.8	
499.00 > 99.00	3.056	3.060	-0.004	0.998	9133		4.02(2.31-6.93)	93.4	90.5	
D 19 13C5 PFNA										
468.00 > 423.00	3.063	3.061	0.002	1.000	3578216	2.46		98.4	65837	
20 Perfluorononanoic acid										
463.00 > 419.00	3.063	3.064	-0.001	1.000	37255	0.0253		101	33.6	
463.00 > 169.00	3.063	3.064	-0.001	1.000	8504		4.38(1.90-5.69)	101	156	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.270	3.272	-0.002	1.000	63605	NC			1085	
D 21 13C8 FOSA										
506.00 > 78.00	3.393	3.388	0.005	1.000	5242954	2.45		98.0	50202	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.393	3.389	0.004	1.000	50297	0.0243		97.1	2125	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.412	3.409	0.003	1.000	28595	0.0240		100	1160	
549.00 > 99.00	3.412	3.409	0.003	1.000	11257		2.54(1.33-3.97)	100	233	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.412	3.413	-0.001	1.000	1128441	2.40		100	46885	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.412	3.415	-0.003	1.000	17515	0.0276		115	142	
D 23 13C2 PFDA										
515.00 > 470.00	3.421	3.423	-0.002	1.000	3124013	2.54		102	34604	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.430	3.427	0.003	1.003	27858	0.0225		90.1	153	
513.00 > 169.00	3.421	3.427	-0.006	1.000	5765		4.83(2.36-7.09)	90.1	172	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.579	3.578	0.001	1.000	1605692	2.44		97.7	24728	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.579	3.581	-0.002	1.000	15580	0.0230		92.0	148	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.743	3.738	0.005	1.000	25096	0.0244		101	720	
599.00 > 99.00	3.733	3.738	-0.005	0.997	6754		3.72(1.39-4.16)	101	273	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.753	3.749	0.004	1.000	1707772	2.48		99.0	4645	
D 30 13C2 PFUnA										
565.00 > 520.00	3.753	3.753	0.0	1.000	2484047	2.48		99.0	53924	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.764	3.755	0.009	1.003	13913	0.0222		88.8	325	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.753	3.755	-0.002	1.000	19693	0.0247		98.8	88.1	
563.00 > 169.00	3.753	3.755	-0.002	1.000	6256		3.15(2.12-6.36)	98.8	230	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.910	3.910	0.0	1.000	99320	NC			3306	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.051	4.052	-0.001	1.000	35020	0.0293		117	27.1	
613.00 > 169.00	4.051	4.052	-0.001	1.000	6979		5.02(2.13-6.40)	117	123	
D 36 13C2 PFDoA										
615.00 > 570.00	4.051	4.052	-0.001	1.000	2760551	2.47		98.9	25063	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.319	4.316	0.003	1.000	30591	0.0240		95.9	11.5	
663.00 > 169.00	4.308	4.316	-0.008	0.997	9882		3.10(1.25-3.76)	95.9	176	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.562	4.558	0.004	1.000	3287077	2.32		92.7	19784	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.562	4.558	0.004	1.000	7726	0.0235		94.1	147	
713.00 > 219.00	4.552	4.558	-0.006	0.998	7671		1.01(0.71-2.13)	94.1	202	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.974	4.977	-0.003	1.000	92453	NC			21.2	
813.00 > 169.00	4.974	4.977	-0.003	1.000	16102		5.74(2.86-8.58)		164	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.974	4.977	-0.003	1.000	5240268	2.39		95.7	13910	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.342	5.344	-0.002	1.000	48490	NC			7.8	
913.00 > 169.00	5.342	5.344	-0.002	1.000	5832		8.31(3.83-11.48)		96.3	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Reagents:

LCPFC_LL1_00005 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:47:26 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_002.d

Injection Date: 29-Mar-2018 17:27:24 Instrument ID: A8_N

Lims ID: IC L1 Full

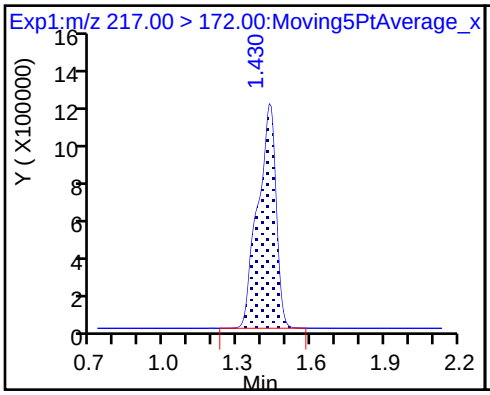
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2

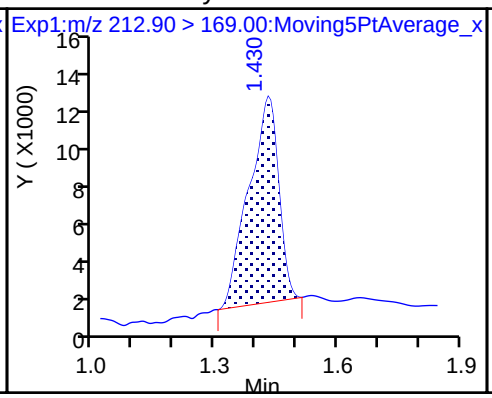
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

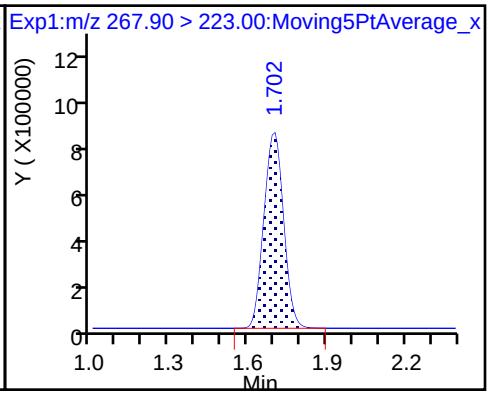
D 1 13C4 PFBA



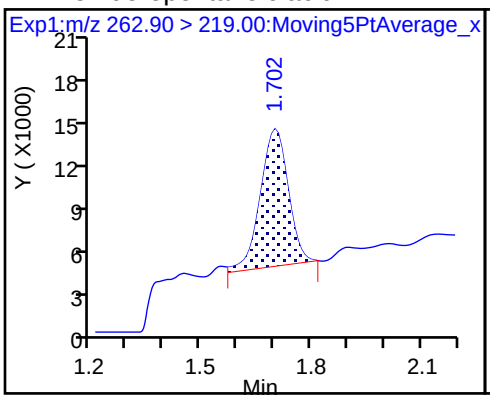
2 Perfluorobutyric acid



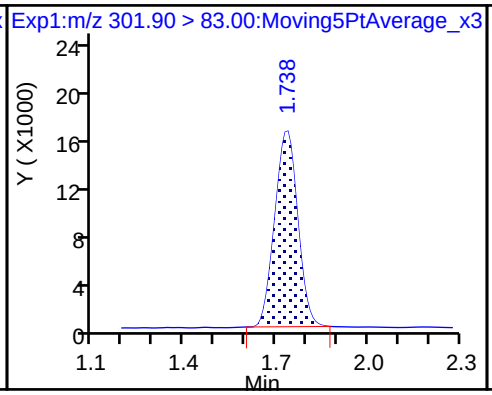
D 3 13C5-PFPeA



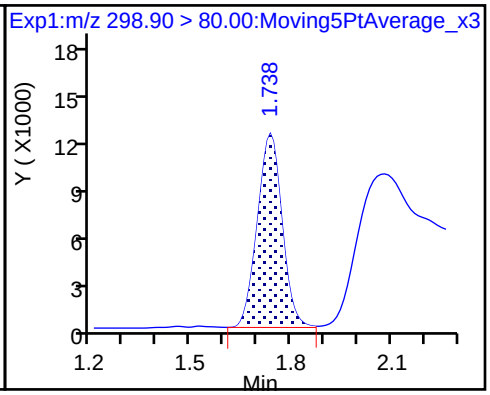
4 Perfluoropentanoic acid



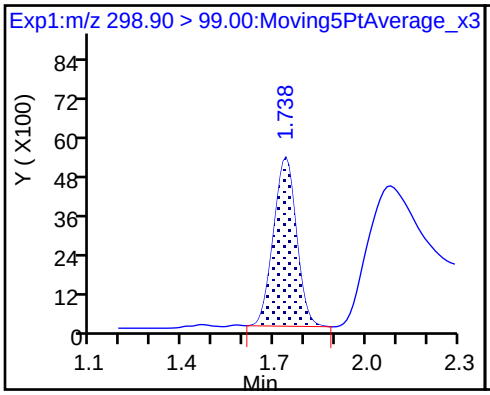
D 47 13C3-PFBS



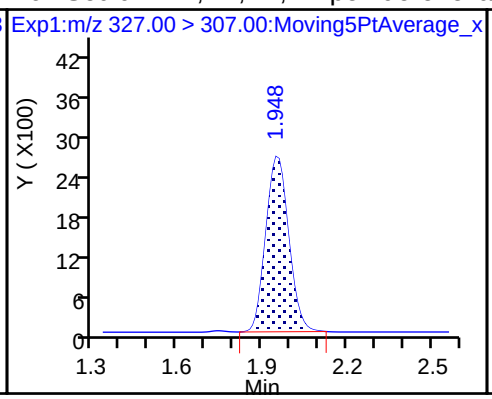
5 Perfluorobutanesulfonic acid



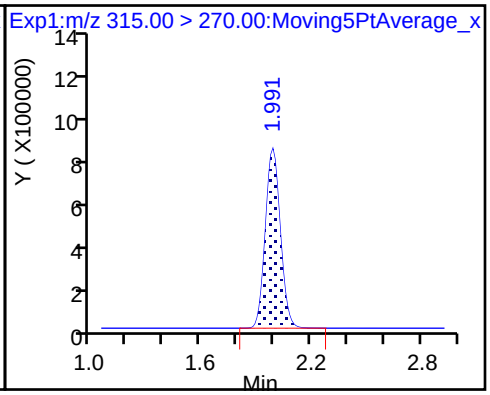
5 Perfluorobutanesulfonic acid



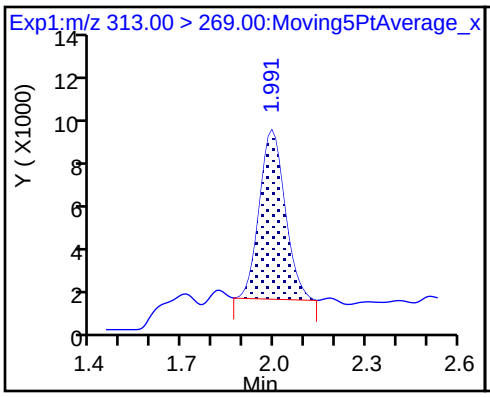
61 Sodium 1H,1H,2H,2H-perfluorohexa



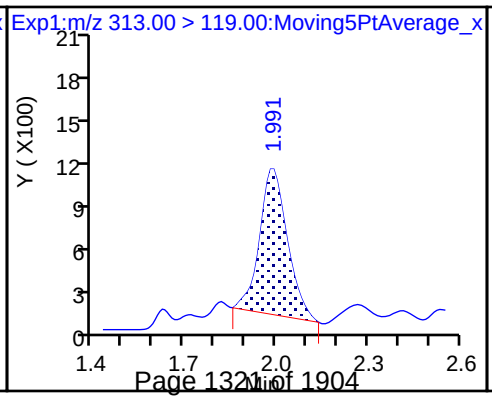
De 7 13C2 PFHxA



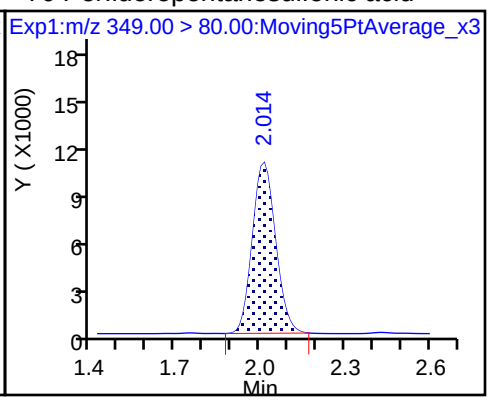
6 Perfluorohexanoic acid



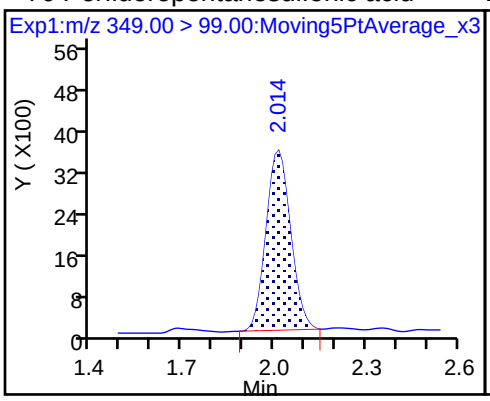
6 Perfluorohexanoic acid



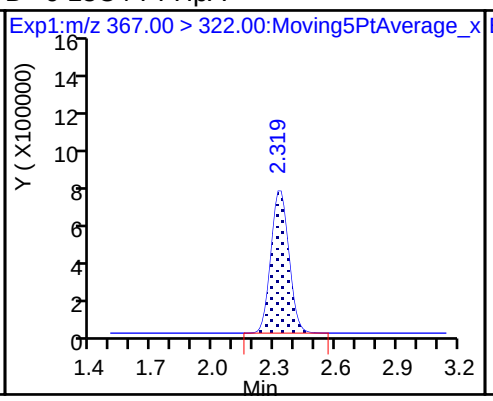
70 Perfluoropentanesulfonic acid



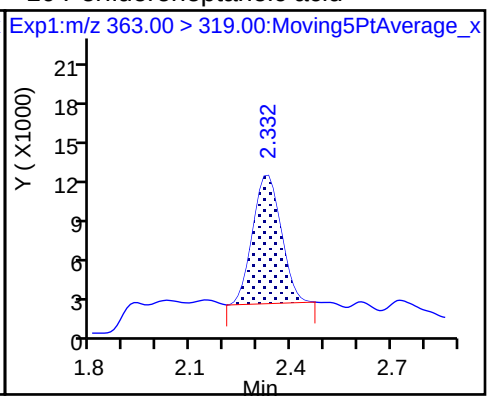
70 Perfluoropentanesulfonic acid



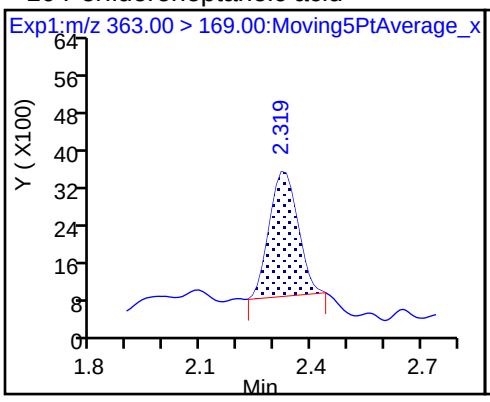
D 9 13C4-PFHpA



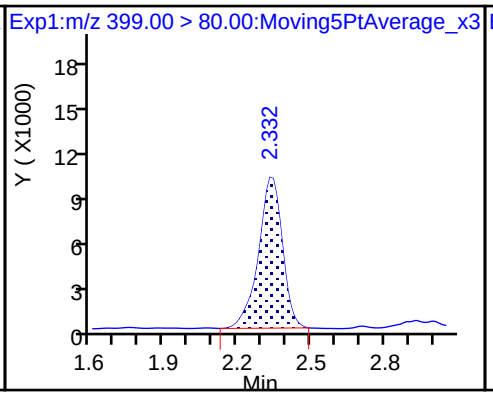
10 Perfluoroheptanoic acid



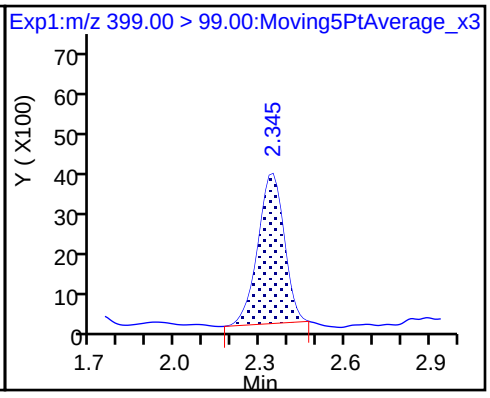
10 Perfluoroheptanoic acid



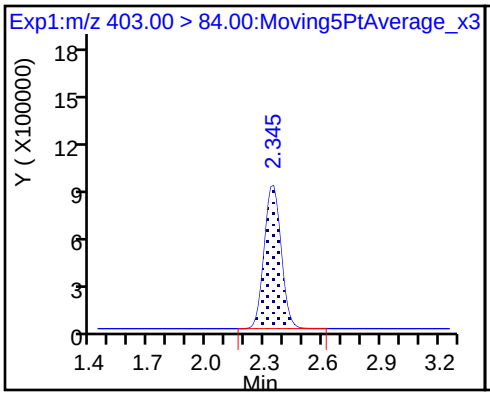
8 Perfluorohexanesulfonic acid



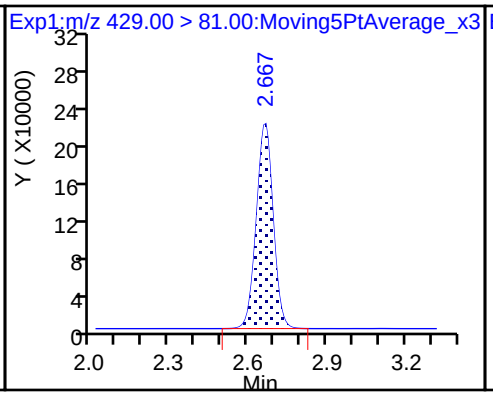
8 Perfluorohexanesulfonic acid



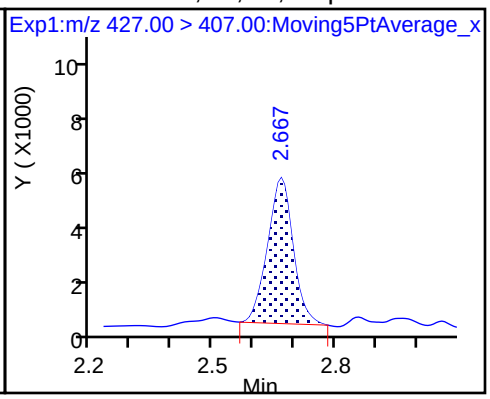
D 11 18O2 PFHxS



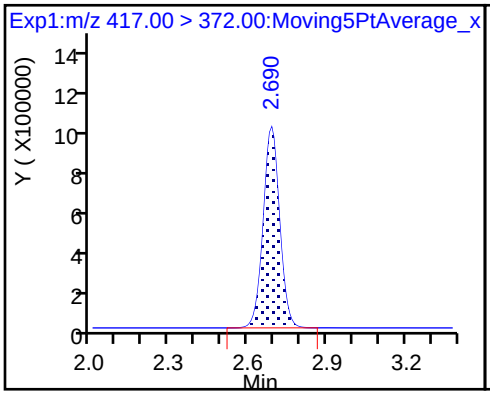
D 12 M2-6:2FTS



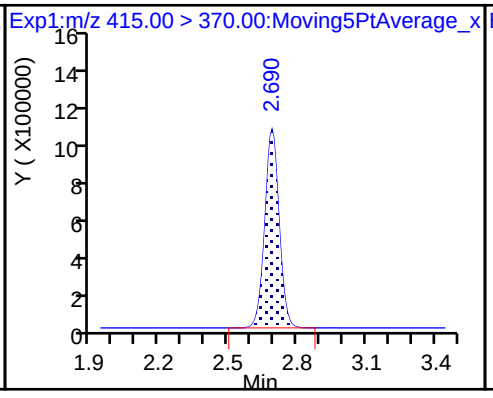
13 Sodium 1H,1H,2H,2H-perfluorooctane



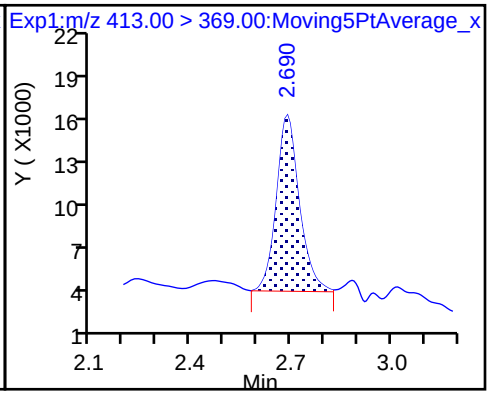
D 14 13C4 PFOA



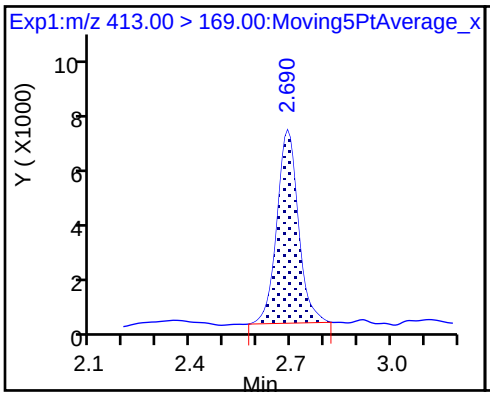
* 62 13C2-PFOA



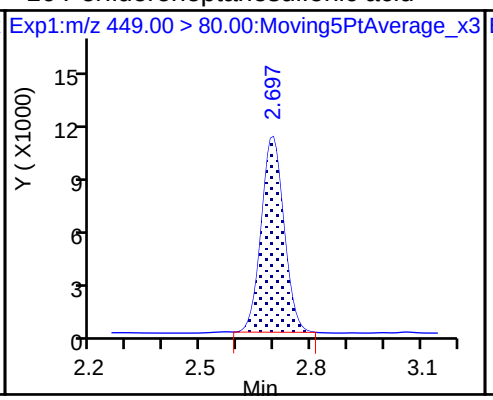
15 Perfluorooctanoic acid



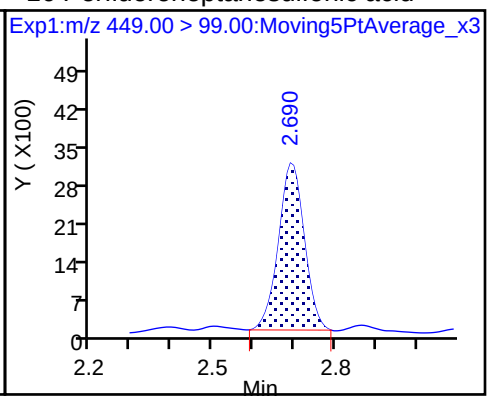
15 Perfluorooctanoic acid



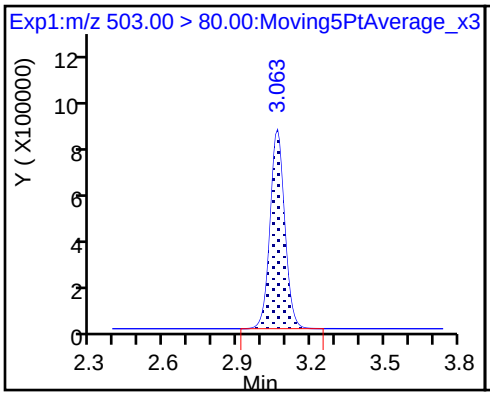
16 Perfluoroheptanesulfonic acid



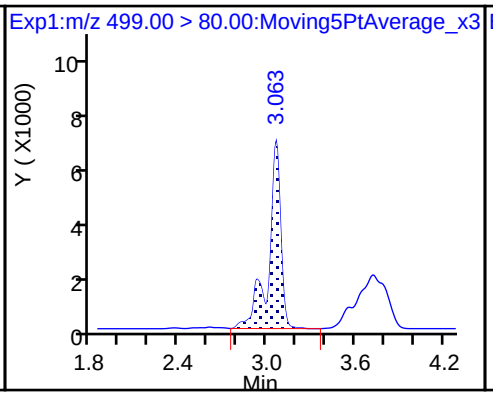
16 Perfluoroheptanesulfonic acid



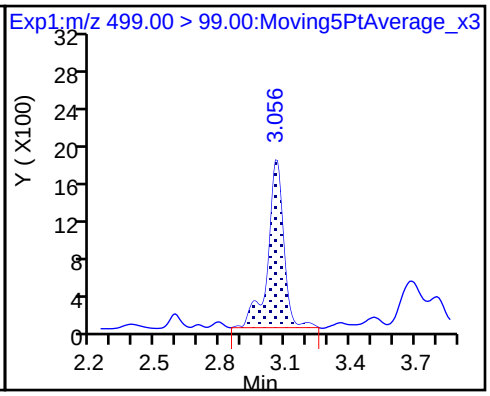
D 18 13C4 PFOS



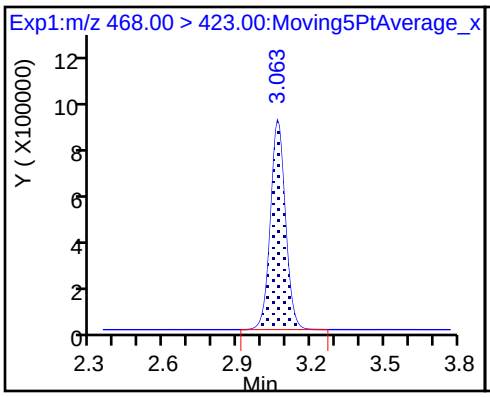
17 Perfluorooctane sulfonic acid



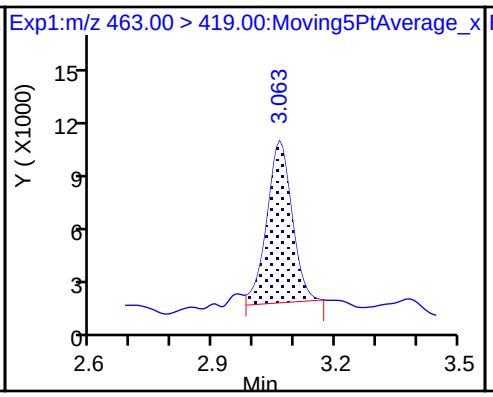
17 Perfluorooctane sulfonic acid



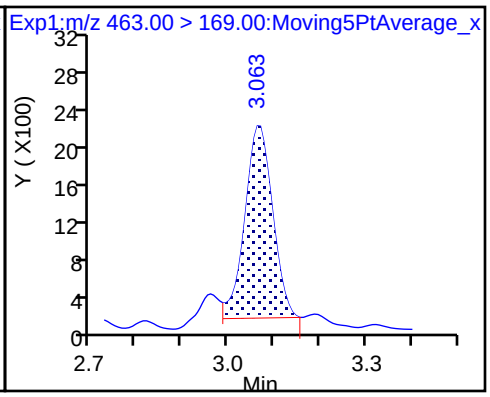
D 19 13C5 PFNA



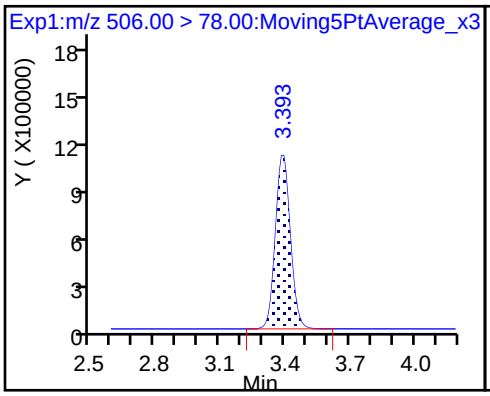
20 Perfluorononanoic acid



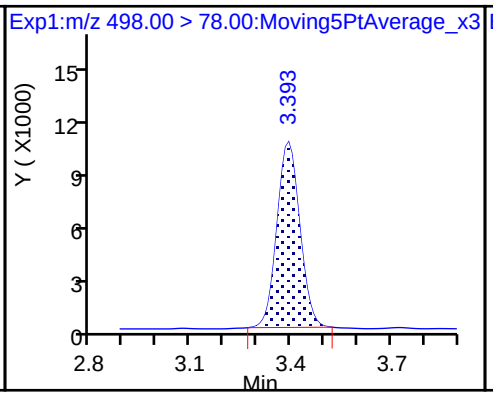
20 Perfluorononanoic acid



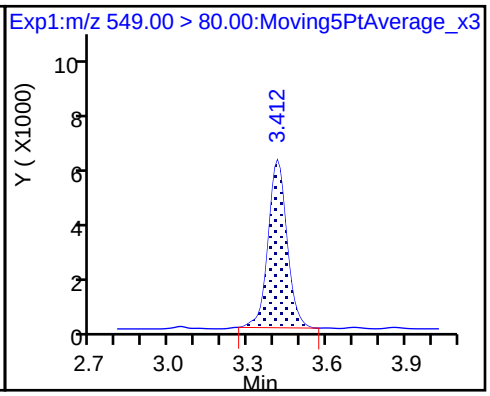
D 21 13C8 FOSA



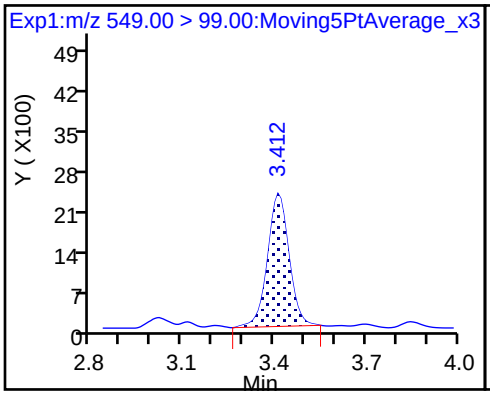
22 Perfluorooctane Sulfonamide



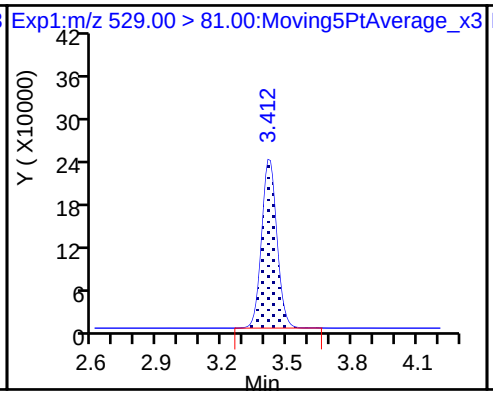
68 Perfluorononanesulfonic acid



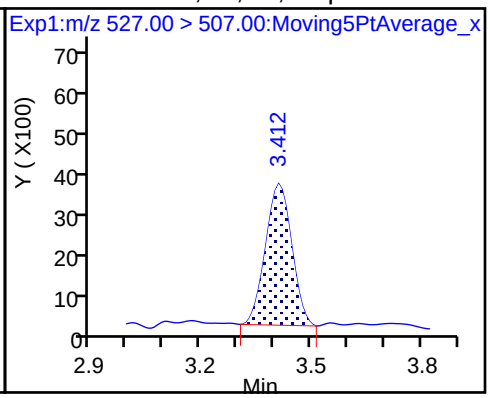
68 Perfluorononanesulfonic acid



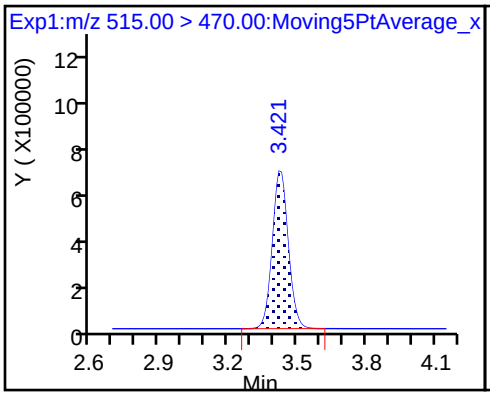
D 26 M2-8:2FTS



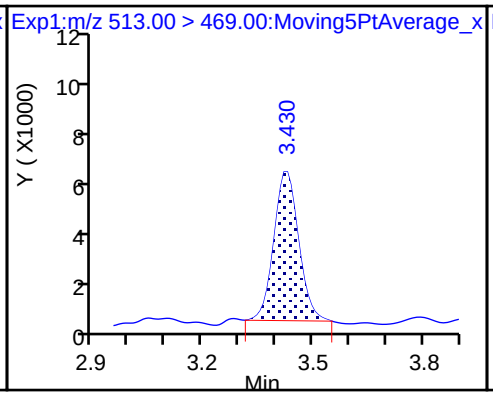
25 Sodium 1H,1H,2H,2H-perfluorodecane



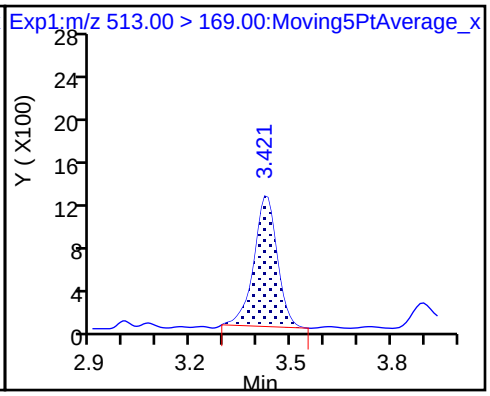
D 23 13C2 PFDA



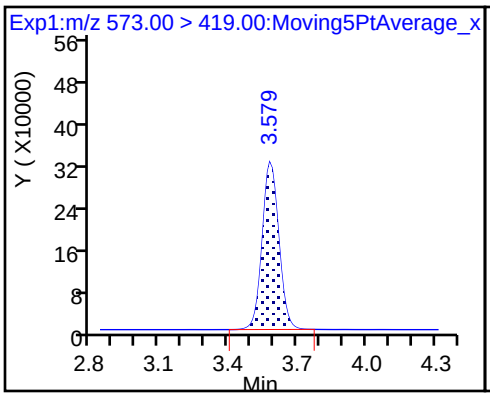
24 Perfluorodecanoic acid



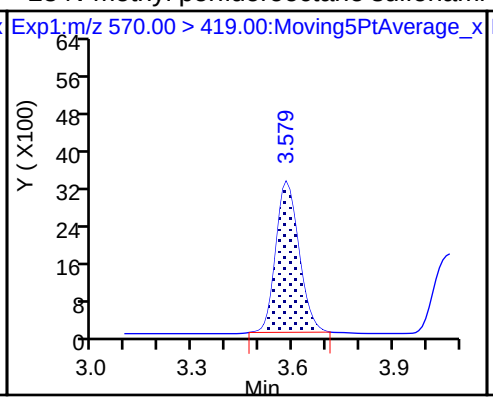
24 Perfluorodecanoic acid



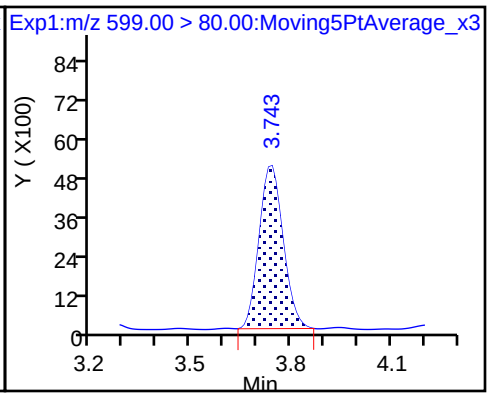
D 27 d3-NMeFOSAA



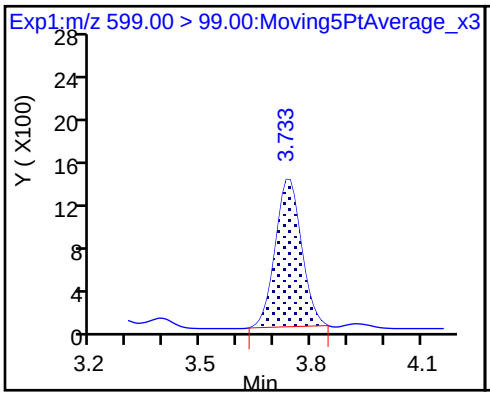
28 N-methyl perfluorooctane sulfonami



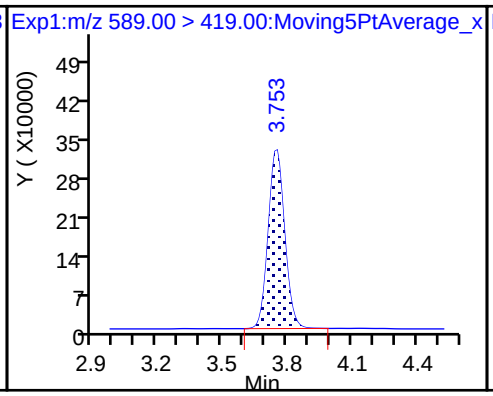
29 Perfluorodecane Sulfonic acid



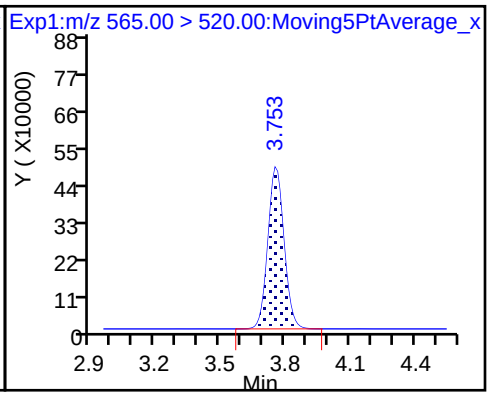
29 Perfluorodecane Sulfonic acid



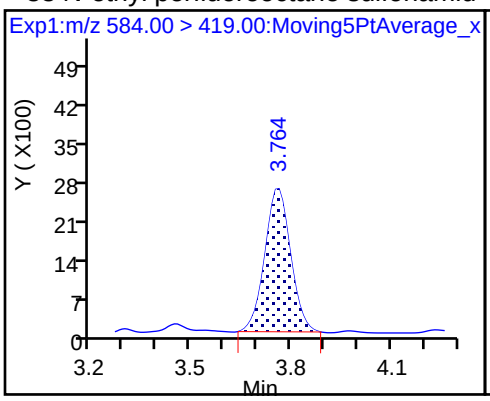
D 32 d5-NEtFOSAA



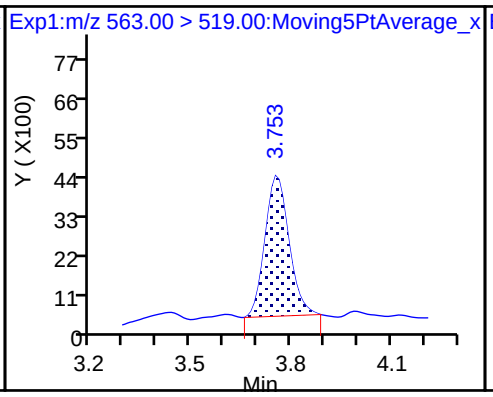
D 30 13C2 PFUnA



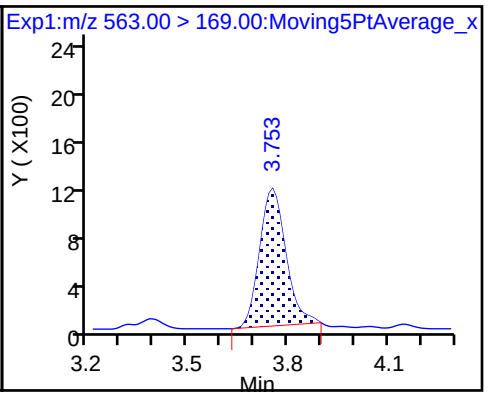
33 N-ethyl perfluorooctane sulfonamid



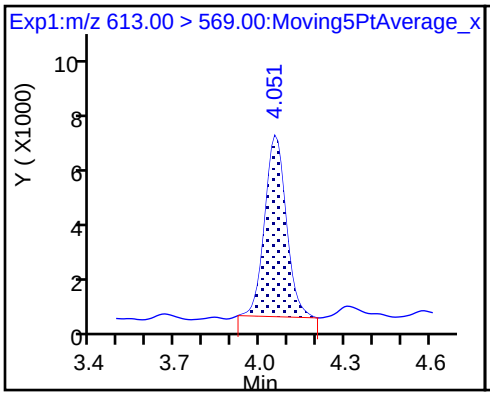
31 Perfluoroundecanoic acid



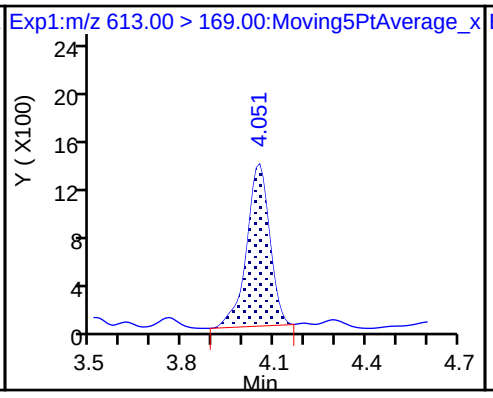
31 Perfluoroundecanoic acid



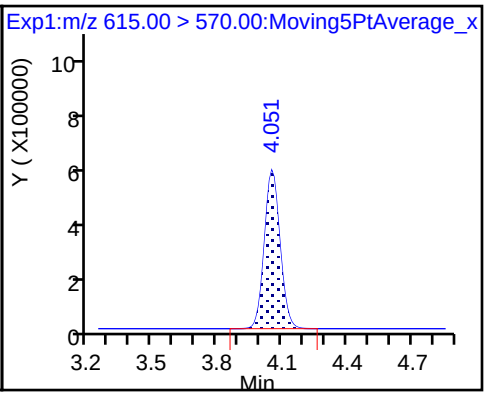
37 Perfluorododecanoic acid



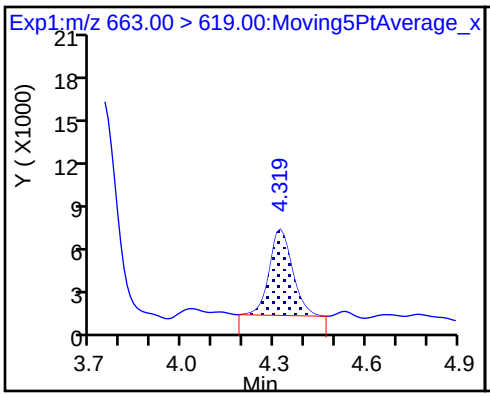
37 Perfluorododecanoic acid



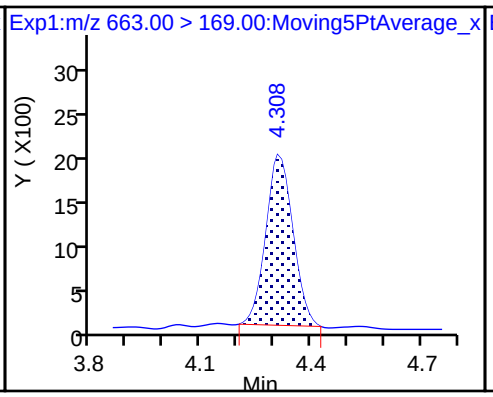
D 36 13C2 PFDoA



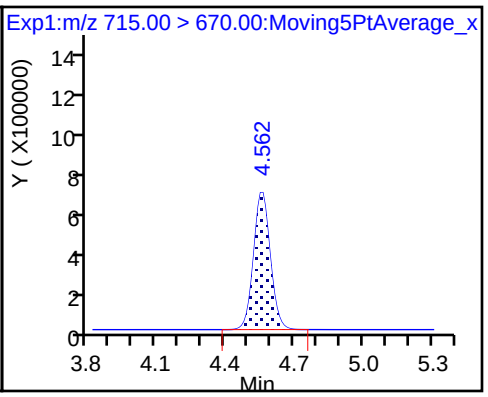
41 Perfluorotridecanoic acid



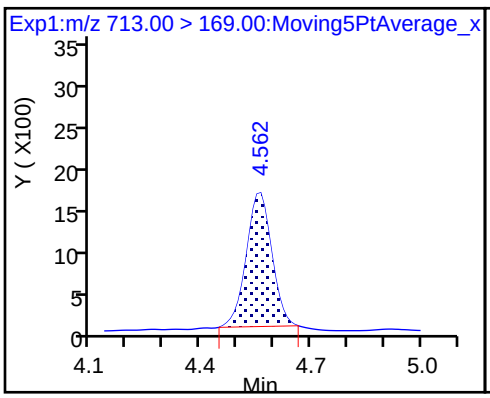
41 Perfluorotridecanoic acid



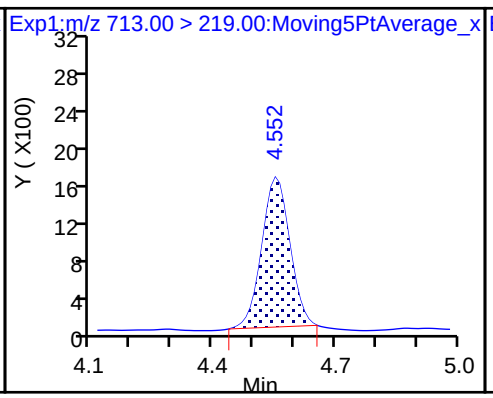
D 43 13C2-PFTeDA



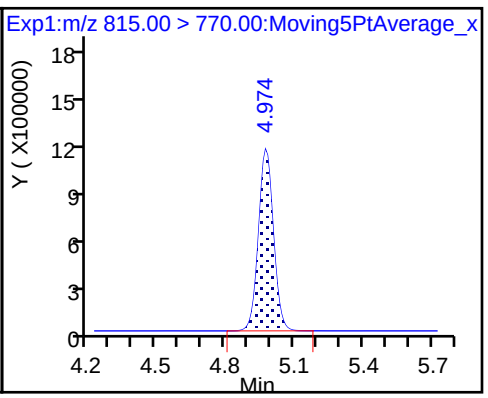
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_003.d
Lims ID: IC L2 Full
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 29-Mar-2018 17:35:12 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:47:33 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

First Level Reviewer: westendorfc Date: 30-Mar-2018 08:31:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.436	0.005	1.000	6349810	2.50		100.0	62892	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.437	0.004	1.000	114587	0.0488		97.6	42.3	
D 3 13C5-PFPeA										
267.90 > 223.00	1.702	1.702	0.0	0.556	4057226	2.45		98.1	79100	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.711	1.706	0.005	1.005	99196	0.0511		102	38.7	
D 47 13C3-PFBS										
301.90 > 83.00	1.738	1.738	0.0	1.000	86826	2.29		98.6	548	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.747	1.742	0.005	1.005	131921	0.0448		101	91.8	
298.90 > 99.00	1.747	1.742	0.005	1.005	61156		2.16(1.25-3.74)	101	95.8	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.955	0.004	1.000	683814	NC			9417	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.959	1.955	0.004	1.000	34332	0.0533		114	1560	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.991	0.002	1.000	4516262	2.48		99.1	114603	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.992	1.992	0.0	1.000	91036	0.0492		98.5	123	
313.00 > 119.00	2.004	1.992	0.012	1.006	9683		9.40(5.03-15.10)	98.5	120	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.015	2.013	0.002	1.000	118105	0.0444		94.7	3501	
349.00 > 99.00	2.015	2.013	0.002	1.000	50910		2.32(1.36-4.07)	94.7	1502	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.094	2.092	0.002	1.000	15350	NC			127	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.094	2.092	0.002	1.000	222854	NC			3059	
D 9 13C4-PFHpA										
367.00 > 322.00	2.333	2.326	0.007	1.000	4349189	2.48		99.3	90666	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.333	2.327	0.006	1.000	86879	0.0460		91.9	64.2	
363.00 > 169.00	2.333	2.327	0.006	1.000	32712		2.66(1.13-3.40)	91.9	83.5	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.346	2.339	0.007	1.000	116520	0.0484		106	646	
399.00 > 99.00	2.346	2.339	0.007	1.000	36295		3.21(1.50-4.49)	106	207	
D 11 18O2 PFHxS										
403.00 > 84.00	2.346	2.340	0.006	1.000	5097412	2.33		98.6	84888	
65 Adona										
377.00 > 251.00	2.373	2.372	0.001	1.000	265166	NC			6589	
377.00 > 85.00	2.373	2.372	0.001	1.000	160661		1.65(0.84-2.53)		2799	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.668	2.664	0.004	1.000	39956	0.0512		108	205	
D 12 M2-6:2FTS										
429.00 > 81.00	2.668	2.664	0.004	1.000	991613	2.45		103	32060	
D 14 13C4 PFOA										
417.00 > 372.00	2.690	2.688	0.002	1.000	4341966	2.52		101	71813	
* 62 13C2-PFOA										
415.00 > 370.00	2.690	2.689	0.001		4596582	2.50			88523	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.690	2.690	0.0	1.000	114806	0.0557		111	33.8	
413.00 > 169.00	2.690	2.690	0.0	1.000	55627		2.06(0.84-2.52)	111	255	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.698	2.695	0.003	1.000	90656	0.0443		93.1	4161	
449.00 > 99.00	2.698	2.695	0.003	1.000	24724		3.67(1.94-5.82)	93.1	644	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.063	3.060	0.003	1.000	100111	0.0571		123	243	
499.00 > 99.00	3.063	3.060	0.003	1.000	22757		4.40(2.31-6.93)	123	232	
D 18 13C4 PFOS										
503.00 > 80.00	3.063	3.060	0.003	1.000	3668029	2.42		101	46995	
D 19 13C5 PFNA										
468.00 > 423.00	3.063	3.061	0.002	1.000	3693528	2.53		101	88431	
20 Perfluorononanoic acid										
463.00 > 419.00	3.070	3.064	0.006	1.002	73551	0.0484		96.8	69.8	
463.00 > 169.00	3.063	3.064	-0.001	1.000	20050		3.67(1.90-5.69)	96.8	343	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.277	3.272	0.005	1.000	122429	NC			2323	
D 21 13C8 FOSA										
506.00 > 78.00	3.385	3.388	-0.003	1.000	5426551	2.53		101	71507	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.395	3.389	0.006	1.003	105346	0.0491		98.3	2796	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.413	3.409	0.004	1.000	61518	0.0500		104	2616	
549.00 > 99.00	3.413	3.409	0.004	1.000	20319		3.03(1.33-3.97)	104	373	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.413	3.413	0.0	1.000	1207568	2.56		107	35673	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.423	3.415	0.008	1.003	32444	0.0477		99.6	331	
D 23 13C2 PFDA										
515.00 > 470.00	3.423	3.423	0.0	1.000	3057872	2.48		99.3	49113	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.432	3.427	0.005	1.003	60106	0.0497		99.3	222	
513.00 > 169.00	3.423	3.427	-0.004	1.000	10996		5.47(2.36-7.09)	99.3	277	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.582	3.578	0.004	1.000	1584763	2.41		96.2	51662	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.582	3.581	0.001	1.000	37929	0.0568		114	356	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.737	3.738	-0.001	1.000	52893	0.0497		103	1503	
599.00 > 99.00	3.737	3.738	-0.001	1.000	15830		3.34(1.39-4.16)	103	320	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.747	3.749	-0.002	1.000	1753746	2.54		101	4660	
D 30 13C2 PFUnA										
565.00 > 520.00	3.758	3.753	0.005	1.000	2598573	2.58		103	73614	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.758	3.755	0.003	1.003	34166	0.0531		106	703	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.755	0.003	1.000	44699	0.0536		107	178	
563.00 > 169.00	3.758	3.755	0.003	1.000	11584		3.86(2.12-6.36)	107	588	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.914	3.910	0.004	1.000	216712	NC			8713	
D 36 13C2 PFDoA										
615.00 > 570.00	4.057	4.052	0.005	1.000	2755722	2.46		98.5	18105	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.057	4.052	0.005	1.000	57155	0.0480		96.0	43.3	
613.00 > 169.00	4.057	4.052	0.005	1.000	15975		3.58(2.13-6.40)	96.0	355	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.317	4.316	0.001	1.000	59640	0.0468		93.6	23.5	
663.00 > 169.00	4.317	4.316	0.001	1.000	20700		2.88(1.25-3.76)	93.6	402	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.561	4.558	0.003	1.000	16166	0.0457		91.5	253	
713.00 > 219.00	4.550	4.558	-0.008	0.998	13055		1.24(0.71-2.13)	91.5	266	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.561	4.558	0.003	1.000	3538364	2.49		99.6	20273	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.982	4.977	0.005	1.000	5380000	2.45		98.0	13437	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.982	4.977	0.005	1.000	144357	NC			34.6	
813.00 > 169.00	4.982	4.977	0.005	1.000	22803		6.33(2.86-8.58)		235	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.348	5.344	0.004	1.000	102429	NC			17.9	
913.00 > 169.00	5.348	5.344	0.004	1.000	11835		8.65(3.83-11.48)		167	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL2_00004 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:47:41 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_003.d

Injection Date: 29-Mar-2018 17:35:12 Instrument ID: A8_N

Lims ID: IC L2 Full

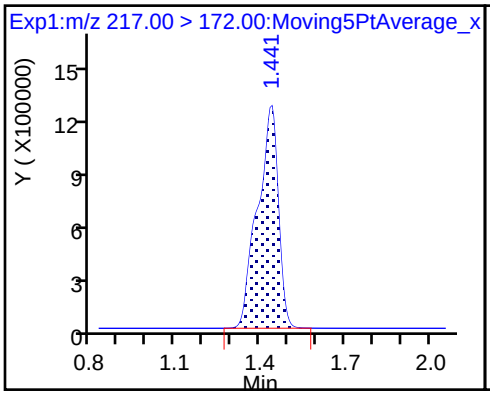
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3

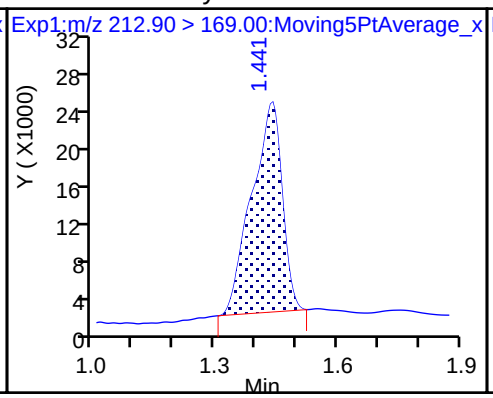
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

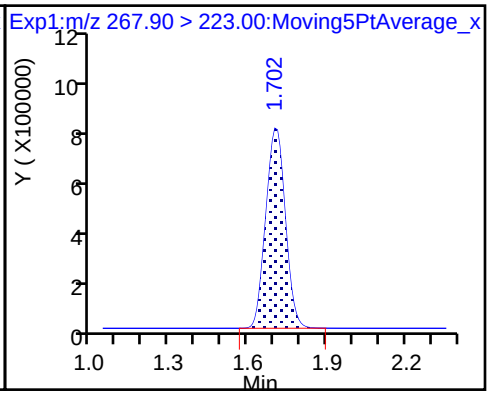
D 1 13C4 PFBA



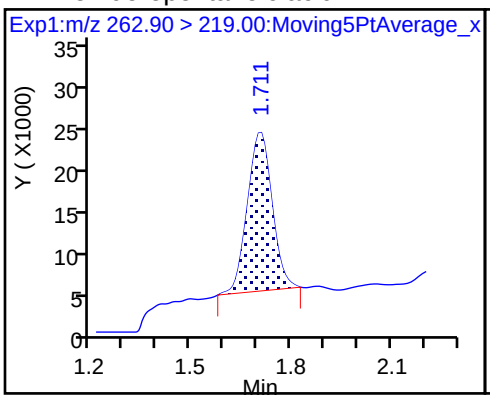
2 Perfluorobutyric acid



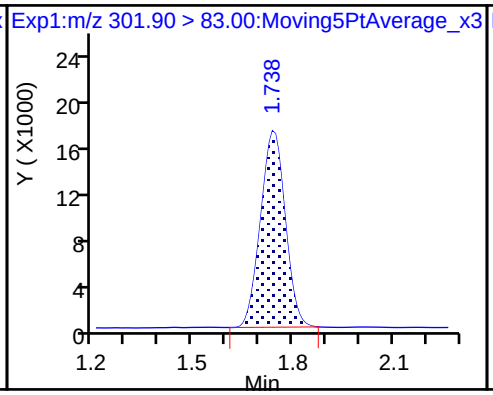
D 3 13C5-PFPeA



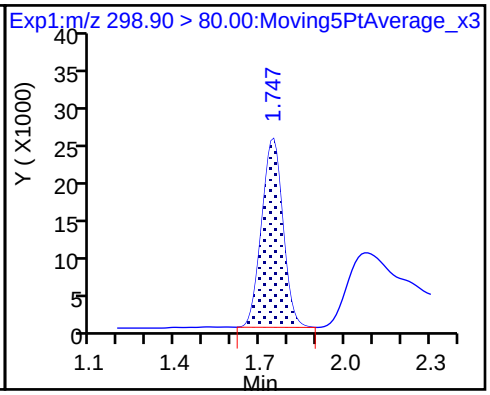
4 Perfluoropentanoic acid



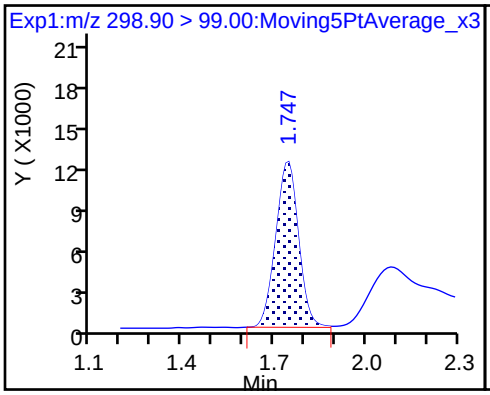
D 47 13C3-PFBS



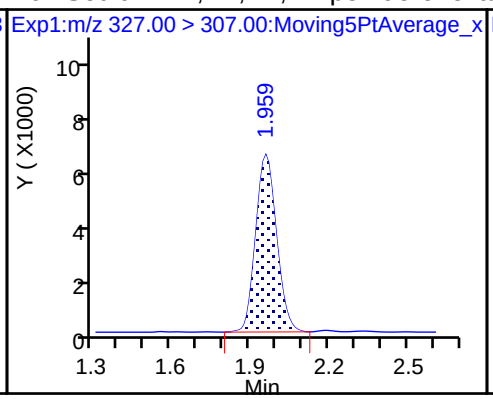
5 Perfluorobutanesulfonic acid



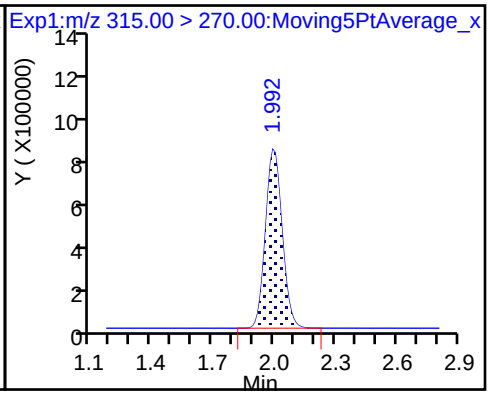
5 Perfluorobutanesulfonic acid



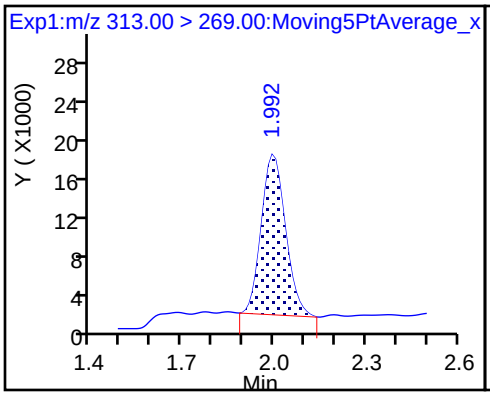
61 Sodium 1H,1H,2H,2H-perfluorohexa



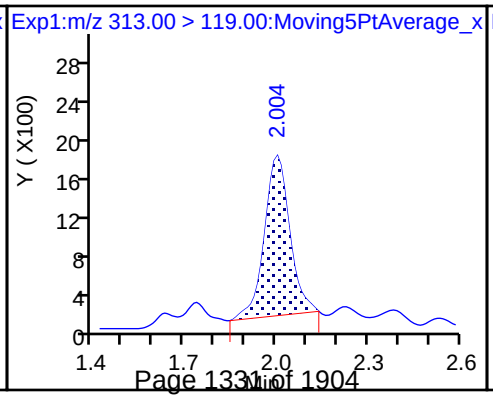
De 7 13C2 PFHxA



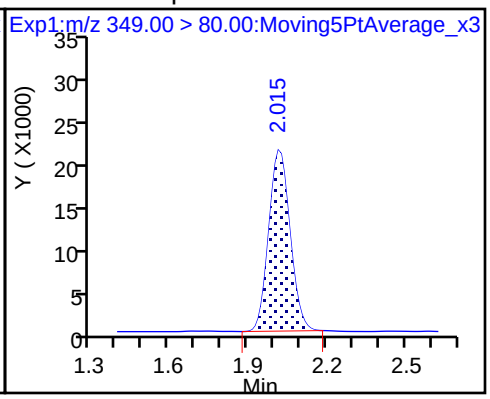
6 Perfluorohexanoic acid



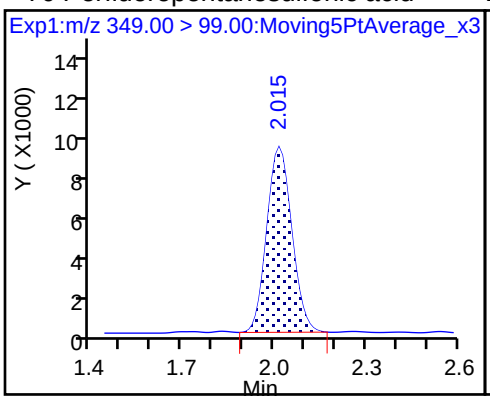
6 Perfluorohexanoic acid



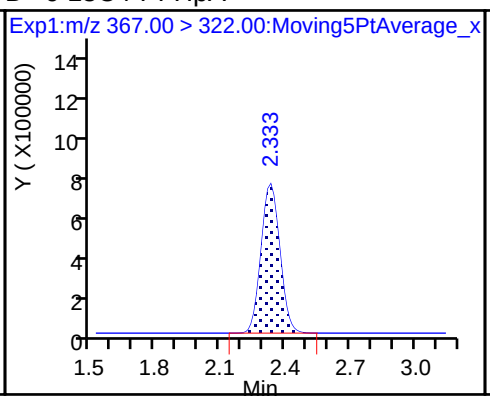
70 Perfluoropentanesulfonic acid



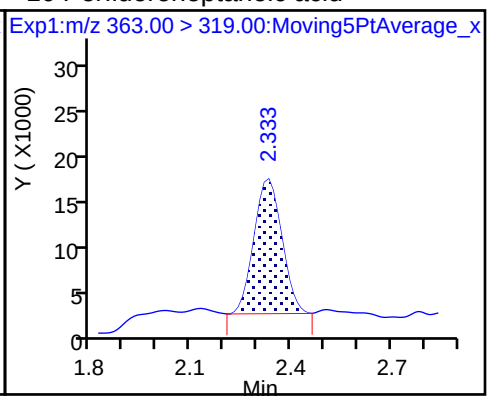
70 Perfluoropentanesulfonic acid



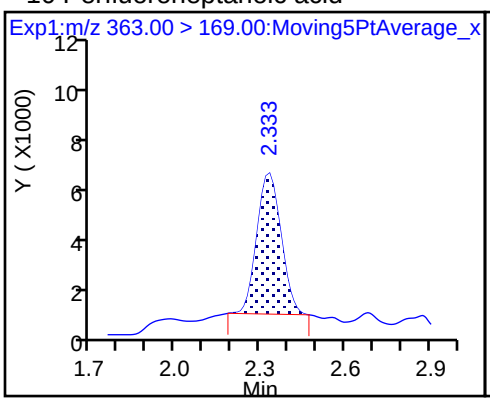
D 9 13C4-PFHpA



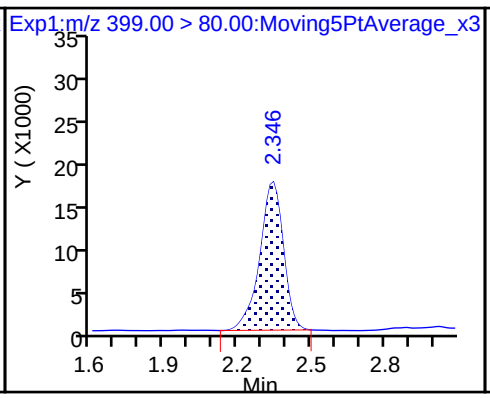
10 Perfluoroheptanoic acid



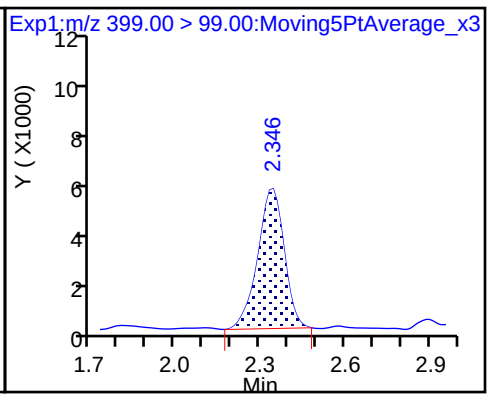
10 Perfluoroheptanoic acid



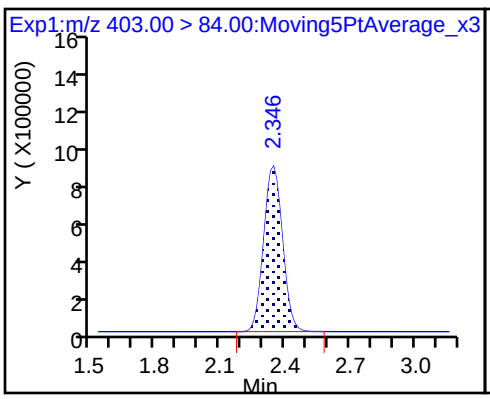
8 Perfluorohexanesulfonic acid



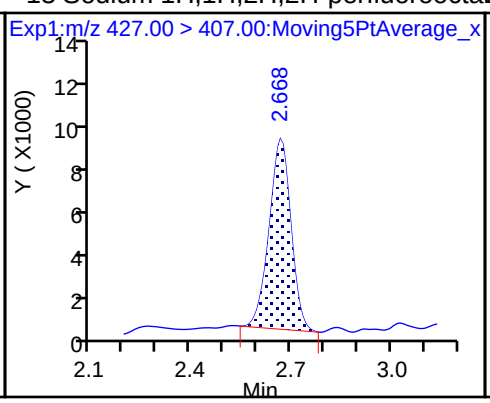
8 Perfluorohexanesulfonic acid



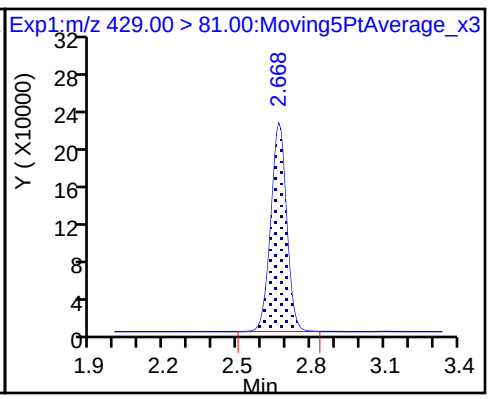
D 11 18O2 PFHxS



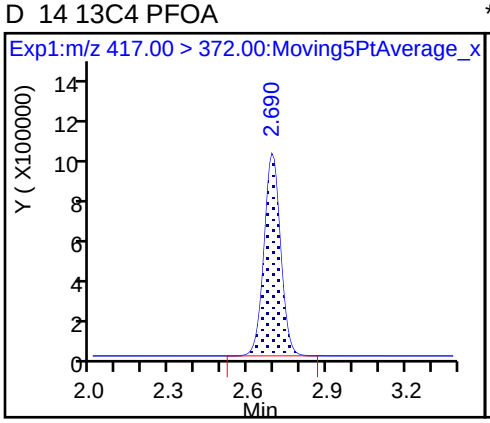
13 Sodium 1H,1H,2H,2H-perfluorooctane



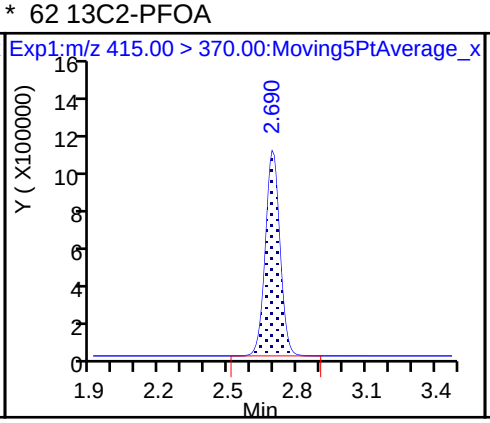
D 12 M2-6:2FTS



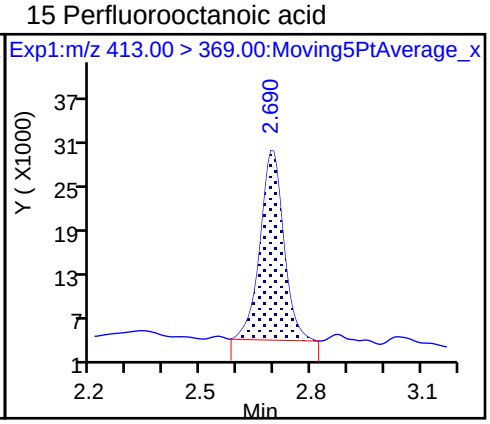
D 14 13C4 PFOA



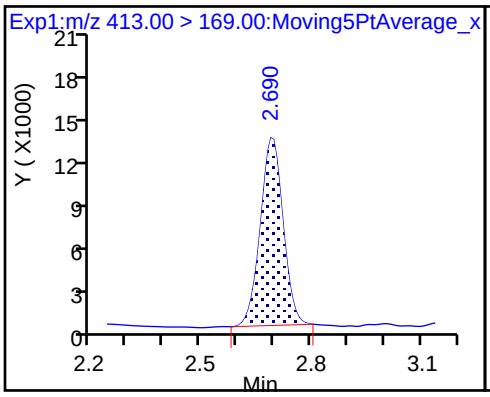
* 62 13C2-PFOA



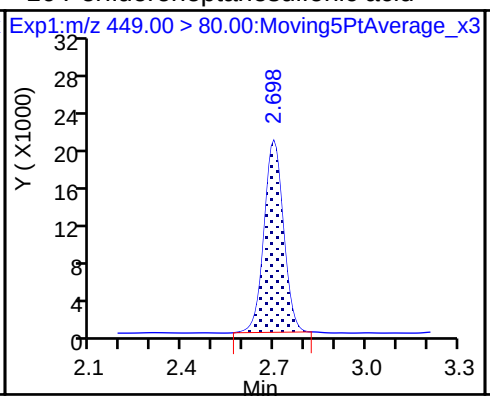
15 Perfluorooctanoic acid



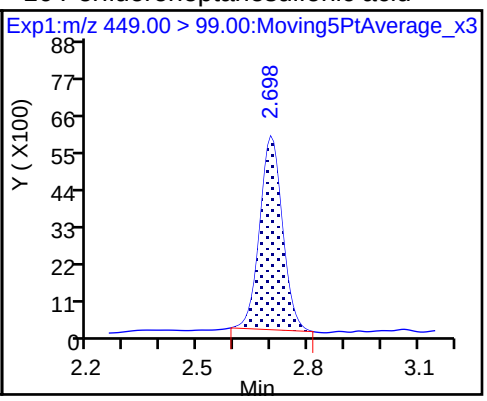
15 Perfluorooctanoic acid



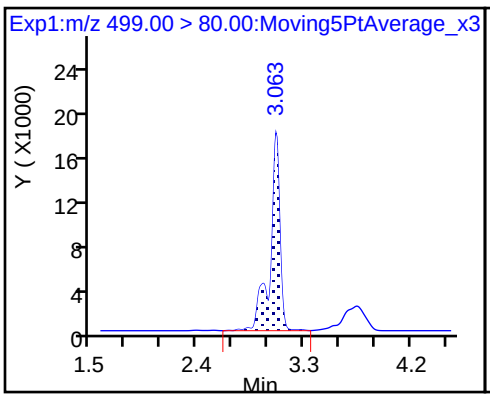
16 Perfluoroheptanesulfonic acid



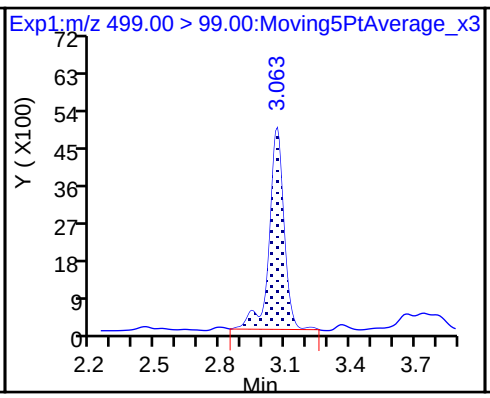
16 Perfluoroheptanesulfonic acid



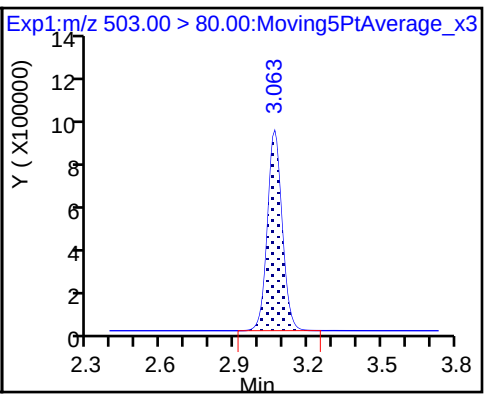
17 Perfluorooctane sulfonic acid



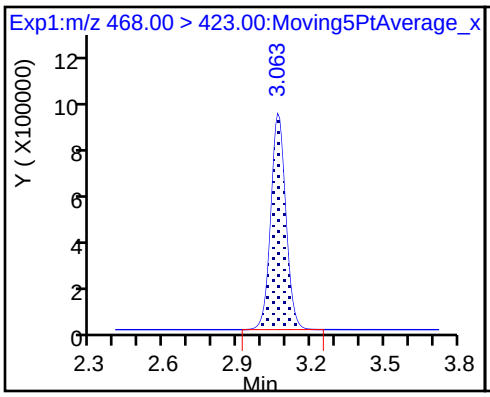
17 Perfluorooctane sulfonic acid



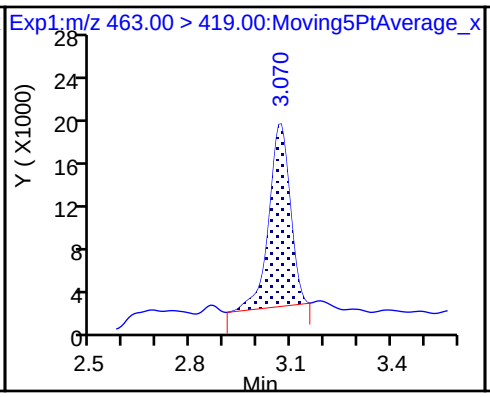
D 18 13C4 PFOS



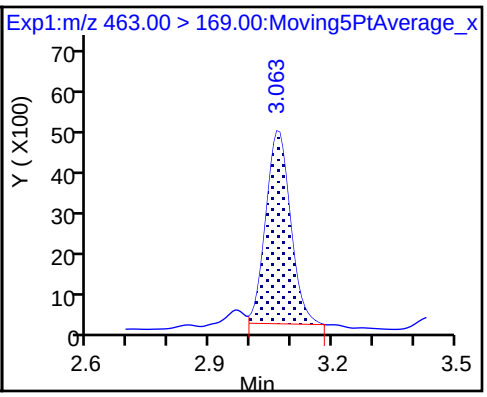
D 19 13C5 PFNA



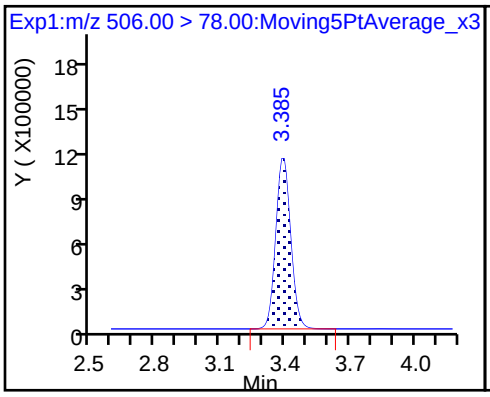
20 Perfluorononanoic acid



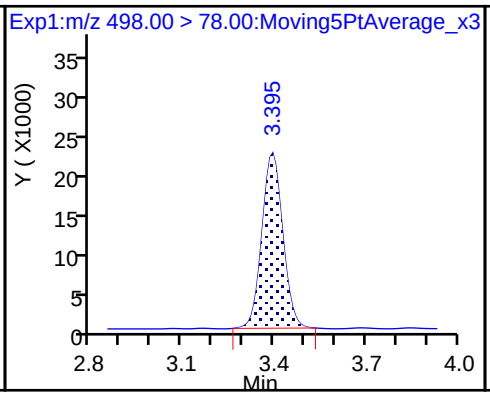
20 Perfluorononanoic acid



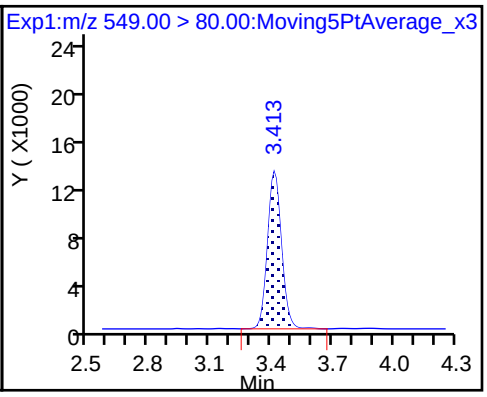
D 21 13C8 FOSA



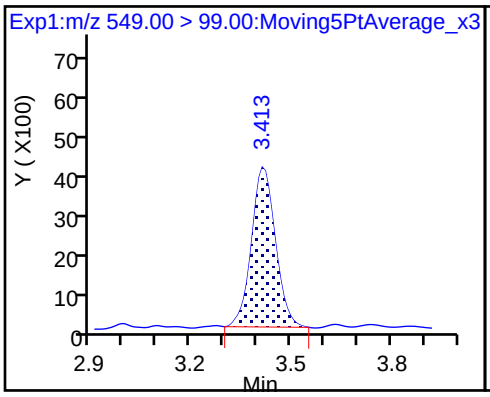
22 Perfluorooctane Sulfonamide



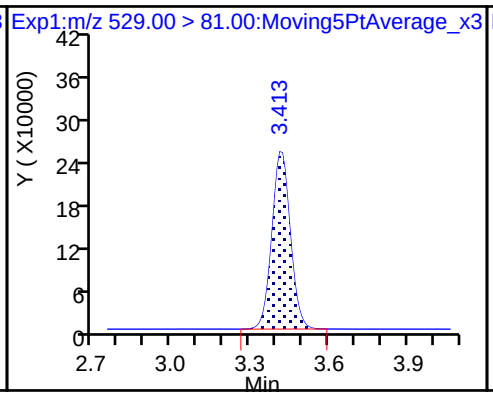
68 Perfluorononanesulfonic acid



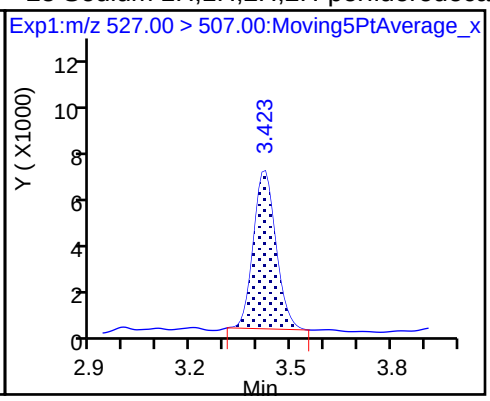
68 Perfluorononanesulfonic acid



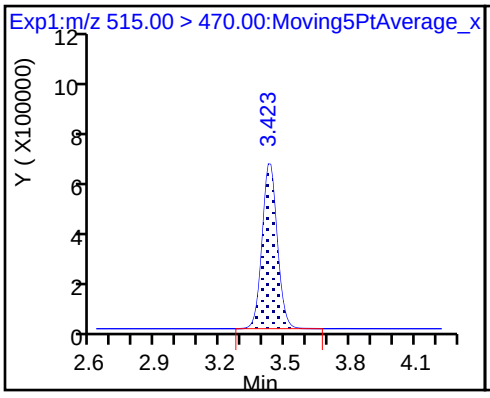
D 26 M2-8:2FTS



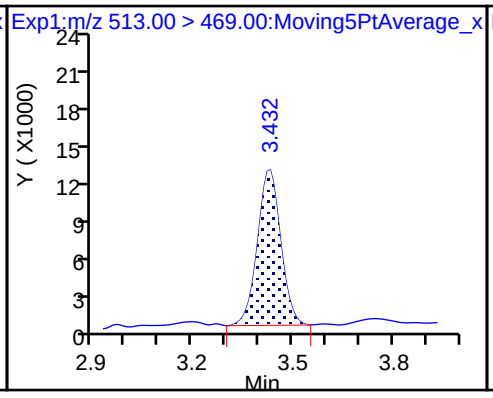
25 Sodium 1H,1H,2H,2H-perfluorodecane



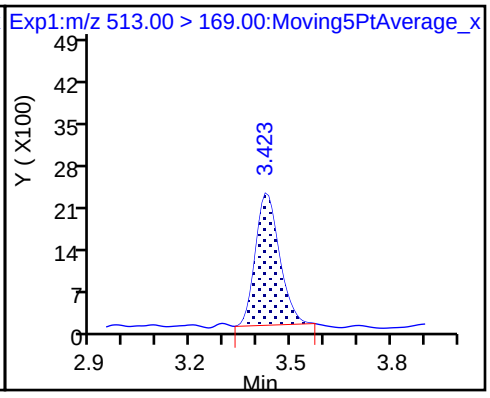
D 23 13C2 PFDA



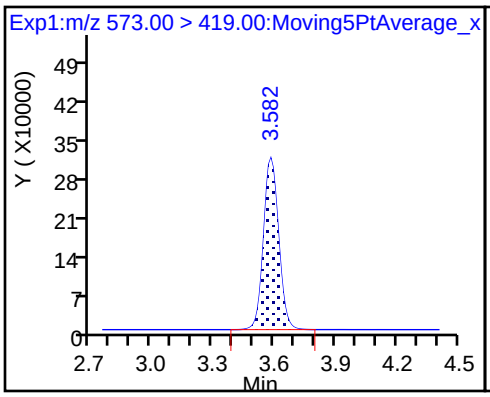
24 Perfluorodecanoic acid



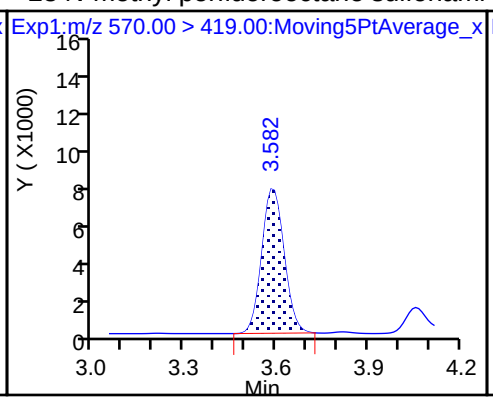
24 Perfluorodecanoic acid



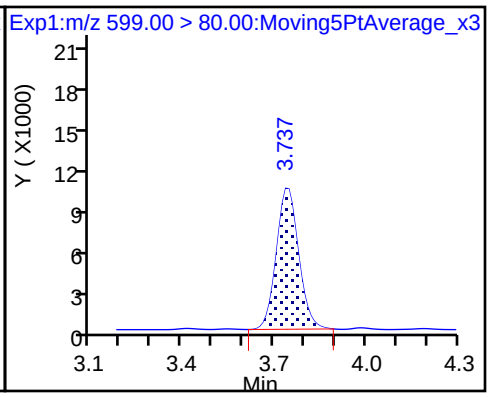
D 27 d3-NMeFOSAA



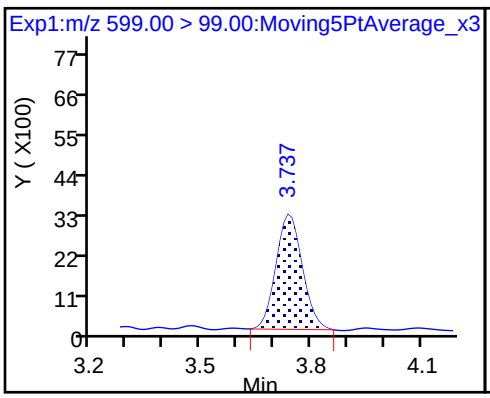
28 N-methyl perfluorooctane sulfonami



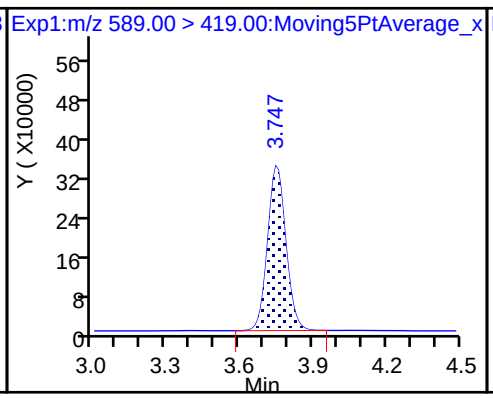
29 Perfluorodecane Sulfonic acid



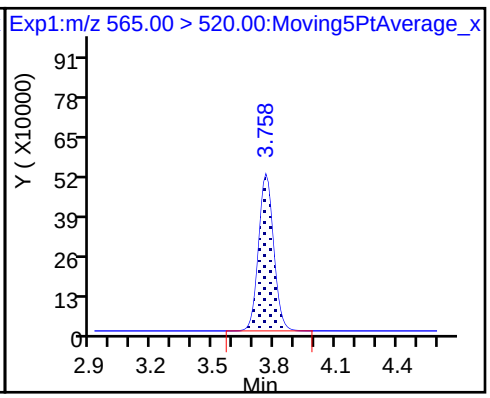
29 Perfluorodecane Sulfonic acid



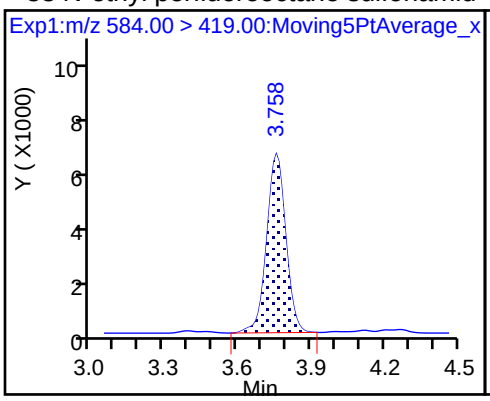
D 32 d5-NEtFOSAA



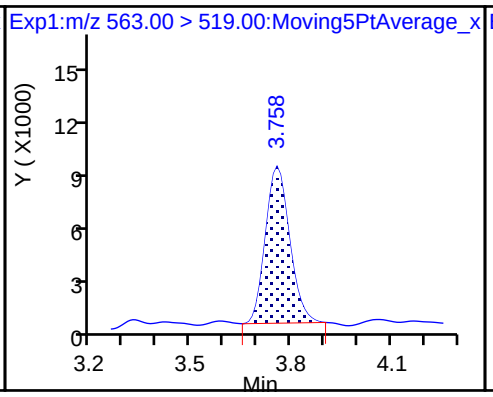
D 30 13C2 PFUnA



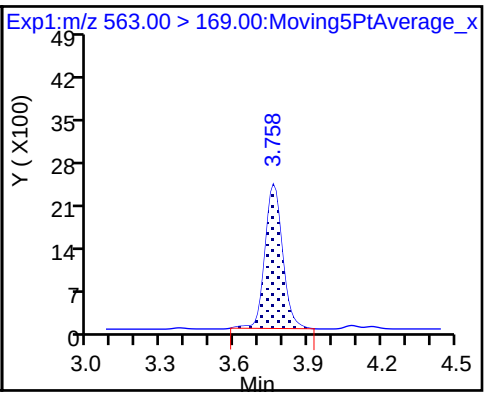
33 N-ethyl perfluorooctane sulfonamid



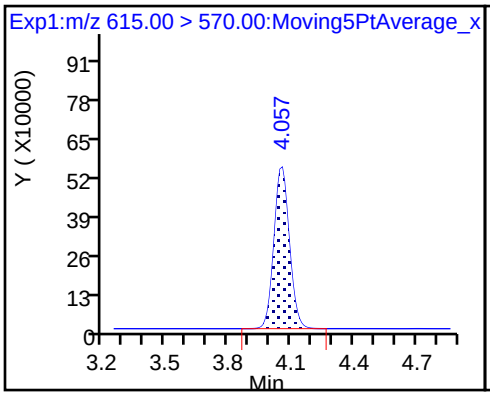
31 Perfluoroundecanoic acid



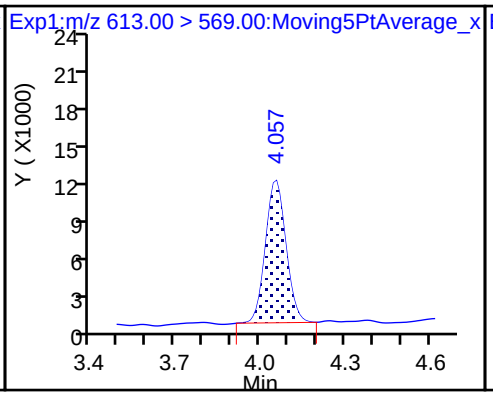
31 Perfluoroundecanoic acid



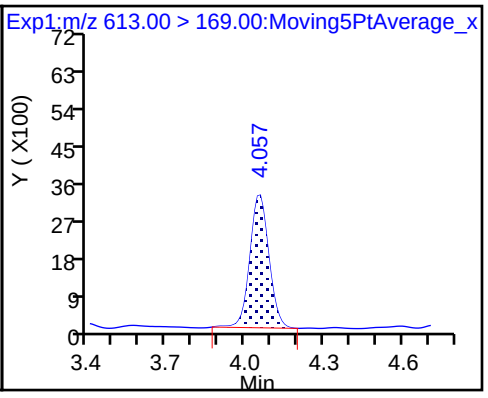
D 36 13C2 PFDoA



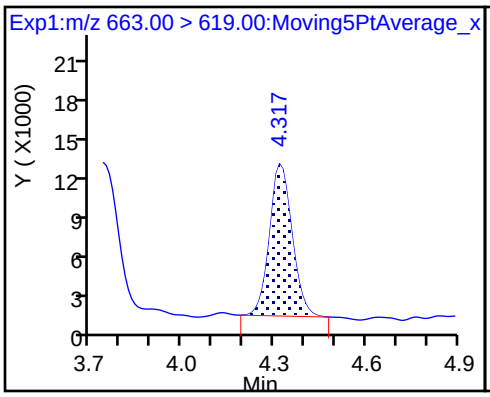
37 Perfluorododecanoic acid



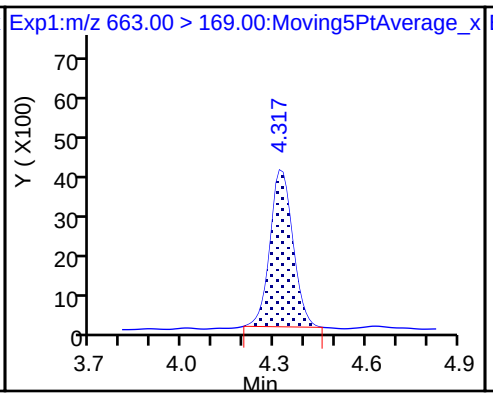
37 Perfluorododecanoic acid



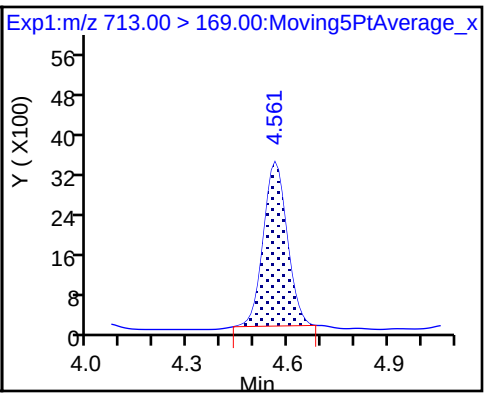
41 Perfluorotridecanoic acid



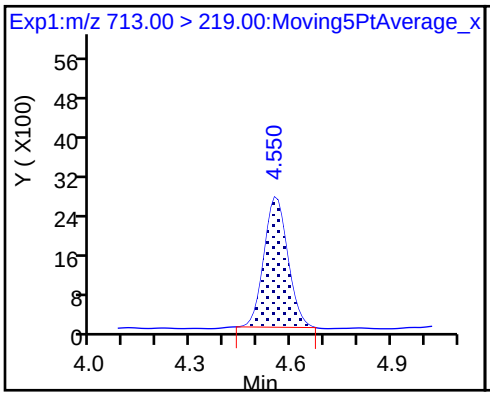
41 Perfluorotridecanoic acid



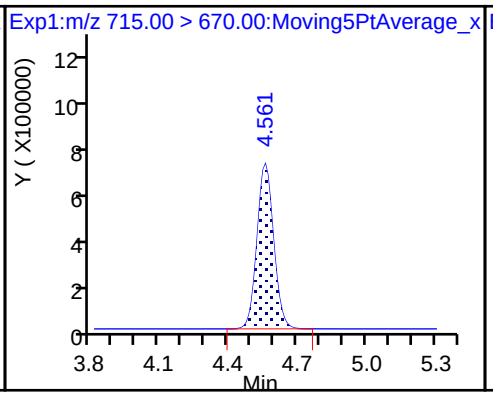
42 Perfluorotetradecanoic acid



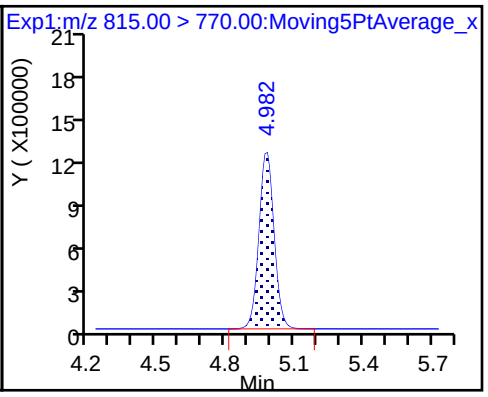
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_004.d
Lims ID: IC L3 Full
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 29-Mar-2018 17:43:00 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:47:44 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

First Level Reviewer: westendorfc Date: 30-Mar-2018 08:30:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.436	0.0	1.000	6060888	2.41		96.5	56962	
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.437	-0.001	1.000	553955	0.2472		98.9	209	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.702	0.001	0.556	4032497	2.47		98.6	98655	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.706	-0.003	1.000	480043	0.2486		99.5	187	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.738	0.001	1.000	87970	2.35		101	533	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.739	1.742	-0.003	1.000	655502	0.2196		99.4	452	
298.90 > 99.00	1.739	1.742	-0.003	1.000	270315		2.42(1.25-3.74)	99.4	452	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.961	1.955	0.006	1.000	143786	0.2202		94.3	8707	
D 60 M2-4:2FTS										
329.00 > 81.00	1.961	1.955	0.006	1.000	659047	NC			8619	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.991	0.003	1.000	4418534	2.45		98.0	132844	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.992	0.001	1.000	449634	0.2486		99.4	672	
313.00 > 119.00	1.993	1.992	0.001	1.000	43865		10.25(5.03-15.10)	99.4	560	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.013	0.003	1.000	604278	0.2243		95.7	15316	
349.00 > 99.00	2.016	2.013	0.003	1.000	229999		2.63(1.36-4.07)	95.7	5859	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.092	0.003	1.000	197281	NC			3119	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.092	0.003	1.000	79234	NC			621	
D 9 13C4-PFHpA										
367.00 > 322.00	2.322	2.326	-0.004	1.000	4242345	2.45		97.9	58841	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.322	2.327	-0.005	1.000	440174	0.2387		95.5	382	
363.00 > 169.00	2.322	2.327	-0.005	1.000	167042		2.64(1.13-3.40)	95.5	414	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.335	2.339	-0.004	1.000	512387	0.2134		93.8	2668	
399.00 > 99.00	2.335	2.339	-0.004	1.000	182072		2.81(1.50-4.49)	93.8	1118	
D 11 18O2 PFHxS										
403.00 > 84.00	2.335	2.340	-0.005	1.000	5084038	2.35		99.4	70453	
65 Adona										
377.00 > 251.00	2.374	2.372	0.002	1.000	1396340	NC			30346	
377.00 > 85.00	2.374	2.372	0.002	1.000	777798		1.80(0.84-2.53)		15072	
D 12 M2-6:2FTS										
429.00 > 81.00	2.661	2.664	-0.004	1.000	1019321	2.54		107	29794	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.661	2.664	-0.004	1.000	174781	0.2181		92.0	926	
D 14 13C4 PFOA										
417.00 > 372.00	2.691	2.688	0.002	1.000	4272950	2.51		100	76270	
* 62 13C2-PFOA										
415.00 > 370.00	2.691	2.689	0.001		4546643	2.50			87379	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.691	2.690	0.0	1.000	477643	0.2357		94.3	156	
413.00 > 169.00	2.691	2.690	0.0	1.000	240403		1.99(0.84-2.52)	94.3	957	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.698	2.695	0.003	1.000	477719	0.2495		105	12384	
449.00 > 99.00	2.698	2.695	0.003	1.000	122111		3.91(1.94-5.82)	105	3153	
D 18 13C4 PFOS										
503.00 > 80.00	3.057	3.060	-0.003	1.000	3434108	2.29		95.7	54984	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.057	3.060	-0.003	1.000	363900	0.2216		95.5	797	
499.00 > 99.00	3.057	3.060	-0.003	1.000	84231		4.32(2.31-6.93)	95.5	698	
D 19 13C5 PFNA										
468.00 > 423.00	3.064	3.061	0.003	1.000	3523980	2.44		97.7	70645	
20 Perfluorononanoic acid										
463.00 > 419.00	3.064	3.064	0.0	1.000	356101	0.2455		98.2	343	
463.00 > 169.00	3.064	3.064	0.0	1.000	90740		3.92(1.90-5.69)	98.2	3091	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.271	3.272	-0.001	1.000	665453	NC			11650	
D 21 13C8 FOSA										
506.00 > 78.00	3.386	3.388	-0.002	1.000	5204720	2.45		98.1	61555	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.386	3.389	-0.003	1.000	523091	0.2544		102	15875	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.413	3.409	0.004	1.000	272737	0.2367		98.6	9533	
549.00 > 99.00	3.413	3.409	0.004	1.000	111781		2.44(1.33-3.97)	98.6	2945	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.413	3.413	0.0	1.000	1144081	2.46		103	33988	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.413	3.415	-0.002	1.000	140627	0.2183		91.1	1260	
D 23 13C2 PFDA										
515.00 > 470.00	3.423	3.423	0.0	1.000	2904523	2.38		95.4	40768	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.423	3.427	-0.004	1.000	302194	0.2629		105	1474	
513.00 > 169.00	3.423	3.427	-0.004	1.000	58285		5.18(2.36-7.09)	105	2424	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.583	3.578	0.004	1.000	1579046	2.42		96.9	44458	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.583	3.581	0.001	1.000	160694	0.2414		96.5	1665	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.737	3.738	-0.001	1.000	238488	0.2392		99.3	7789	
599.00 > 99.00	3.737	3.738	-0.001	1.000	75761		3.15(1.39-4.16)	99.3	2515	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.747	3.749	-0.002	1.000	1667774	2.44		97.6	5132	
D 30 13C2 PFUnA										
565.00 > 520.00	3.758	3.753	0.005	1.000	2421277	2.44		97.4	58900	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.758	3.755	0.003	1.003	158064	0.2584		103	2333	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.755	0.003	1.000	181675	0.2338		93.5	762	
563.00 > 169.00	3.758	3.755	0.003	1.000	53494		3.40(2.12-6.36)	93.5	2615	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.914	3.910	0.004	1.000	1001338	NC			22386	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.047	4.052	-0.005	1.000	269716	0.2285		91.4	196	
613.00 > 169.00	4.047	4.052	-0.005	1.000	66650		4.05(2.13-6.40)	91.4	1457	
D 36 13C2 PFDoA										
615.00 > 570.00	4.047	4.052	-0.005	1.000	2730672	2.47		98.7	20860	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.317	4.316	0.001	1.000	301420	0.2387		95.5	116	
663.00 > 169.00	4.317	4.316	0.001	1.000	102600		2.94(1.25-3.76)	95.5	1837	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.561	4.558	0.003	1.000	3442831	2.45		97.9	17673	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.561	4.558	0.003	1.000	88991	0.2587		103	1506	
713.00 > 219.00	4.550	4.558	-0.008	0.998	67523		1.32(0.71-2.13)	103	1702	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.973	4.977	-0.004	1.000	523255	NC			127	
813.00 > 169.00	4.973	4.977	-0.004	1.000	91462		5.72(2.86-8.58)		886	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.973	4.977	-0.004	1.000	5136479	2.37		94.6	13963	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.348	5.344	0.004	1.000	548804	NC			95.1	
913.00 > 169.00	5.341	5.344	-0.003	0.999	65998		8.32(3.83-11.48)		957	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL3_00004 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:47:50 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_004.d

Injection Date: 29-Mar-2018 17:43:00 Instrument ID: A8_N

Lims ID: IC L3 Full

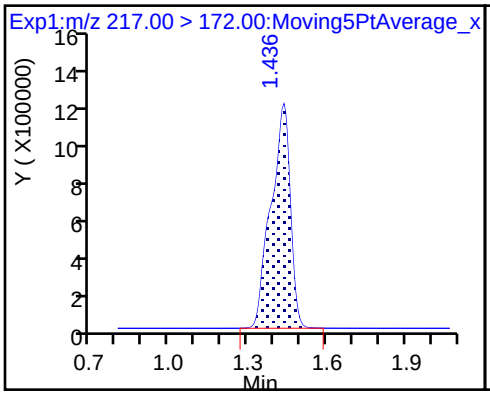
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4

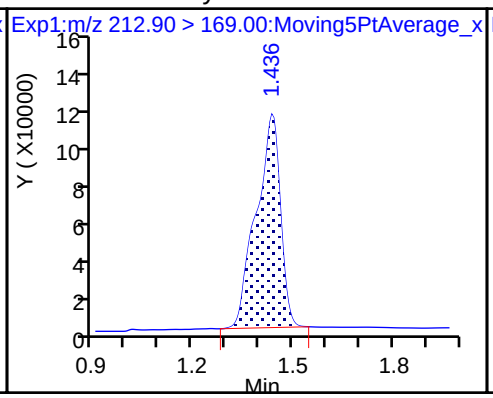
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

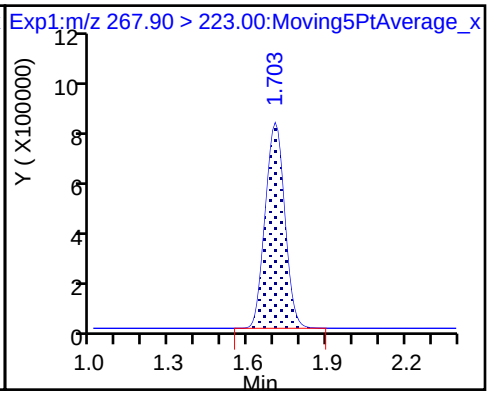
D 1 13C4 PFBA



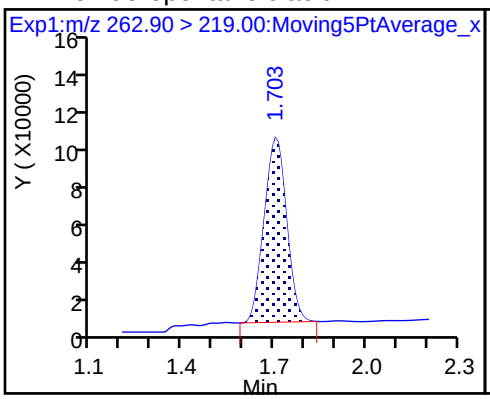
2 Perfluorobutyric acid



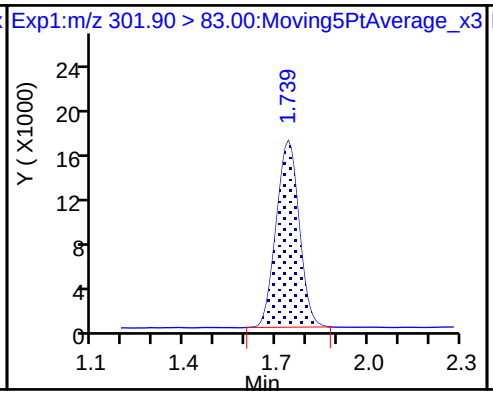
D 3 13C5-PFPeA



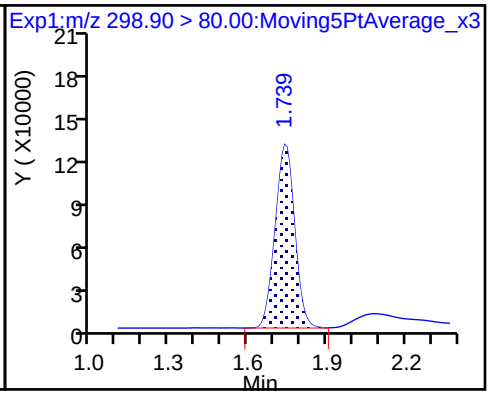
4 Perfluoropentanoic acid



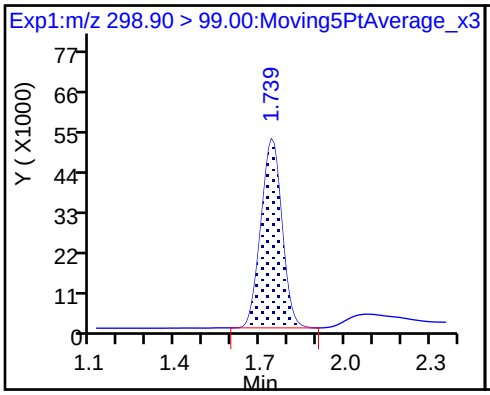
D 47 13C3-PFBS



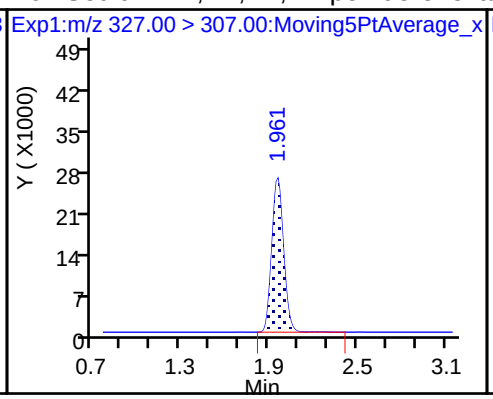
5 Perfluorobutanesulfonic acid



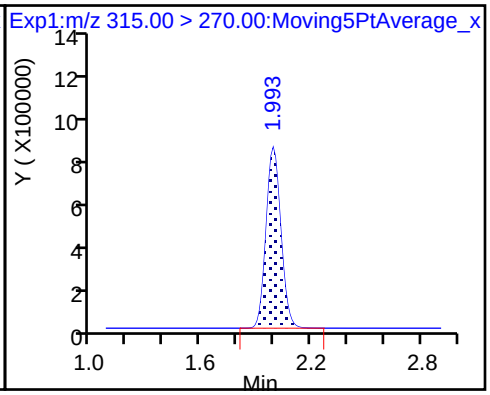
5 Perfluorobutanesulfonic acid



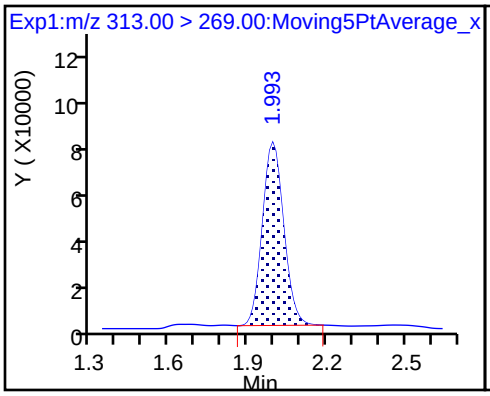
61 Sodium 1H,1H,2H,2H-perfluorohexa



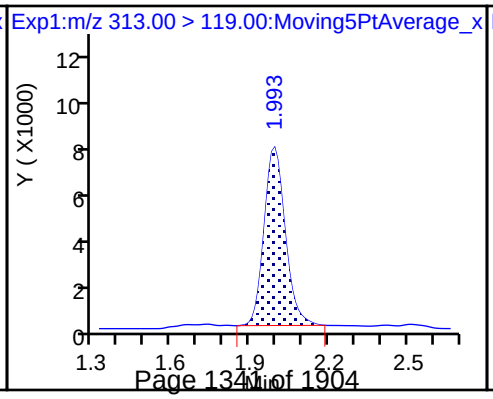
D 7 13C2 PFHxA



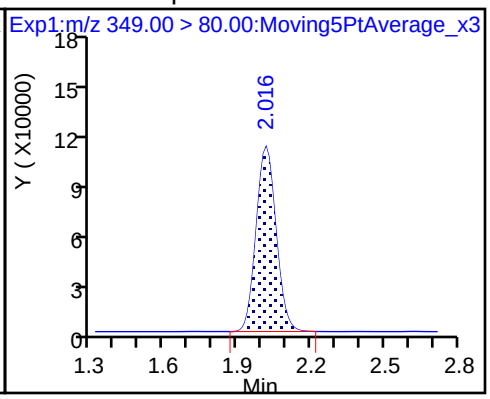
6 Perfluorohexanoic acid



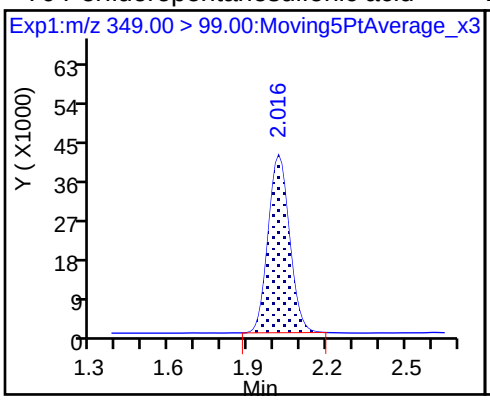
6 Perfluorohexanoic acid



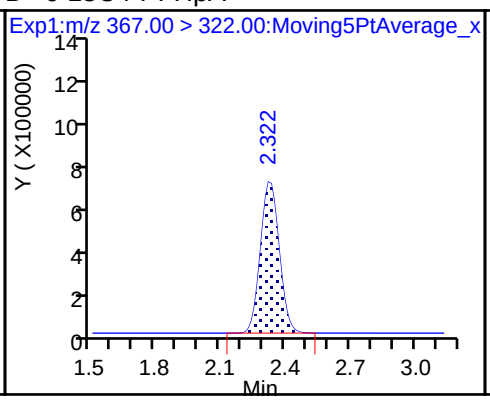
70 Perfluoropentanesulfonic acid



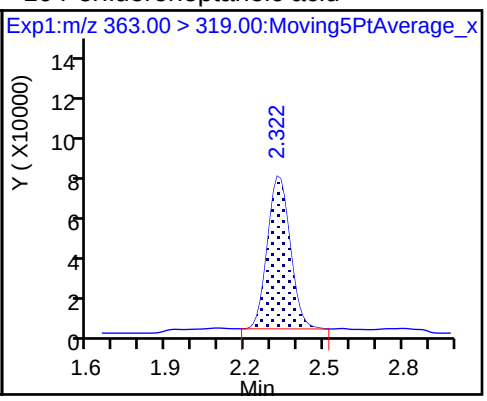
70 Perfluoropentanesulfonic acid



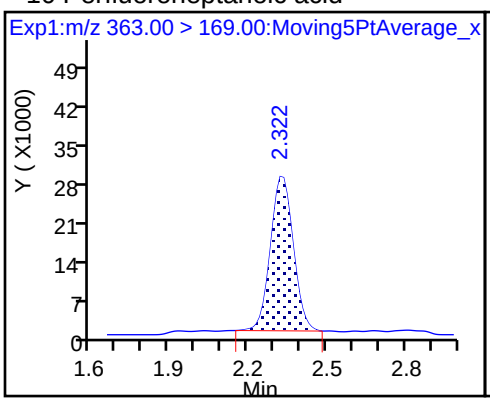
D 9 13C4-PFHpA



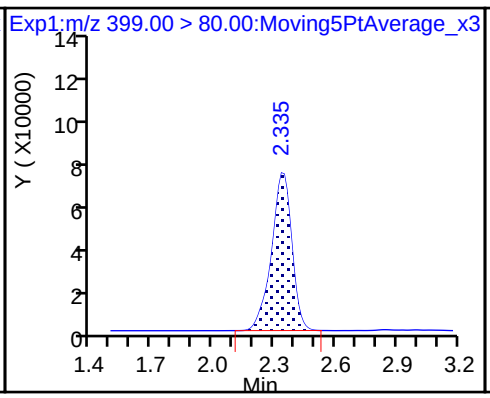
10 Perfluoroheptanoic acid



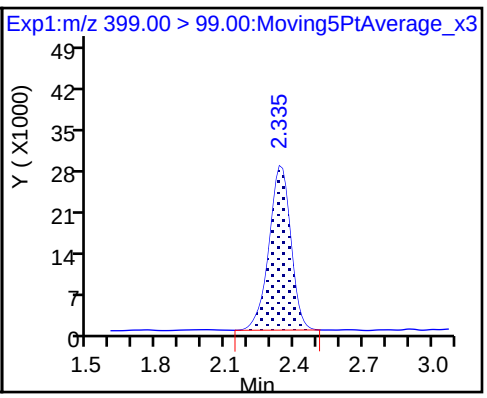
10 Perfluoroheptanoic acid



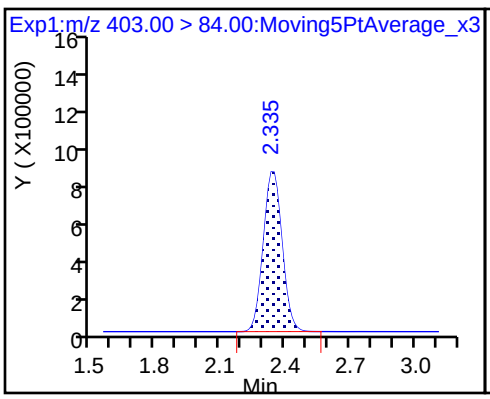
8 Perfluorohexanesulfonic acid



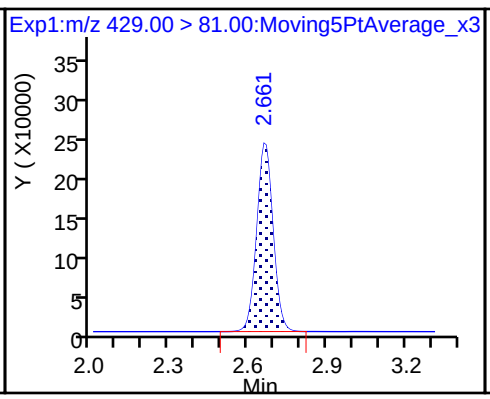
8 Perfluorohexanesulfonic acid



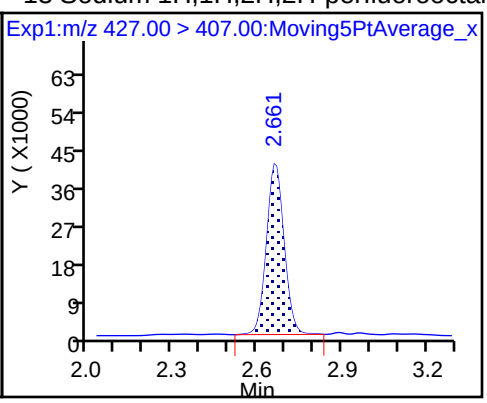
D 11 18O2 PFHxS



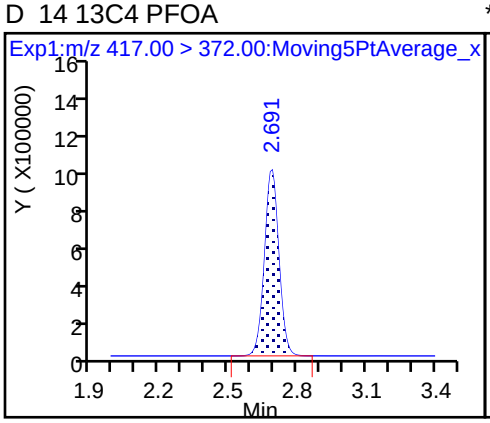
D 12 M2-6:2FTS



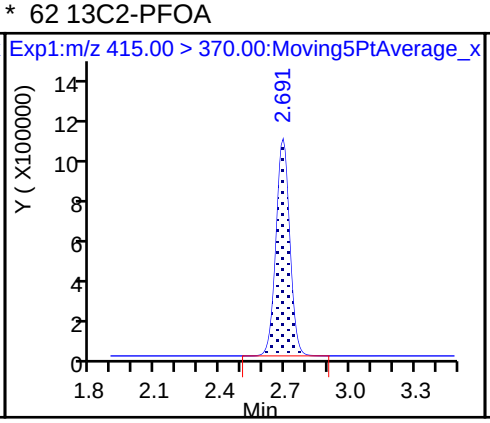
13 Sodium 1H,1H,2H,2H-perfluorooctane



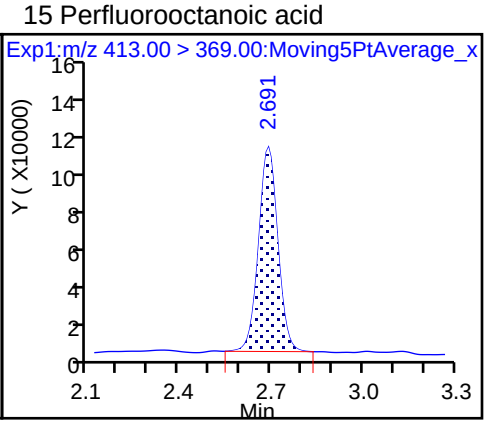
D 14 13C4 PFOA



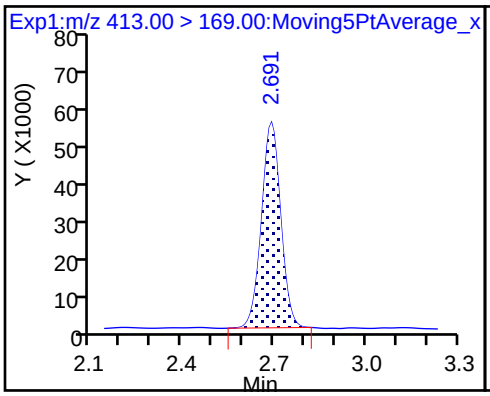
* 62 13C2-PFOA



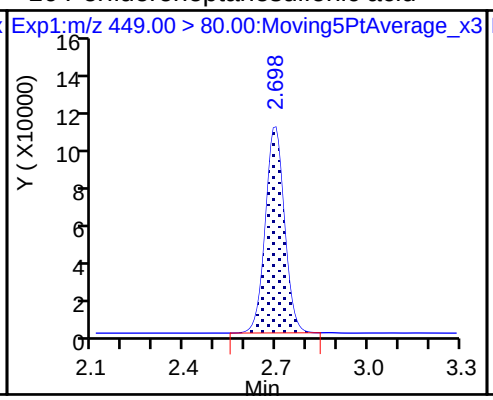
15 Perfluorooctanoic acid



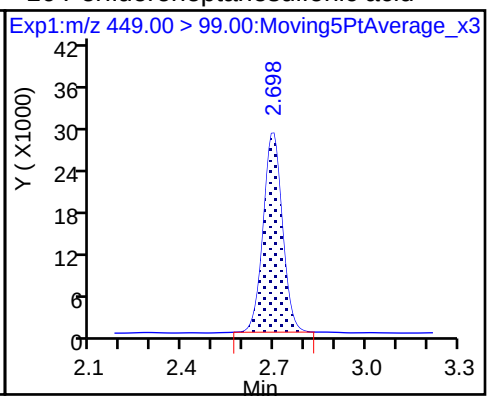
15 Perfluorooctanoic acid



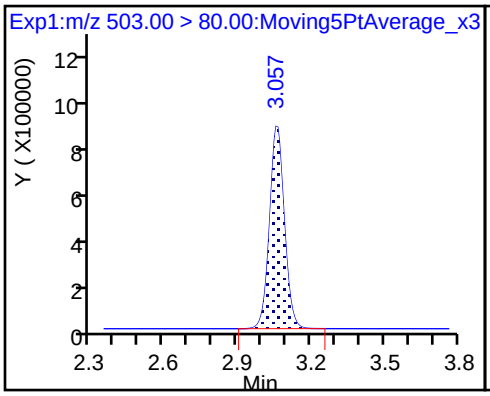
16 Perfluoroheptanesulfonic acid



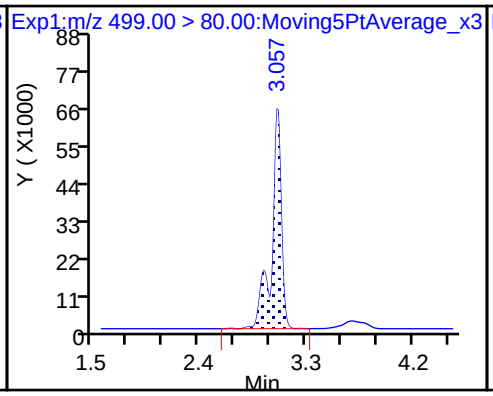
16 Perfluoroheptanesulfonic acid



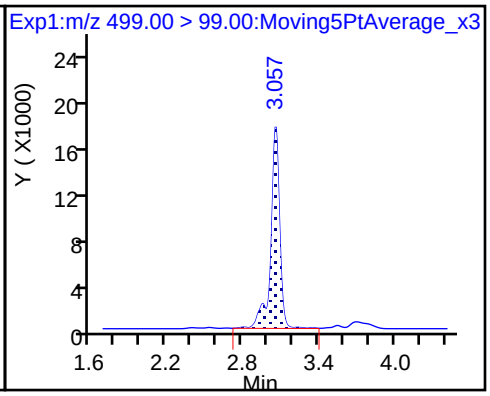
D 18 13C4 PFOS



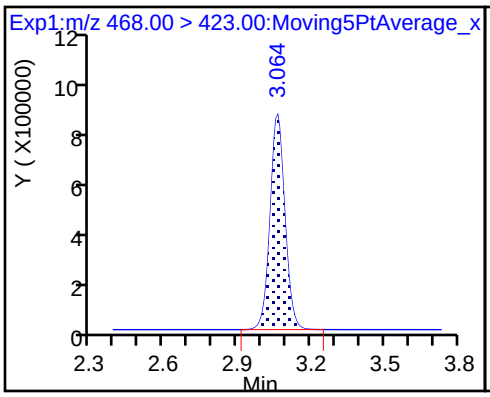
17 Perfluorooctane sulfonic acid



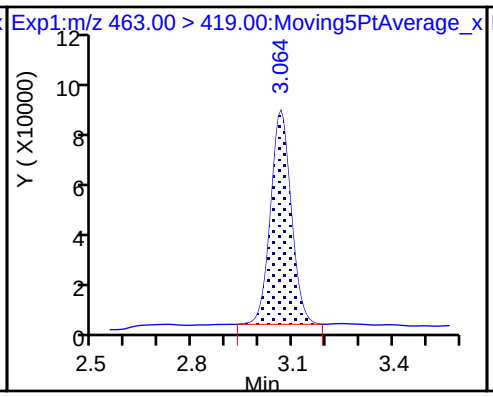
17 Perfluorooctane sulfonic acid



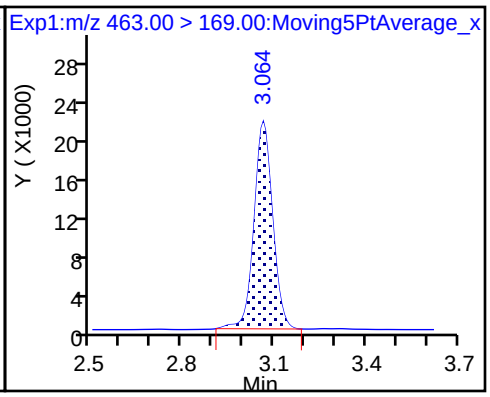
D 19 13C5 PFNA



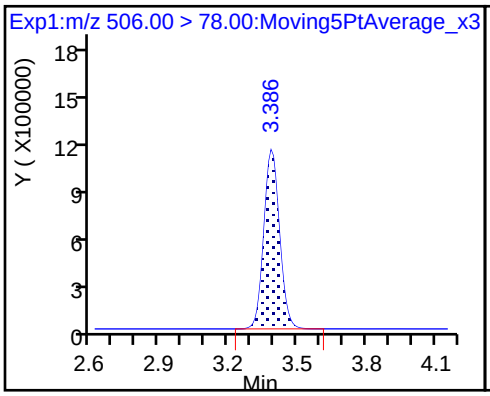
20 Perfluorononanoic acid



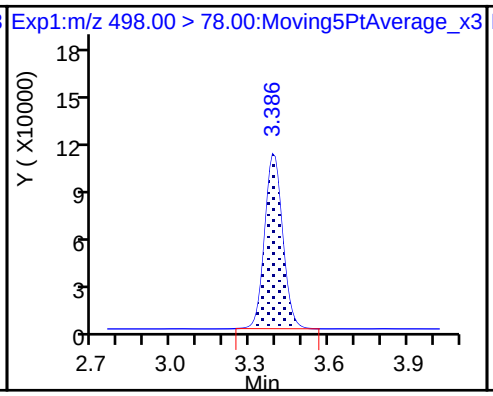
20 Perfluorononanoic acid



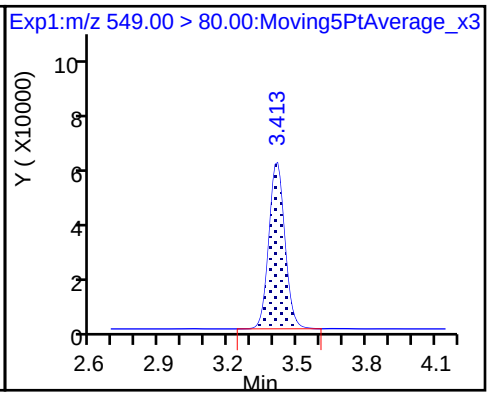
D 21 13C8 FOSA



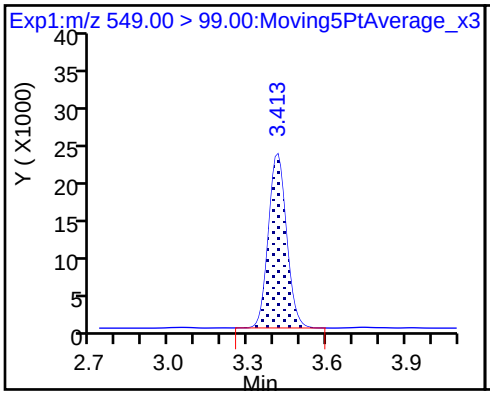
22 Perfluorooctane Sulfonamide



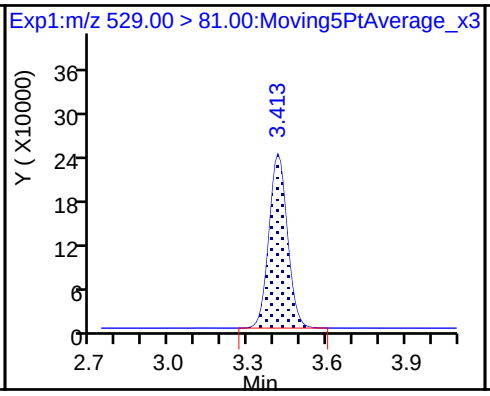
68 Perfluorononanesulfonic acid



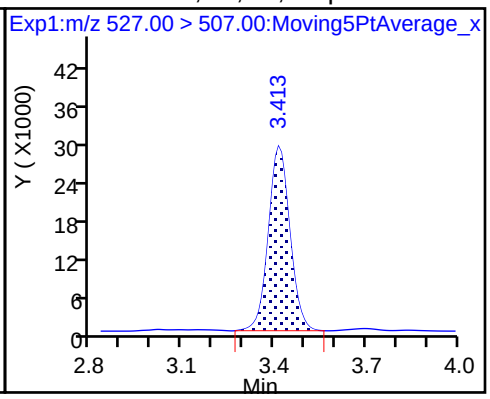
68 Perfluorononanesulfonic acid



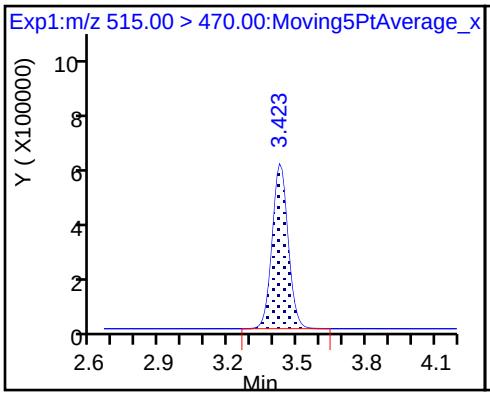
D 26 M2-8:2FTS



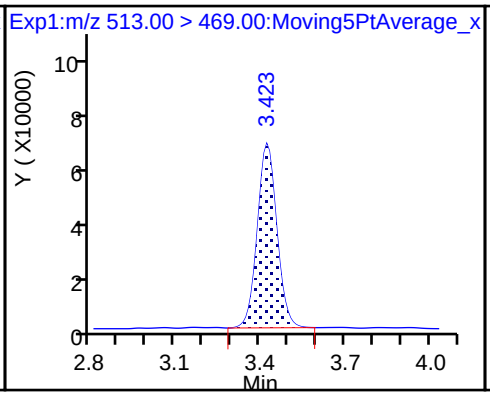
25 Sodium 1H,1H,2H,2H-perfluorodecane



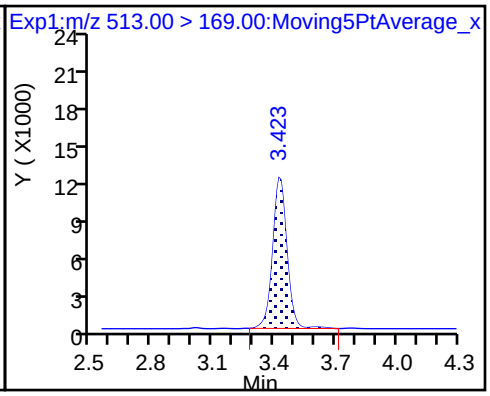
D 23 13C2 PFDA



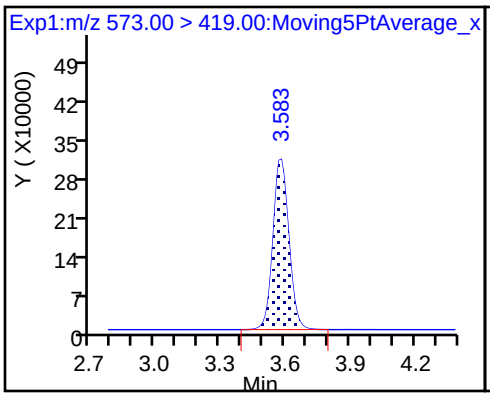
24 Perfluorodecanoic acid



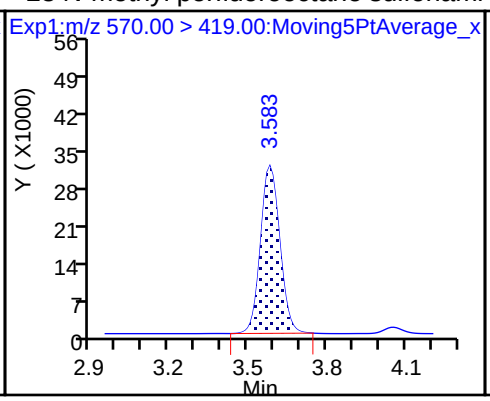
24 Perfluorodecanoic acid



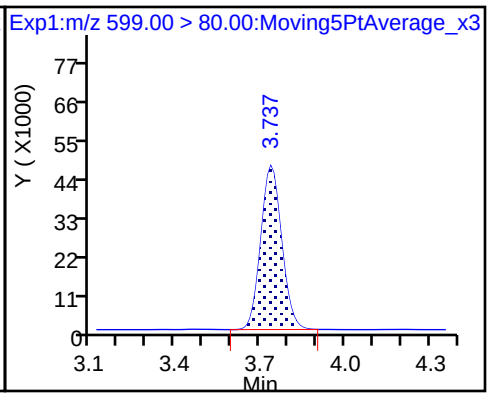
D 27 d3-NMeFOSAA



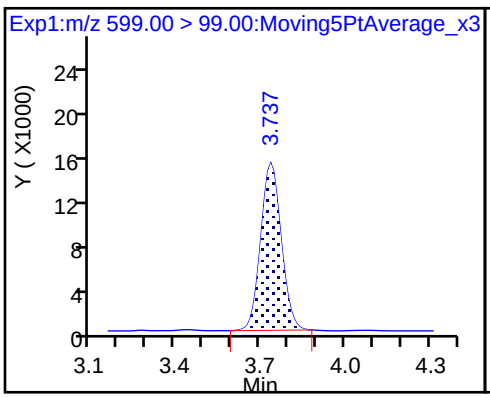
28 N-methyl perfluorooctane sulfonami



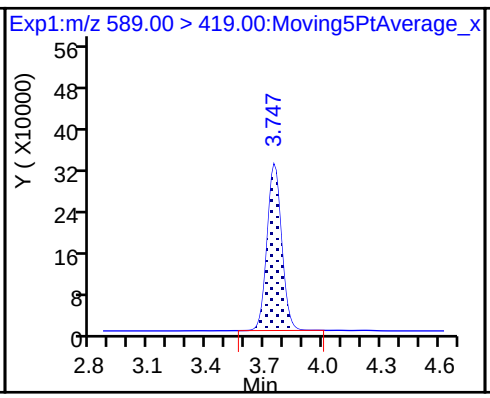
29 Perfluorodecane Sulfonic acid



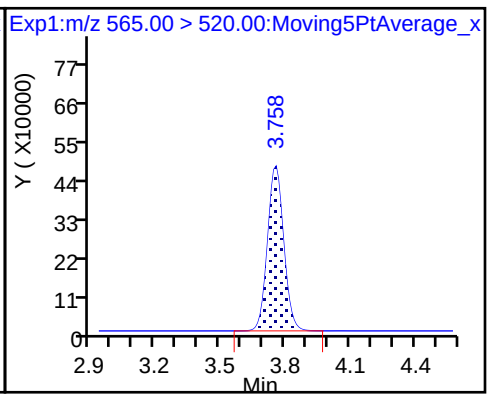
29 Perfluorodecane Sulfonic acid



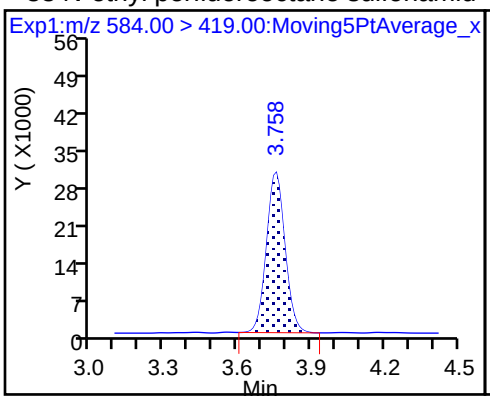
D 32 d5-NEtFOSAA



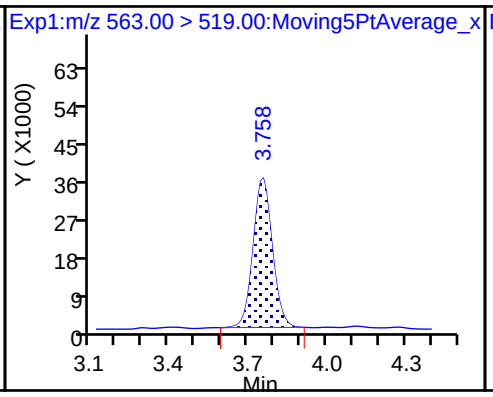
D 30 13C2 PFUnA



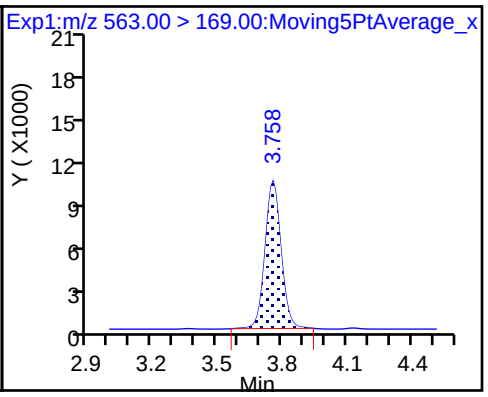
33 N-ethyl perfluorooctane sulfonamid



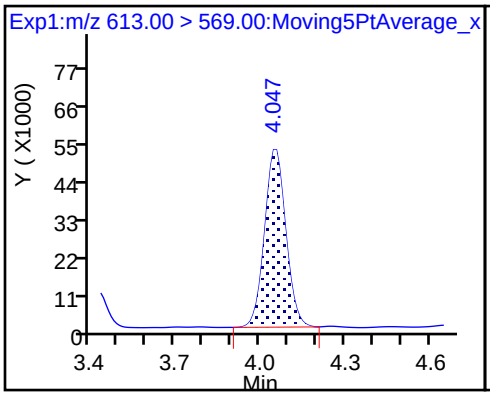
31 Perfluoroundecanoic acid



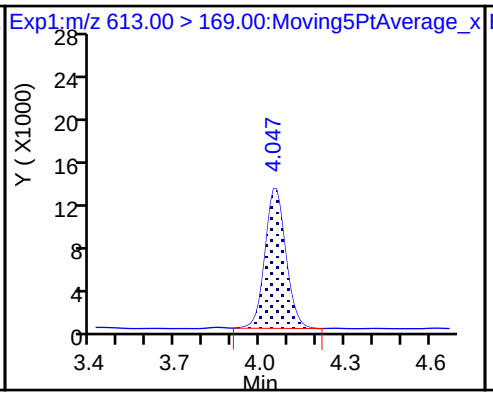
31 Perfluoroundecanoic acid



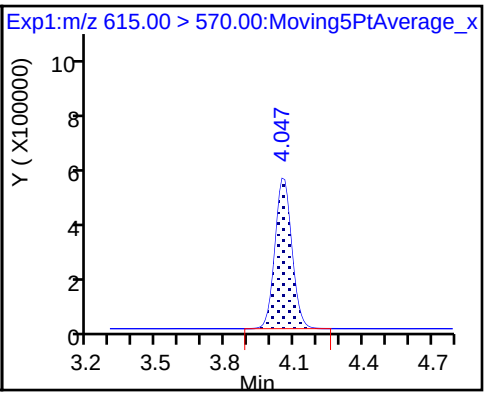
37 Perfluorododecanoic acid



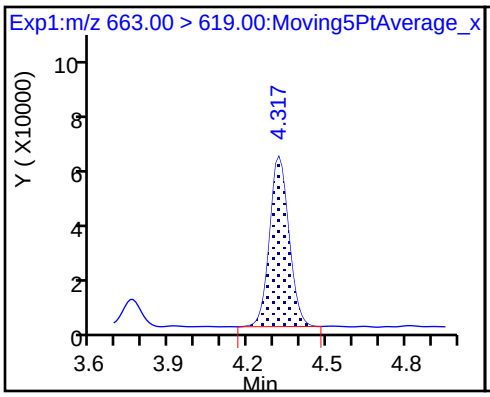
37 Perfluorododecanoic acid



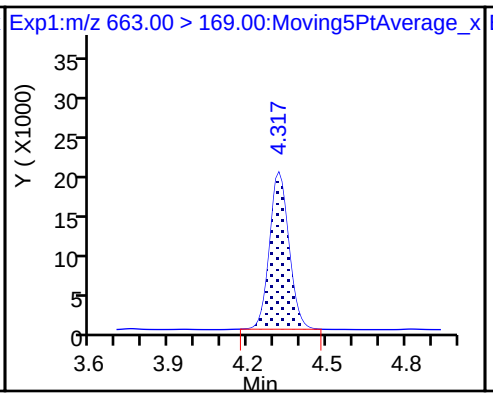
D 36 13C2 PFDoA



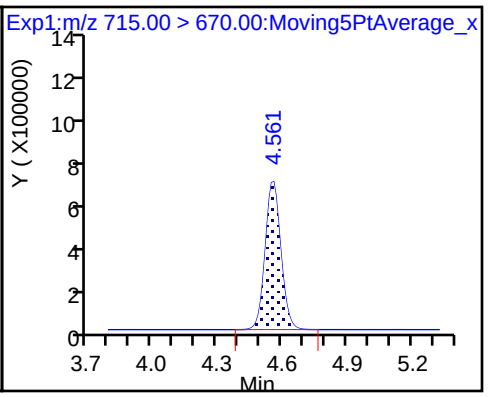
41 Perfluorotridecanoic acid



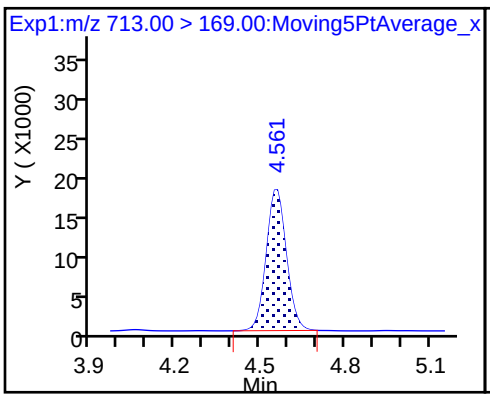
41 Perfluorotridecanoic acid



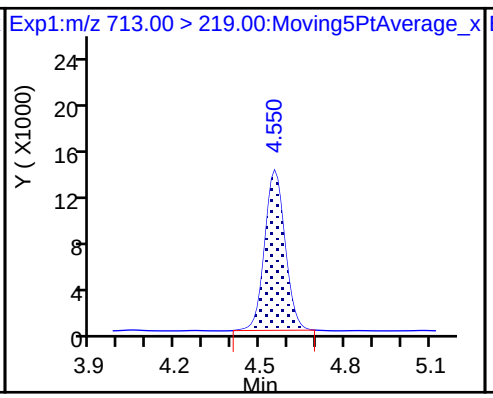
D 43 13C2-PFTeDA



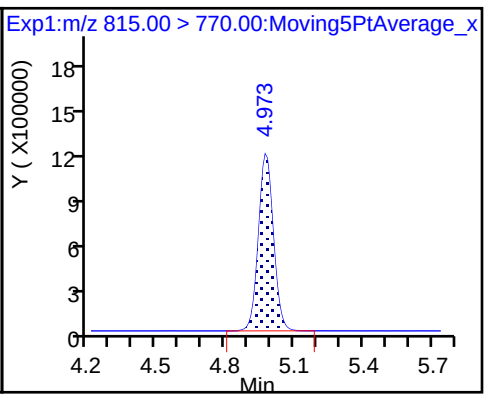
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_005.d
Lims ID: IC L4 Full
Client ID:
Sample Type: ICIS Calib Level: 4
Inject. Date: 29-Mar-2018 17:50:50 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:47:56 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

First Level Reviewer: westendorfc Date: 30-Mar-2018 11:39:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.439	1.436	0.003	1.000	6326878	2.53		101	66086	
2 Perfluorobutyric acid										
212.90 > 169.00	1.439	1.437	0.002	1.000	2290620	0.9794		97.9	809	
D 3 13C5-PFPeA										
267.90 > 223.00	1.698	1.702	-0.004	0.555	4176477	2.57		103	116353	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.707	1.706	0.001	1.005	1931372	0.9659		96.6	805	
D 47 13C3-PFBS										
301.90 > 83.00	1.734	1.738	-0.004	1.000	90179	2.42		104	608	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.743	1.742	0.001	1.005	2631669	0.8600		97.3	1869	
298.90 > 99.00	1.743	1.742	0.001	1.005	1083923		2.43(1.25-3.74)	97.3	1759	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.955	0.001	1.000	663350	NC			9283	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.956	1.955	0.001	1.000	566727	0.8468		90.7	34287	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.991	-0.002	1.000	4494490	2.51		100	133459	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.988	1.992	-0.004	1.000	1763768	0.9587		95.9	2454	
313.00 > 119.00	1.988	1.992	-0.004	1.000	174575		10.10(5.03-15.10)	95.9	1944	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.011	2.013	-0.002	1.000	2554091	0.9248		98.6	56514	
349.00 > 99.00	2.011	2.013	-0.002	1.000	949421		2.69(1.36-4.07)	98.6	24112	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.090	2.092	-0.002	1.000	282149	NC			2501	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.092	-0.002	1.000	228536	NC			4106	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.326	0.003	1.000	4235886	2.46		98.4	78022	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.329	2.327	0.002	1.000	1808460	0.9823		98.2	1774	
363.00 > 169.00	2.329	2.327	0.002	1.000	676071		2.67(1.13-3.40)	98.2	1853	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.342	2.339	0.003	1.000	1978319	0.7926		87.1	8809	
399.00 > 99.00	2.342	2.339	0.003	1.000	679646		2.91(1.50-4.49)	87.1	3957	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.340	0.002	1.000	5285294	2.46		104	74091	
65 Adona										
377.00 > 251.00	2.369	2.372	-0.003	1.000	5648777	NC			75524	
377.00 > 85.00	2.369	2.372	-0.003	1.000	3138221		1.80(0.84-2.53)		54318	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.666	2.664	0.002	1.000	617577	0.8304		87.6	3087	
D 12 M2-6:2FTS										
429.00 > 81.00	2.666	2.664	0.002	1.000	945777	2.38		100	27031	
D 14 13C4 PFOA										
417.00 > 372.00	2.688	2.688	0.0	1.000	4302583	2.54		102	91031	
* 62 13C2-PFOA										
415.00 > 370.00	2.688	2.689	-0.001		4517618	2.50			95988	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.688	2.690	-0.002	1.000	1868120	0.9154		91.5	659	
413.00 > 169.00	2.688	2.690	-0.002	1.000	971134		1.92(0.84-2.52)	91.5	3751	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.696	2.695	0.001	1.000	1907896	0.9225		96.9	34296	
449.00 > 99.00	2.696	2.695	0.001	1.000	526708		3.62(1.94-5.82)	96.9	12171	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.059	3.060	-0.001	1.000	1463610	0.8254		88.9	3157	
499.00 > 99.00	3.059	3.060	-0.001	1.000	340322		4.30(2.31-6.93)	88.9	3568	
D 18 13C4 PFOS										
503.00 > 80.00	3.059	3.060	-0.001	1.000	3709075	2.49		104	36433	
D 19 13C5 PFNA										
468.00 > 423.00	3.059	3.061	-0.002	1.000	3594883	2.51		100	66385	
20 Perfluorononanoic acid										
463.00 > 419.00	3.059	3.064	-0.005	1.000	1464985	0.99		99.0	1530	
463.00 > 169.00	3.059	3.064	-0.005	1.000	357225		4.10(1.90-5.69)	99.0	12362	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.273	3.272	0.001	1.000	2643424	NC			30685	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.000	5326321	2.53		101	62884	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.389	0.0	1.000	2096455	1.00		99.6	44671	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.408	3.409	-0.001	1.000	1129121	0.9075		94.5	33891	
549.00 > 99.00	3.408	3.409	-0.001	1.000	441645		2.56(1.33-3.97)	94.5	13287	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.417	3.413	0.004	1.000	1069323	2.31		96.5	30865	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.417	3.415	0.002	1.000	564315	0.9371		97.8	6369	
D 23 13C2 PFDA										
515.00 > 470.00	3.426	3.423	0.003	1.000	3033191	2.51		100	42271	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.426	3.427	-0.001	1.000	1176291	0.9800		98.0	5989	
513.00 > 169.00	3.426	3.427	-0.001	1.000	221055		5.32(2.36-7.09)	98.0	9212	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.575	3.578	-0.003	1.000	1643657	2.54		102	32778	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.586	3.581	0.005	1.003	637079	0.9192		91.9	4973	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.741	3.738	0.003	1.000	1004519	0.9329		96.8	24501	
599.00 > 99.00	3.741	3.738	0.003	1.000	323257		3.11(1.39-4.16)	96.8	12606	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.751	3.749	0.002	1.000	1794427	2.64		106	4050	
D 30 13C2 PFUnA										
565.00 > 520.00	3.751	3.753	-0.002	1.000	2514905	2.55		102	44805	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.751	3.755	-0.004	1.000	621160	0.9436		94.4	8623	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.751	3.755	-0.004	1.000	761440	0.9434		94.3	3964	
563.00 > 169.00	3.751	3.755	-0.004	1.000	200870		3.79(2.12-6.36)	94.3	9833	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.908	3.910	-0.002	1.000	4214763	NC			70271	
D 36 13C2 PFDoA										
615.00 > 570.00	4.051	4.052	-0.001	1.000	2827344	2.57		103	21719	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.051	4.052	-0.001	1.000	1132386	0.9264		92.6	925	
613.00 > 169.00	4.051	4.052	-0.001	1.000	273090		4.15(2.13-6.40)	92.6	6755	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.316	0.002	1.000	1266253	0.9685		96.9	540	
663.00 > 169.00	4.318	4.316	0.002	1.000	420300		3.01(1.25-3.76)	96.9	6383	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.553	4.558	-0.005	1.000	366508	1.03		103	5270	
713.00 > 219.00	4.553	4.558	-0.005	1.000	262673		1.40(0.71-2.13)	103	6532	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.553	4.558	-0.005	1.000	3577558	2.56		102	21734	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.975	4.977	-0.002	1.000	5422645	2.51		101	15201	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.975	4.977	-0.002	1.000	2020619	NC			475	
813.00 > 169.00	4.975	4.977	-0.002	1.000	343500		5.88(2.86-8.58)		3339	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.344	5.344	0.0	1.000	2132452	NC			350	
913.00 > 169.00	5.344	5.344	0.0	1.000	278856		7.65(3.83-11.48)		3135	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:48:02 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_005.d

Injection Date: 29-Mar-2018 17:50:50 Instrument ID: A8_N

Lims ID: IC L4 Full

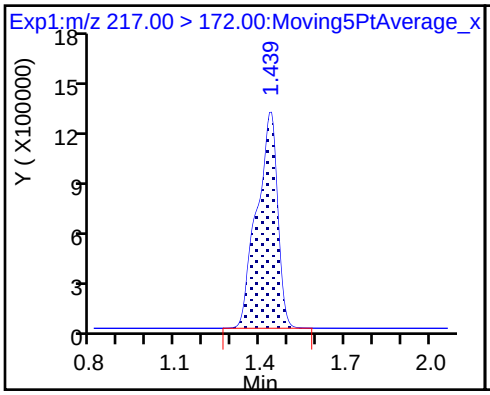
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5

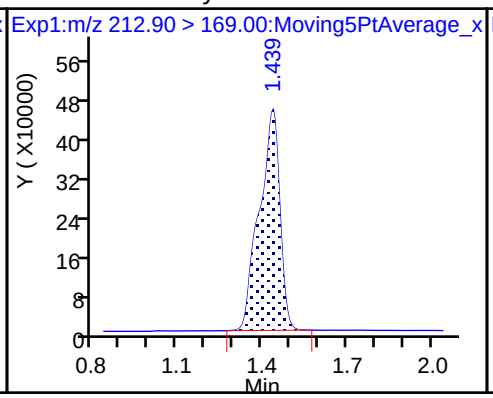
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

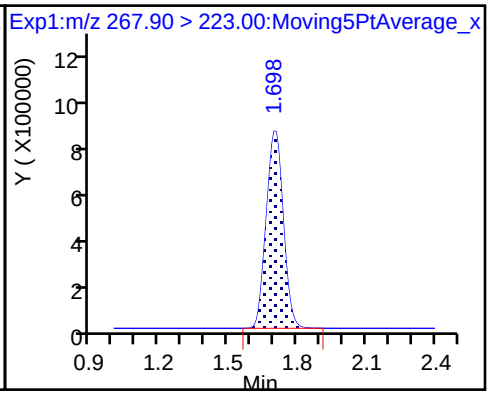
D 1 13C4 PFBA



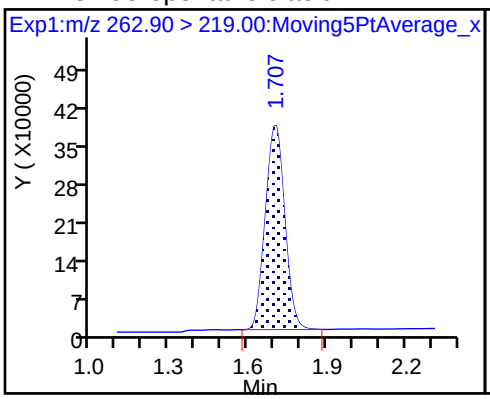
2 Perfluorobutyric acid



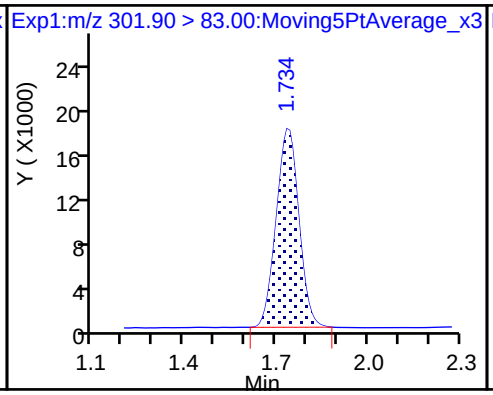
D 3 13C5-PFPeA



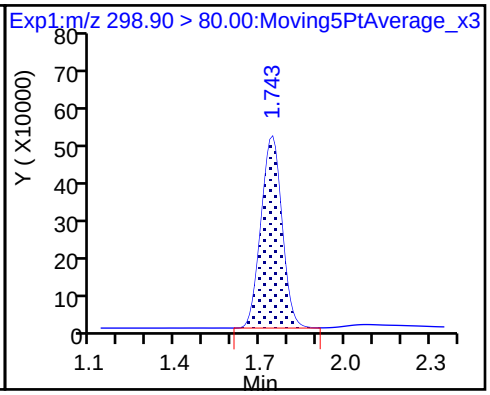
4 Perfluoropentanoic acid



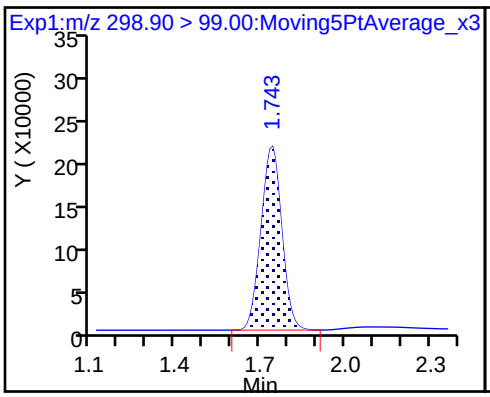
D 47 13C3-PFBS



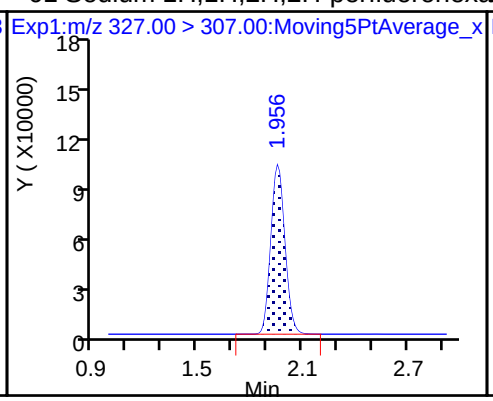
5 Perfluorobutanesulfonic acid



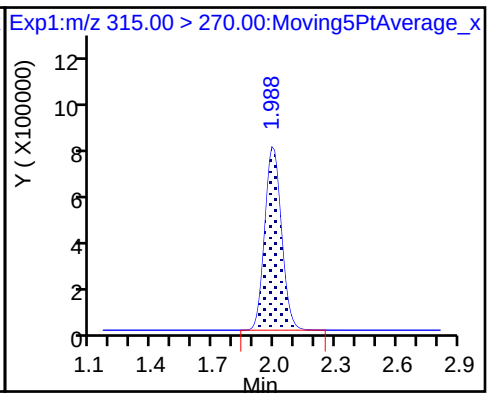
5 Perfluorobutanesulfonic acid



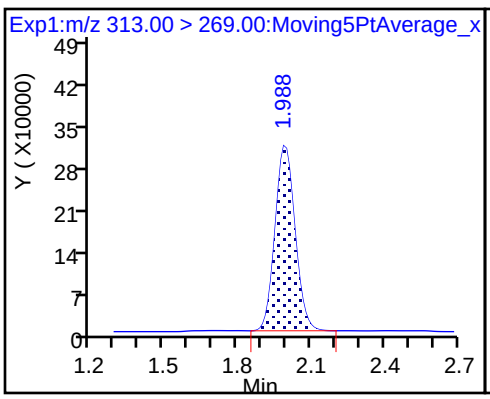
61 Sodium 1H,1H,2H,2H-perfluorohexa



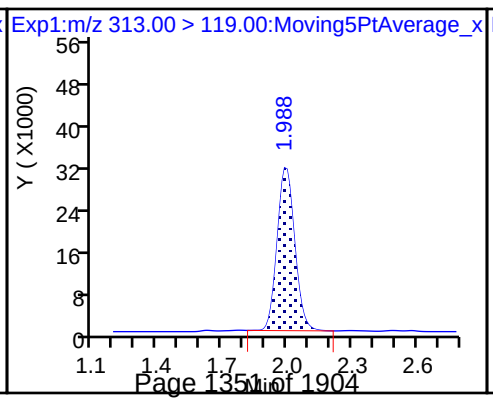
D 7 13C2 PFHxA



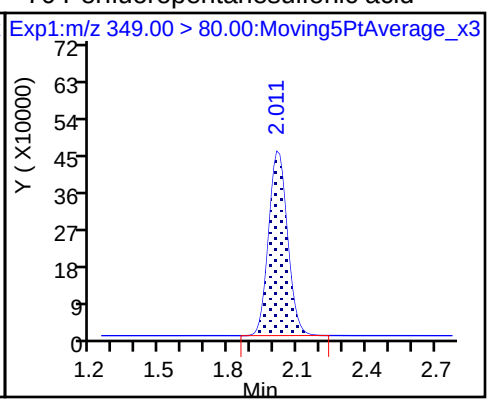
6 Perfluorohexanoic acid



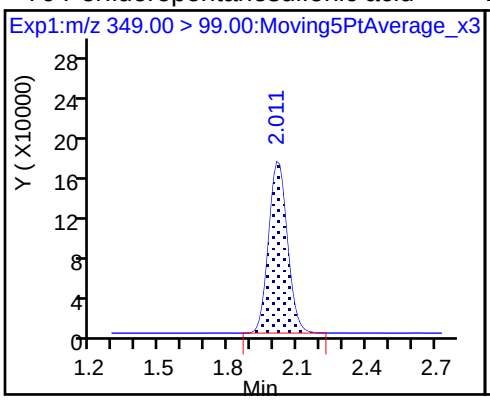
6 Perfluorohexanoic acid



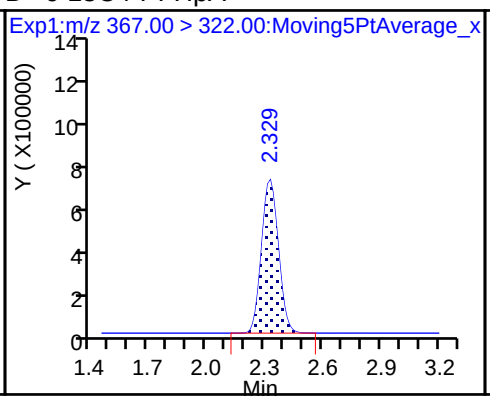
70 Perfluoropentanesulfonic acid



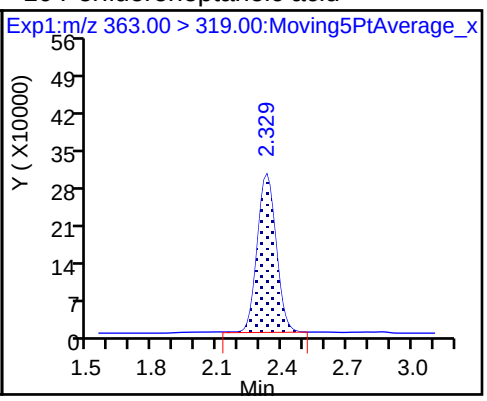
70 Perfluoropentanesulfonic acid



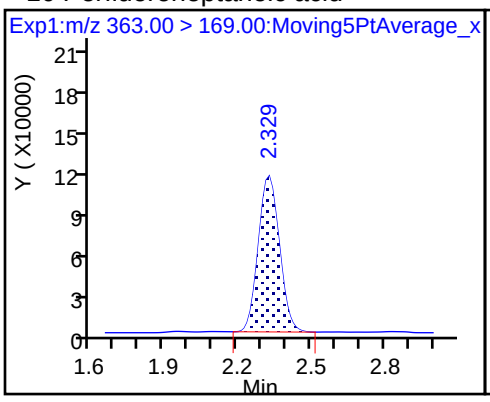
D 9 13C4-PFHpA



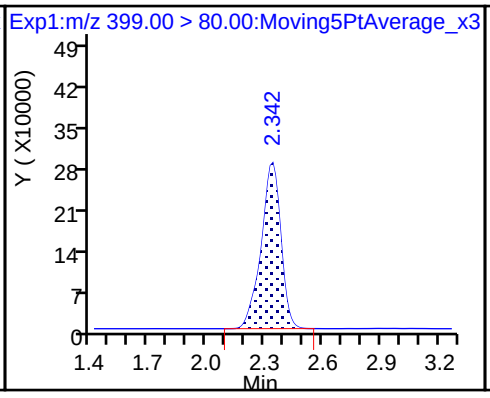
10 Perfluoroheptanoic acid



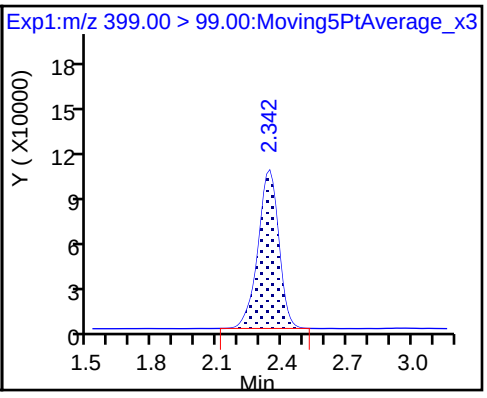
10 Perfluoroheptanoic acid



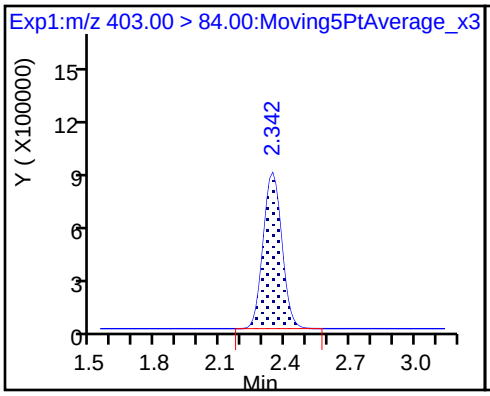
8 Perfluorohexanesulfonic acid



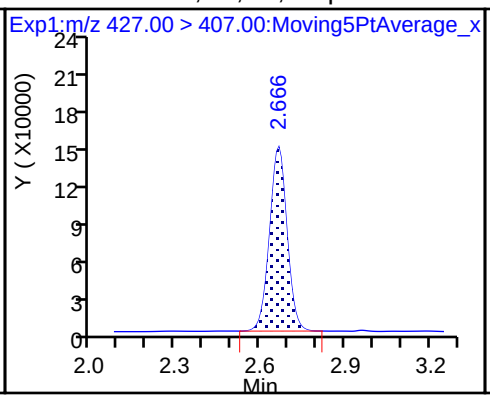
8 Perfluorohexanesulfonic acid



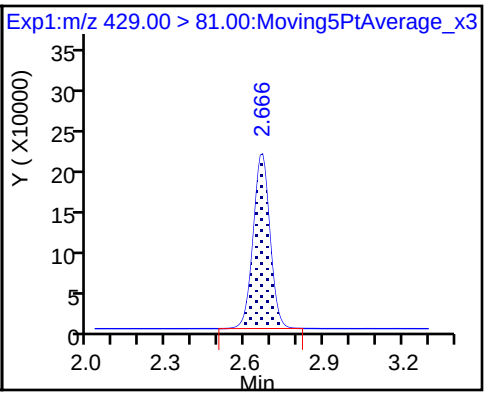
D 11 18O2 PFHxS



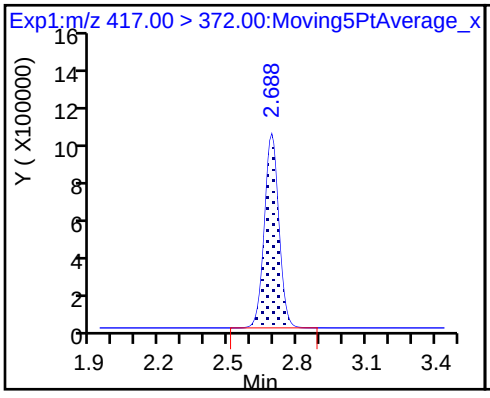
13 Sodium 1H,1H,2H,2H-perfluorooctane



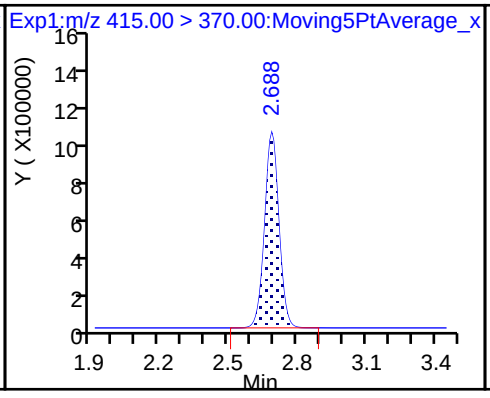
D 12 M2-6:2FTS



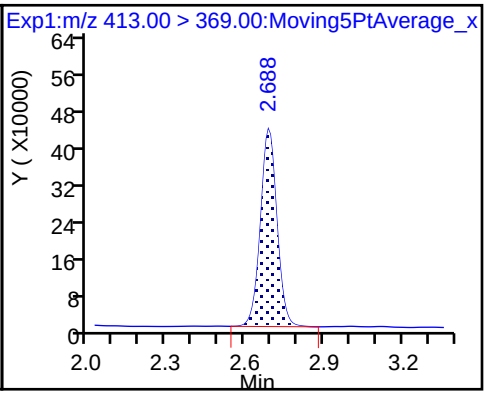
D 14 13C4 PFOA



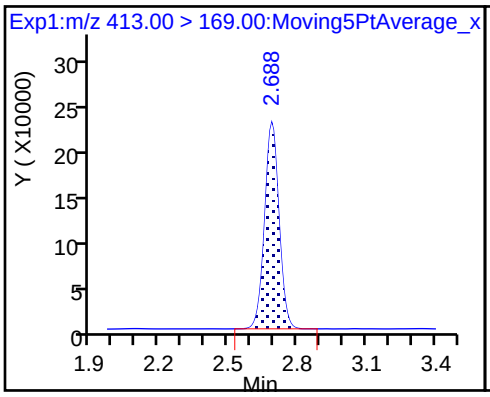
* 62 13C2-PFOA



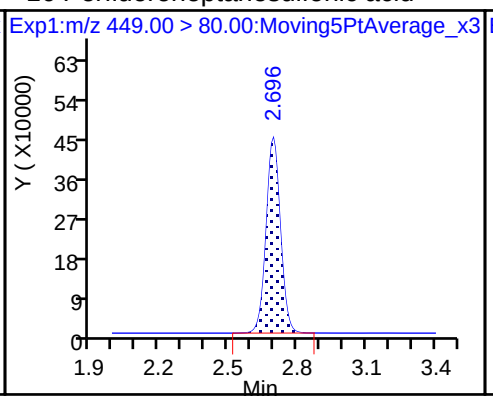
15 Perfluorooctanoic acid



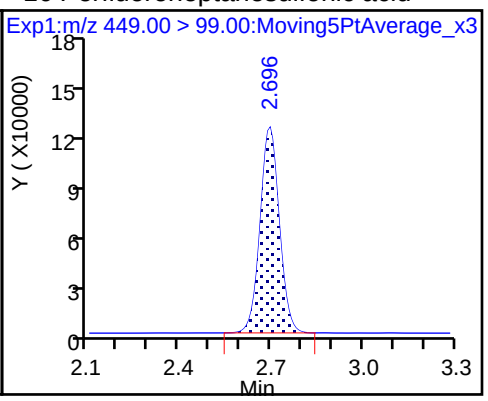
15 Perfluorooctanoic acid



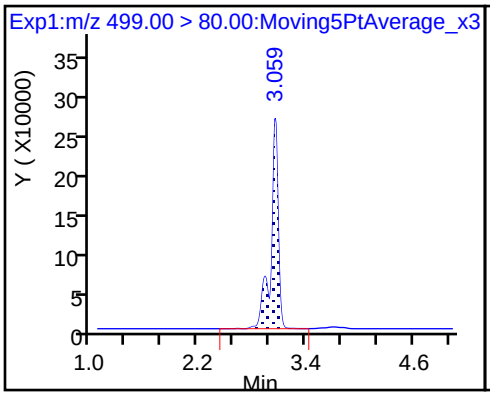
16 Perfluoroheptanesulfonic acid



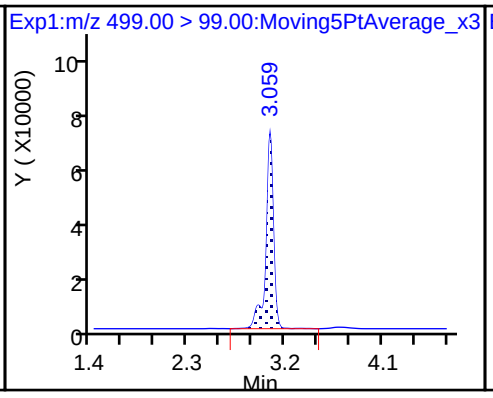
16 Perfluoroheptanesulfonic acid



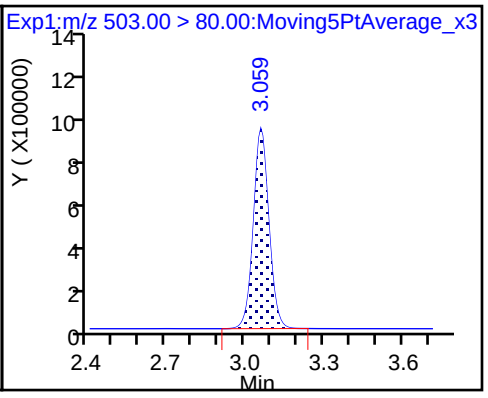
17 Perfluorooctane sulfonic acid



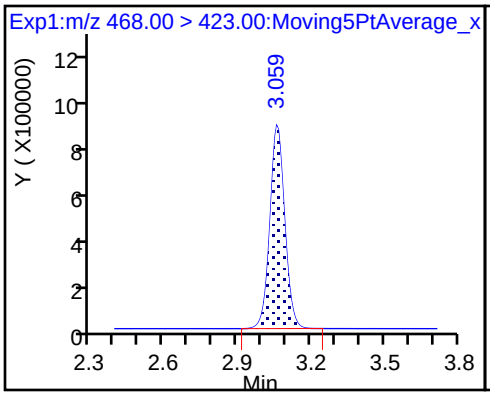
17 Perfluorooctane sulfonic acid



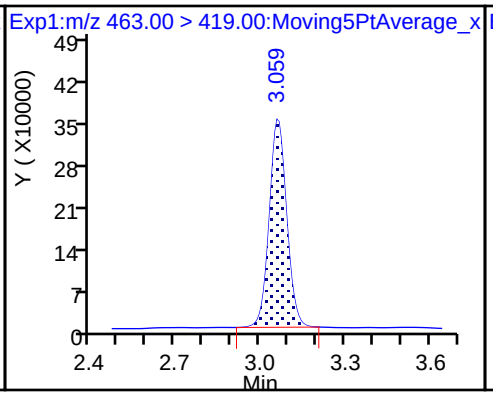
D 18 13C4 PFOS



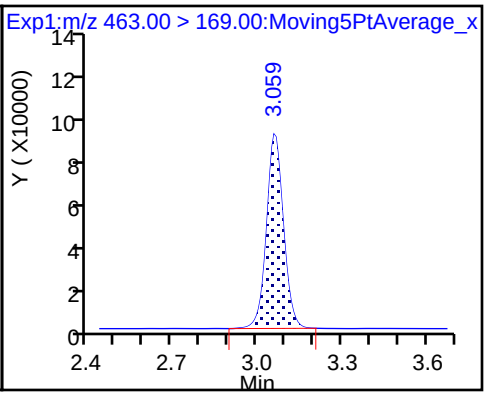
D 19 13C5 PFNA



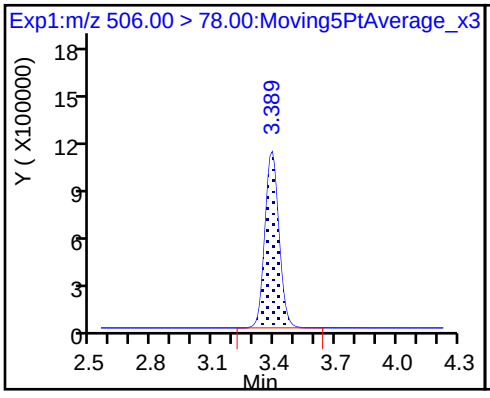
20 Perfluorononanoic acid



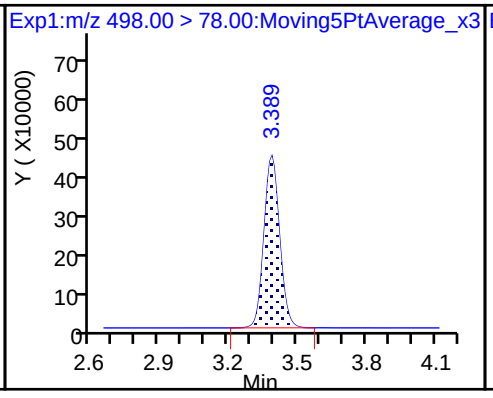
20 Perfluorononanoic acid



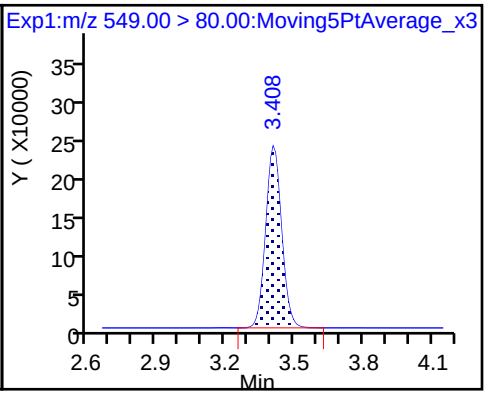
D 21 13C8 FOSA



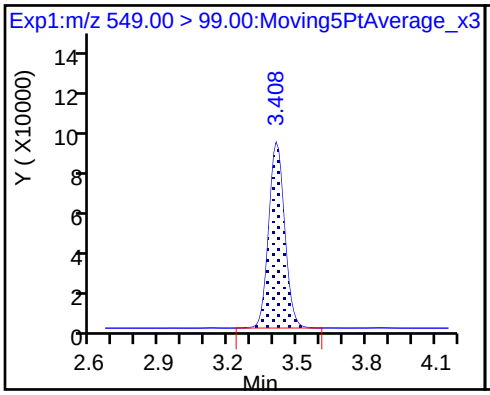
22 Perfluorooctane Sulfonamide



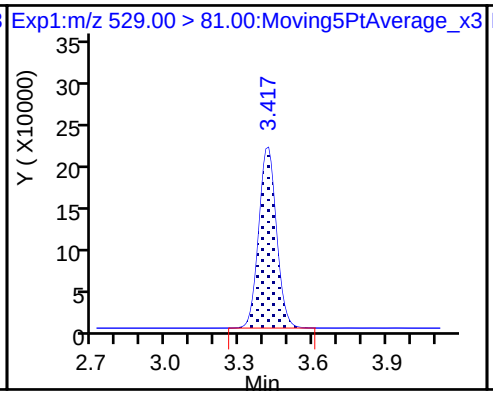
68 Perfluorononanesulfonic acid



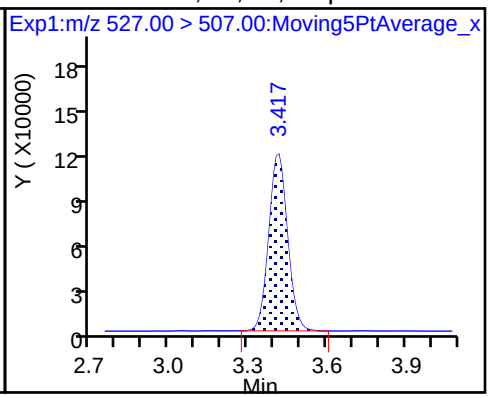
68 Perfluorononanesulfonic acid



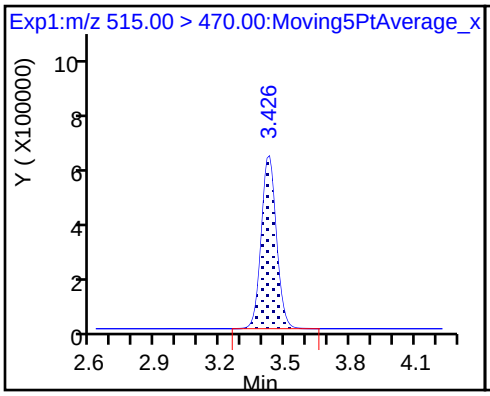
D 26 M2-8:2FTS



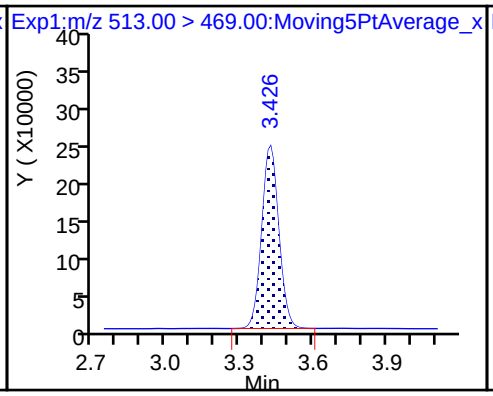
25 Sodium 1H,1H,2H,2H-perfluorodecane



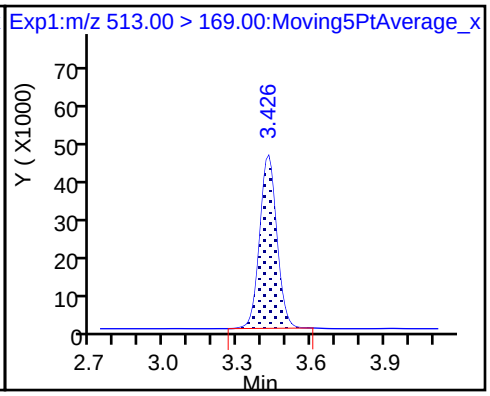
D 23 13C2 PFDA



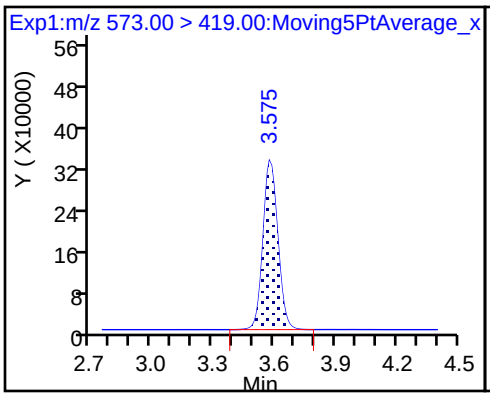
24 Perfluorodecanoic acid



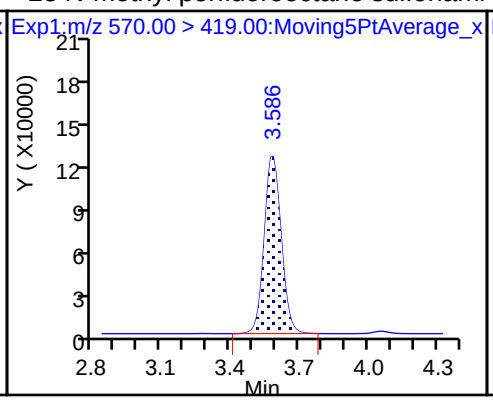
24 Perfluorodecanoic acid



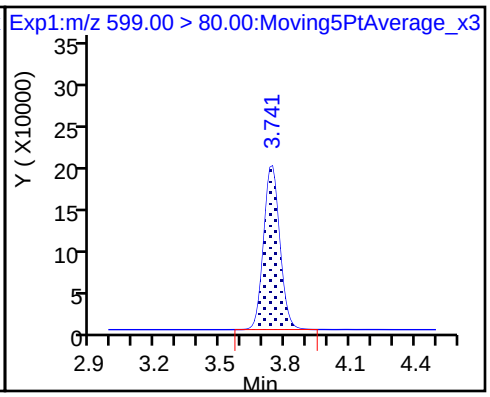
D 27 d3-NMeFOSAA



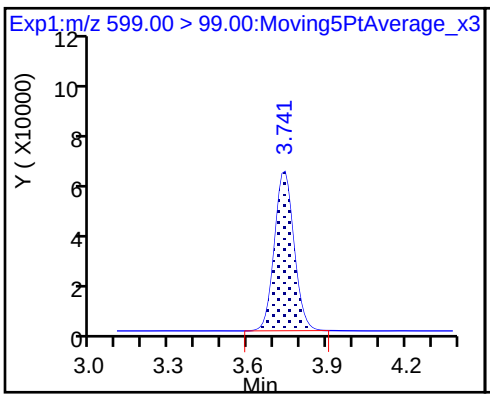
28 N-methyl perfluorooctane sulfonami



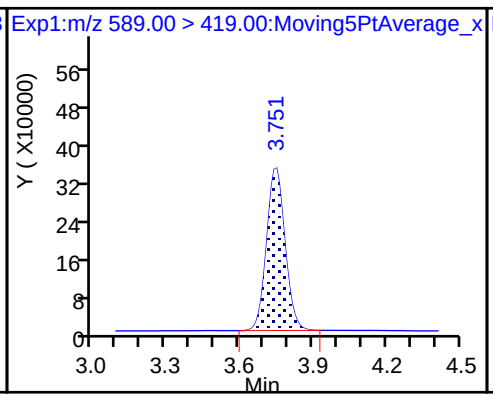
29 Perfluorodecane Sulfonic acid



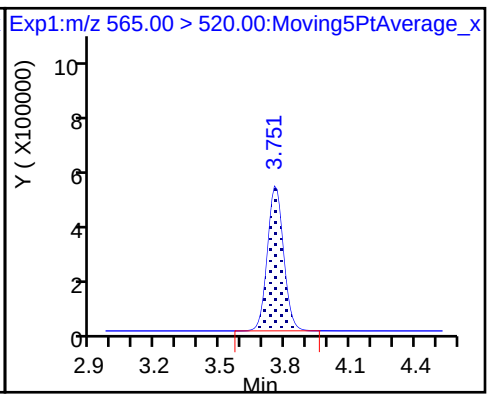
29 Perfluorodecane Sulfonic acid



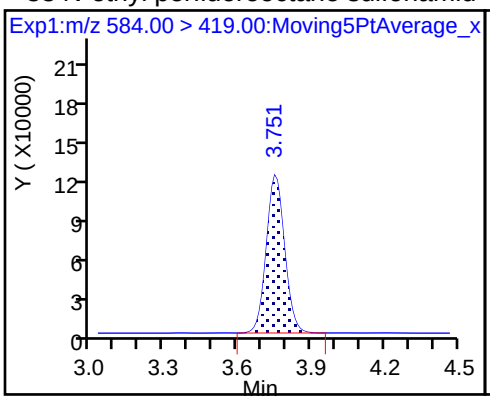
D 32 d5-NEtFOSAA



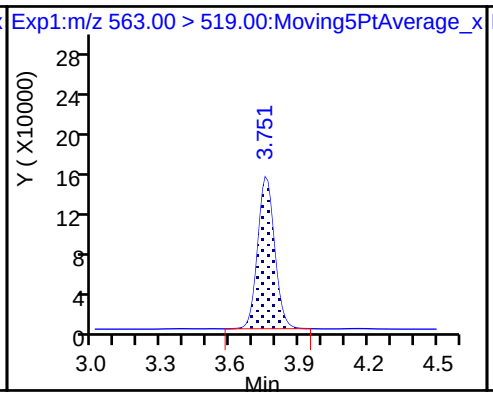
D 30 13C2 PFUnA



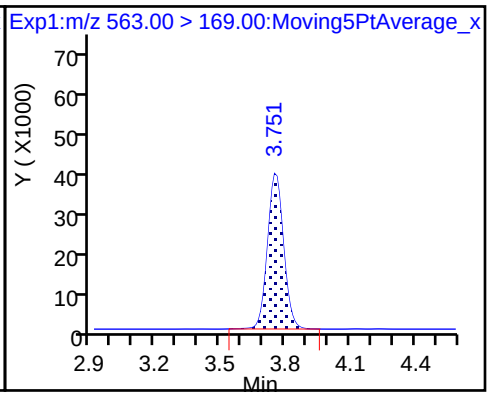
33 N-ethyl perfluorooctane sulfonamid



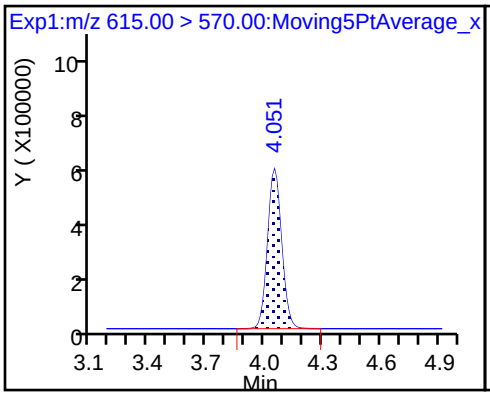
31 Perfluoroundecanoic acid



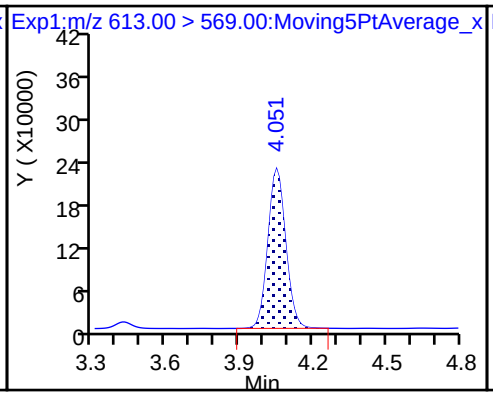
31 Perfluoroundecanoic acid



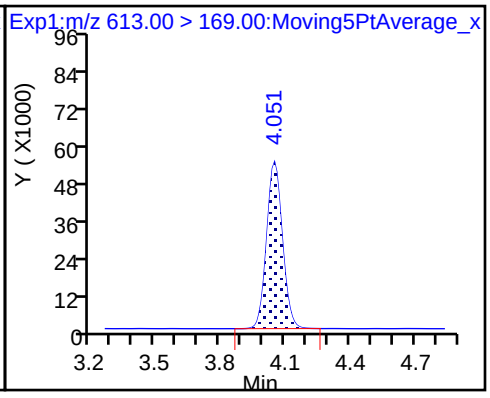
D 36 13C2 PFDoA



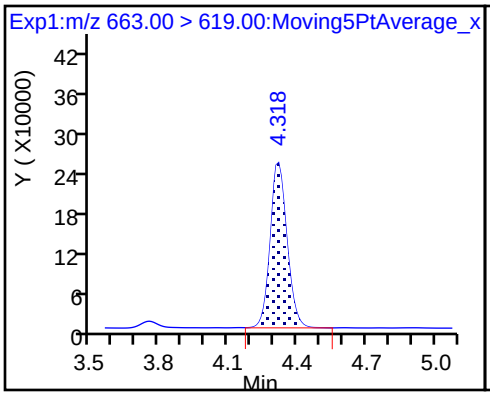
37 Perfluorododecanoic acid



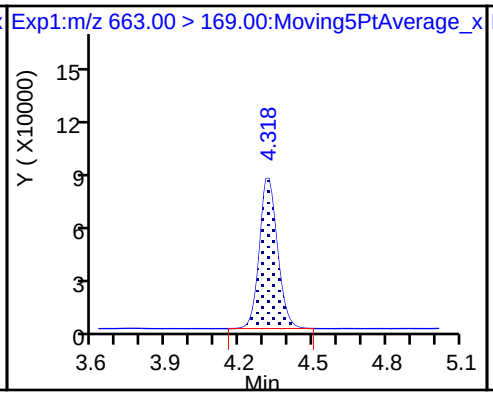
37 Perfluorododecanoic acid



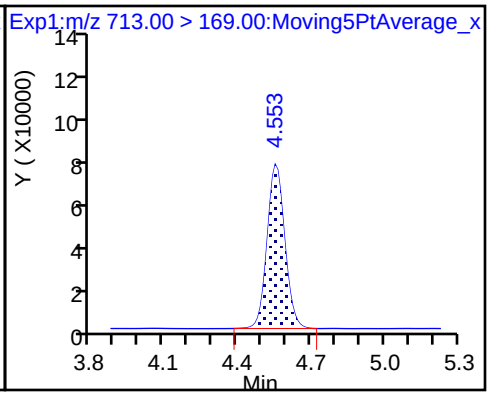
41 Perfluorotridecanoic acid



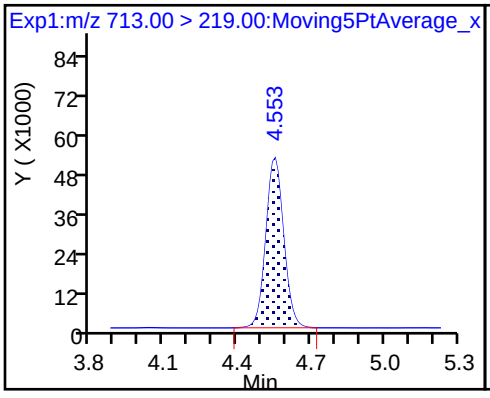
41 Perfluorotridecanoic acid



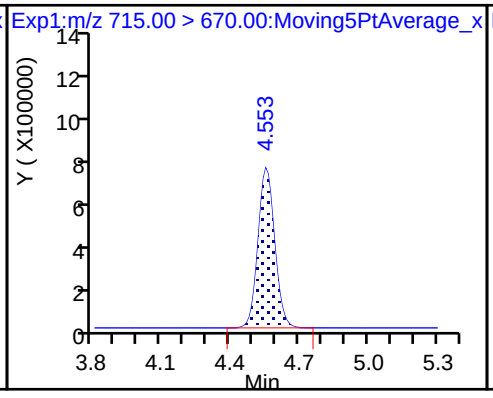
42 Perfluorotetradecanoic acid



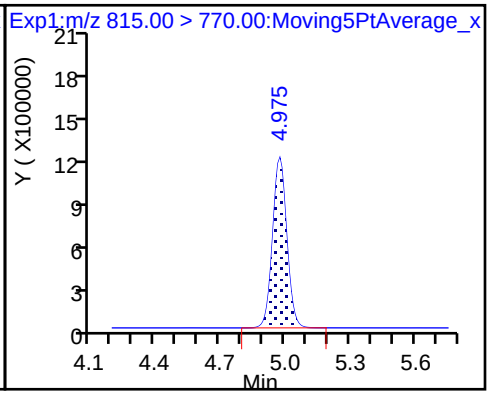
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_006.d
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Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 29-Mar-2018 17:58:39 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:48:09 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

First Level Reviewer: westendorfc Date: 30-Mar-2018 09:09:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.436	0.005	1.000	6030203	2.48		99.1	62199	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.437	0.004	1.000	5777307	2.59		104	3457	
D 3 13C5-PFPeA										
267.90 > 223.00	1.712	1.702	0.010	0.559	3998575	2.52		101	86313	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.712	1.706	0.006	1.000	4732902	2.47		98.9	2193	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.738	0.001	1.000	82172	2.26		97.4	490	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.748	1.742	0.006	1.005	6580985	2.36		107	4397	
298.90 > 99.00	1.748	1.742	0.006	1.005	2674887		2.46(1.25-3.74)	107	4035	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.960	1.955	0.005	1.000	1487518	2.44		104	90099	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.955	0.005	1.000	669149	NC			7608	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.991	0.003	1.000	4449369	2.55		102	111826	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.992	0.001	1.000	4676733	2.57		103	6804	
313.00 > 119.00	1.993	1.992	0.001	1.000	417474		11.20(5.03-15.10)	103	4326	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.013	0.003	1.000	6467251	2.57		110	114345	
349.00 > 99.00	2.016	2.013	0.003	1.000	2239567		2.89(1.36-4.07)	110	49101	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.092	0.003	1.000	231658	NC			4075	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.092	0.003	1.000	729503	NC			6426	
D 9 13C4-PFHpA										
367.00 > 322.00	2.334	2.326	0.008	1.000	4131012	2.46		98.4	76582	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.334	2.327	0.007	1.000	4677284	2.61		104	3860	
363.00 > 169.00	2.334	2.327	0.007	1.000	1694031		2.76(1.13-3.40)	104	5125	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.347	2.339	0.008	1.000	5288566	2.32		102	18242	
399.00 > 99.00	2.347	2.339	0.008	1.000	1735055		3.05(1.50-4.49)	102	9372	
D 11 18O2 PFHxS										
403.00 > 84.00	2.347	2.340	0.007	1.000	4833301	2.31		97.6	73949	
65 Adona										
377.00 > 251.00	2.372	2.372	0.0	1.000	14240170	NC			190651	
377.00 > 85.00	2.372	2.372	0.0	1.000	8381192		1.70(0.84-2.53)		86770	
D 12 M2-6:2FTS										
429.00 > 81.00	2.667	2.664	0.003	1.000	884202	2.28		95.9	24949	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.667	2.664	0.003	1.000	1539946	2.21		93.5	5122	
D 14 13C4 PFOA										
417.00 > 372.00	2.690	2.688	0.002	1.000	4168394	2.53		101	64136	
* 62 13C2-PFOA										
415.00 > 370.00	2.690	2.689	0.001		4403513	2.50			72111	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.697	2.690	0.007	1.003	4758293	2.41		96.3	1602	
413.00 > 169.00	2.690	2.690	0.0	1.000	2531080		1.88(0.84-2.52)	96.3	10234	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.697	2.695	0.002	1.000	4696005	2.46		103	51596	
449.00 > 99.00	2.697	2.695	0.002	1.000	1300851		3.61(1.94-5.82)	103	23065	
D 18 13C4 PFOS										
503.00 > 80.00	3.063	3.060	0.003	1.000	3426212	2.36		98.6	31614	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.063	3.060	0.003	1.000	3738022	2.28		98.4	8399	
499.00 > 99.00	3.063	3.060	0.003	1.000	845589		4.42(2.31-6.93)	98.4	6210	
D 19 13C5 PFNA										
468.00 > 423.00	3.063	3.061	0.002	1.000	3540108	2.53		101	84407	
20 Perfluorononanoic acid										
463.00 > 419.00	3.070	3.064	0.006	1.002	3675243	2.52		101	3854	
463.00 > 169.00	3.063	3.064	-0.001	1.000	916459		4.01(1.90-5.69)	101	23909	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.277	3.272	0.005	1.000	6465289	NC			57970	
D 21 13C8 FOSA										
506.00 > 78.00	3.394	3.388	0.006	1.000	5134426	2.50		100.0	38523	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.394	3.389	0.005	1.000	5273555	2.60		104	65764	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.413	3.409	0.004	1.000	2797665	2.43		101	66092	
549.00 > 99.00	3.413	3.409	0.004	1.000	1086732		2.57(1.33-3.97)	101	32886	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.413	3.413	0.0	1.000	1054813	2.34		97.6	30965	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.413	3.415	-0.002	1.000	1404701	2.36		98.7	16955	
D 23 13C2 PFDA										
515.00 > 470.00	3.422	3.423	-0.001	1.000	2988519	2.53		101	34662	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.432	3.427	0.005	1.003	2995028	2.53		101	18233	
513.00 > 169.00	3.432	3.427	0.005	1.003	534907		5.60(2.36-7.09)	101	12381	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.582	3.578	0.004	1.000	1585449	2.51		100	34638	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.582	3.581	0.001	1.000	1647643	2.46		98.6	11941	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.737	3.738	-0.001	1.000	2358750	2.37		98.4	65020	
599.00 > 99.00	3.737	3.738	-0.001	1.000	855317		2.76(1.39-4.16)	98.4	33383	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.747	3.749	-0.002	1.000	1675412	2.53		101	3712	
D 30 13C2 PFUnA										
565.00 > 520.00	3.758	3.753	0.005	1.000	2409033	2.50		100	42492	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.758	3.755	0.003	1.003	1542349	2.51		100	26985	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.755	0.003	1.000	1901518	2.46		98.4	8013	
563.00 > 169.00	3.758	3.755	0.003	1.000	507139		3.75(2.12-6.36)	98.4	24360	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.916	3.910	0.006	1.000	10377874	NC			103580	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.059	4.052	0.007	1.000	2927481	2.52		101	2194	
613.00 > 169.00	4.059	4.052	0.007	1.000	732103		4.00(2.13-6.40)	101	11010	
D 36 13C2 PFDoA										
615.00 > 570.00	4.059	4.052	0.007	1.000	2684707	2.50		100	18257	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.316	0.002	1.000	3245349	2.61		105	1291	
663.00 > 169.00	4.318	4.316	0.002	1.000	1056833		3.07(1.25-3.76)	105	17392	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.563	4.558	0.005	1.000	3484985	2.56		102	22350	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.563	4.558	0.005	1.000	884583	2.54		102	13447	
713.00 > 219.00	4.553	4.558	-0.005	0.998	623379		1.42(0.71-2.13)	102	11224	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.983	4.977	0.006	1.000	5398203	NC			1240	
813.00 > 169.00	4.983	4.977	0.006	1.000	886265		6.09(2.86-8.58)		6550	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.983	4.977	0.006	1.000	5578235	2.65		106	15602	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.350	5.344	0.006	1.000	5719746	NC			885	
913.00 > 169.00	5.350	5.344	0.006	1.000	729616		7.84(3.83-11.48)		5795	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:48:15 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_006.d

Injection Date: 29-Mar-2018 17:58:39 Instrument ID: A8_N

Lims ID: IC L5 Full

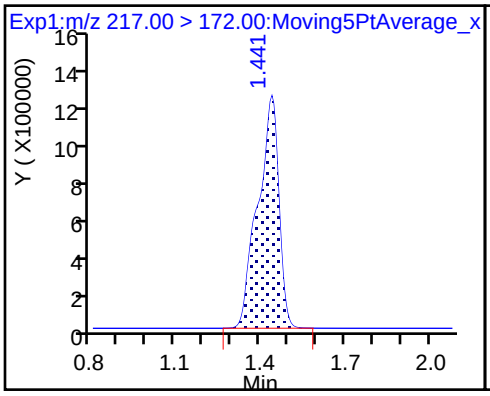
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 6

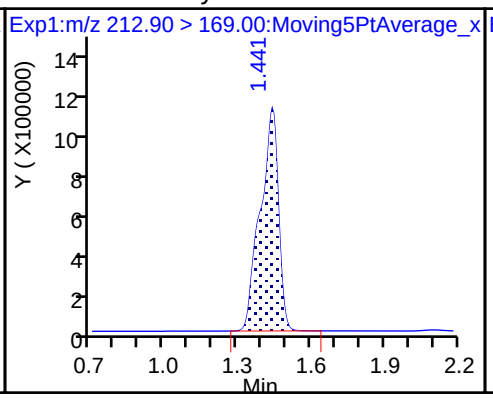
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

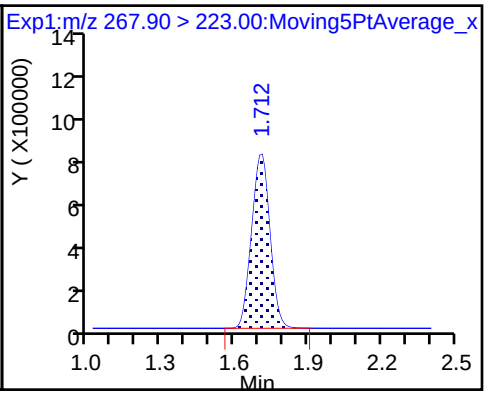
D 1 13C4 PFBA



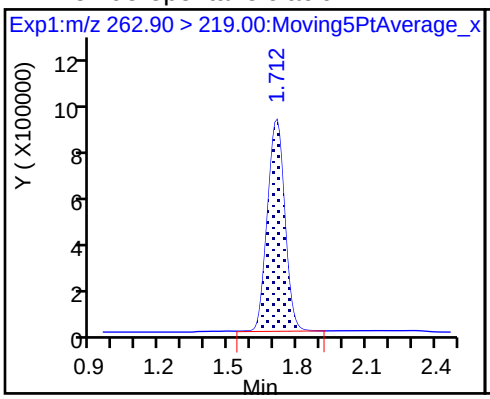
2 Perfluorobutyric acid



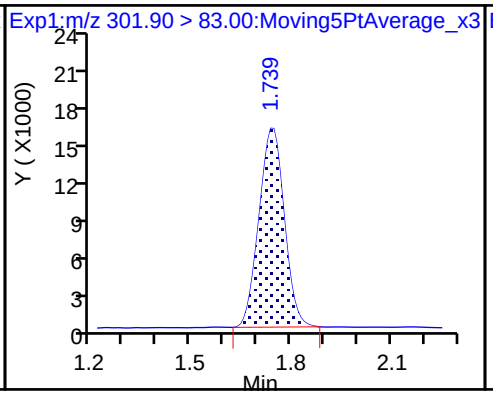
D 3 13C5-PFPeA



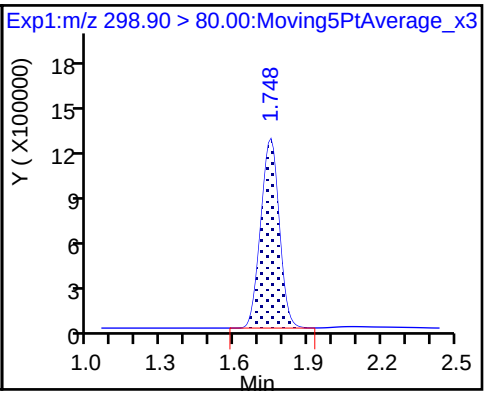
4 Perfluoropentanoic acid



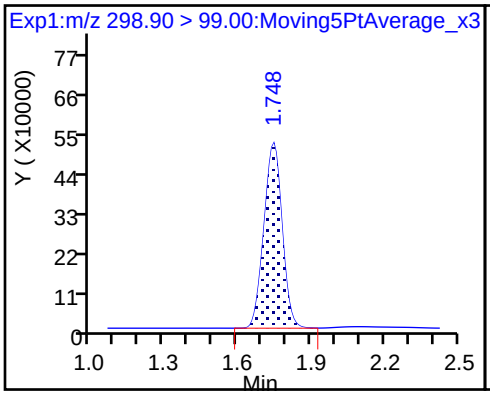
D 47 13C3-PFBS



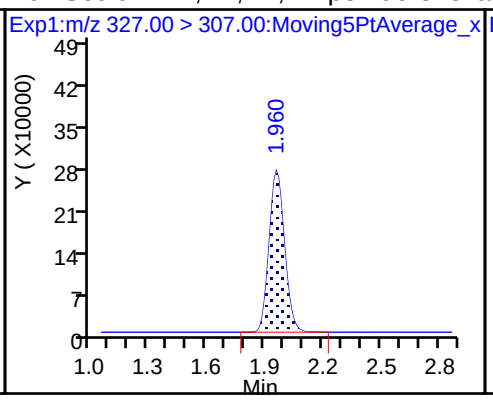
5 Perfluorobutanesulfonic acid



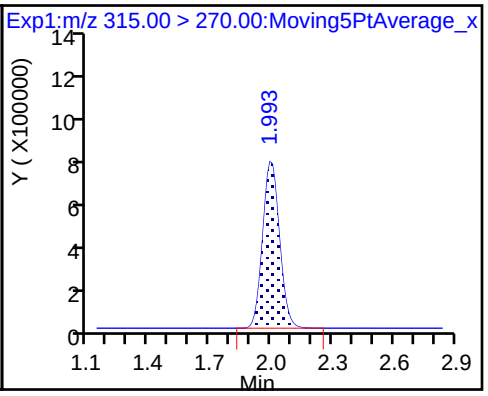
5 Perfluorobutanesulfonic acid



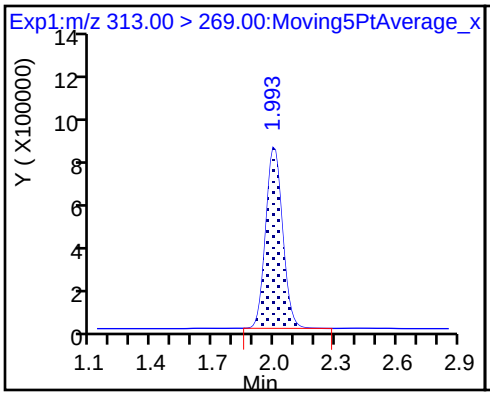
61 Sodium 1H,1H,2H,2H-perfluorohexa



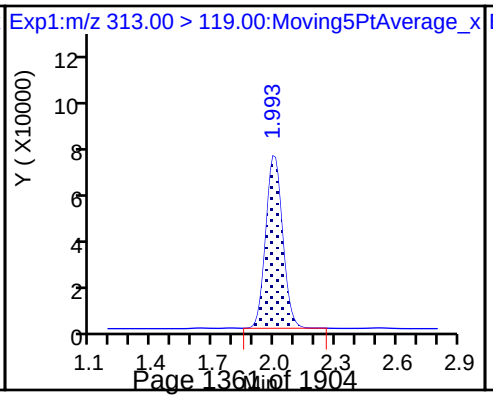
D 7 13C2 PFHxA



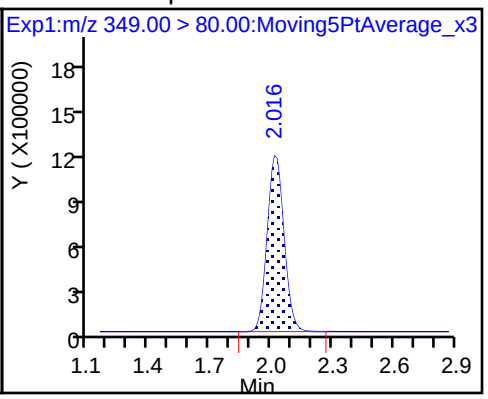
6 Perfluorohexanoic acid



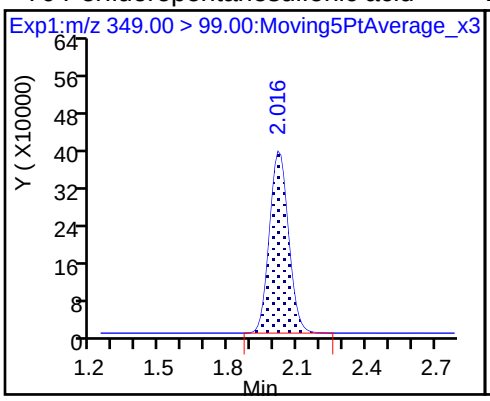
6 Perfluorohexanoic acid



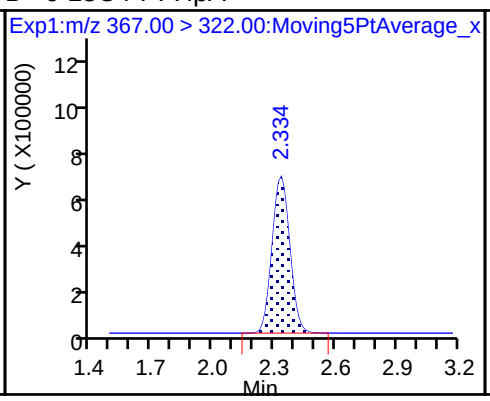
70 Perfluoropentanesulfonic acid



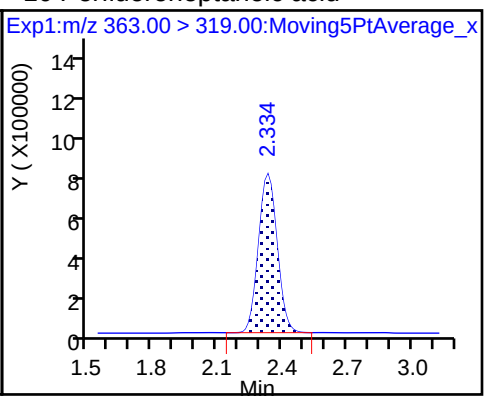
70 Perfluoropentanesulfonic acid



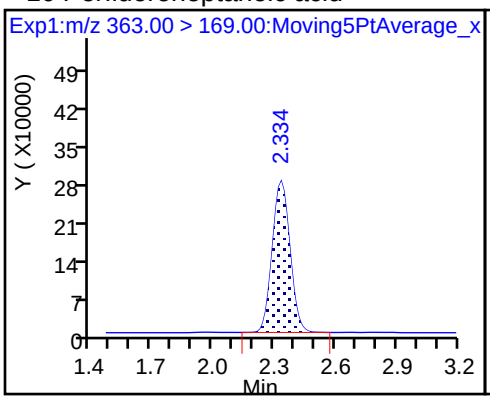
D 9 13C4-PFHpA



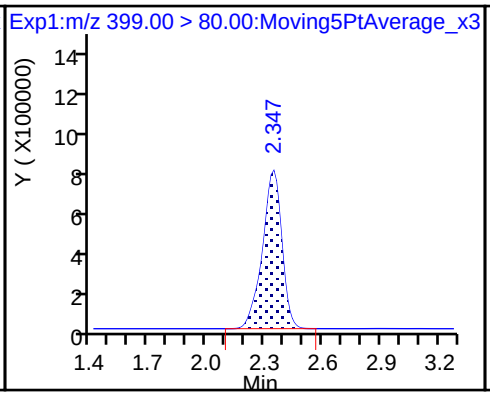
10 Perfluoroheptanoic acid



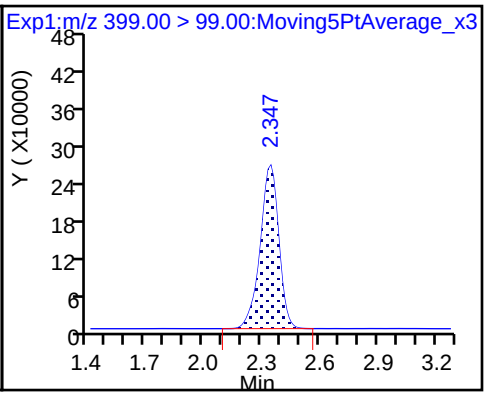
10 Perfluoroheptanoic acid



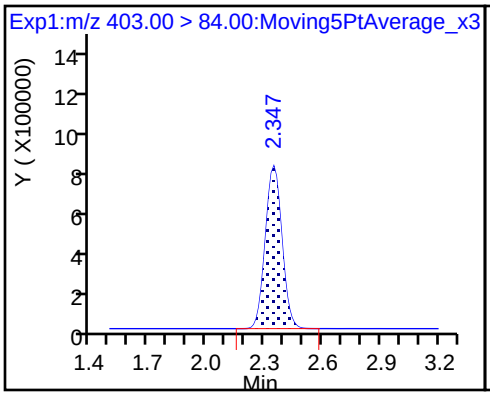
8 Perfluorohexanesulfonic acid



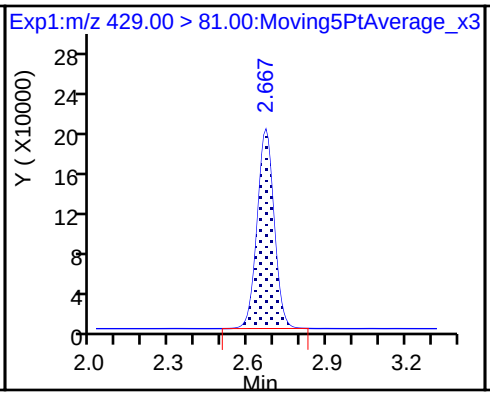
8 Perfluorohexanesulfonic acid



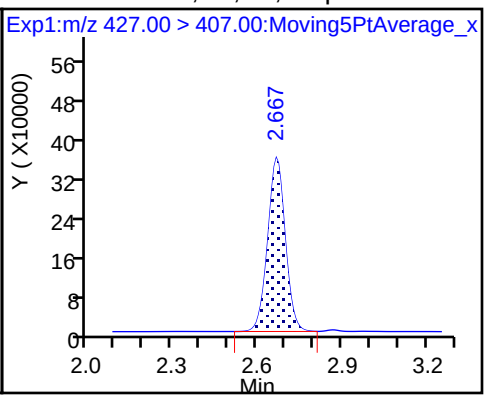
D 11 18O2 PFHxS



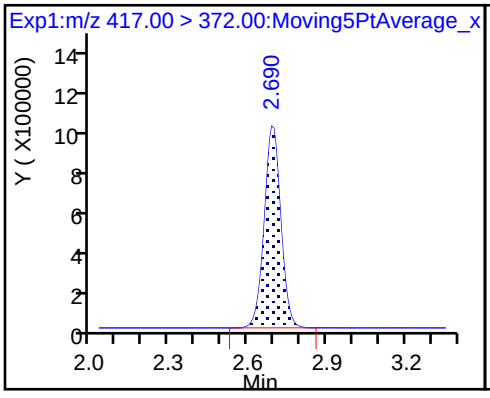
D 12 M2-6:2FTS



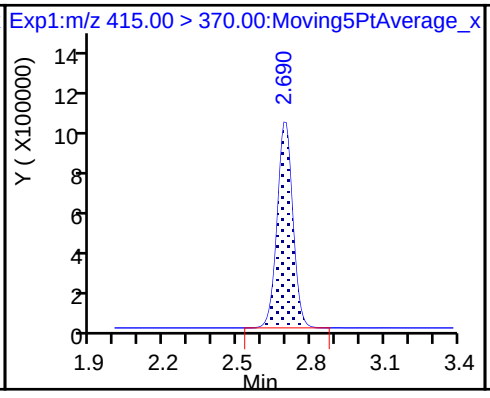
13 Sodium 1H,1H,2H,2H-perfluorooctane



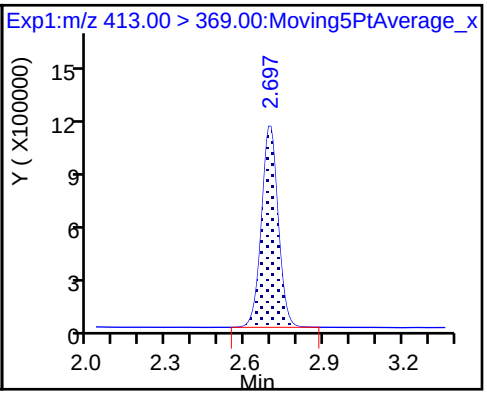
D 14 13C4 PFOA



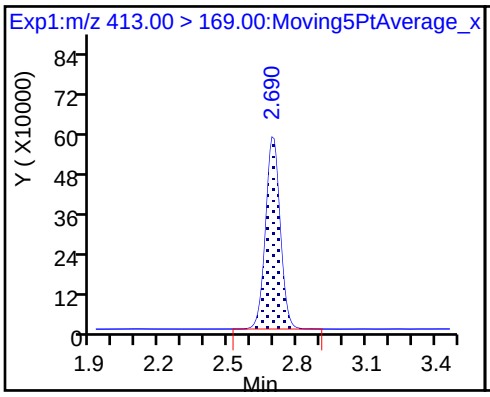
* 62 13C2-PFOA



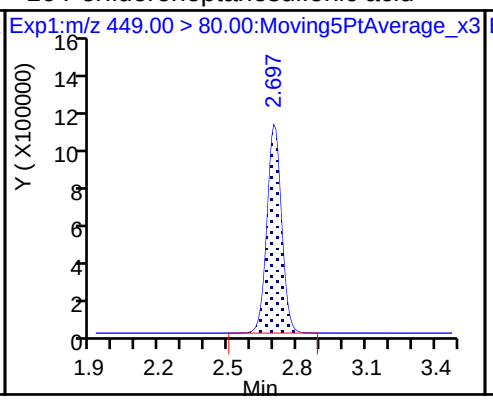
15 Perfluorooctanoic acid



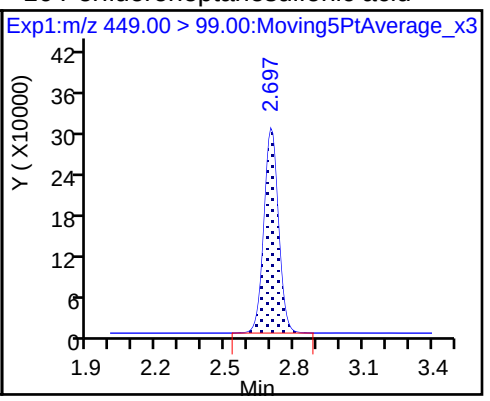
15 Perfluorooctanoic acid



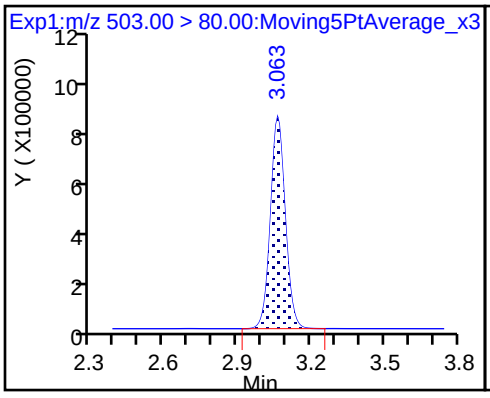
16 Perfluoroheptanesulfonic acid



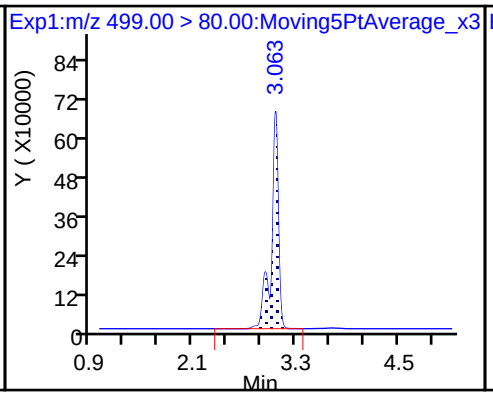
16 Perfluoroheptanesulfonic acid



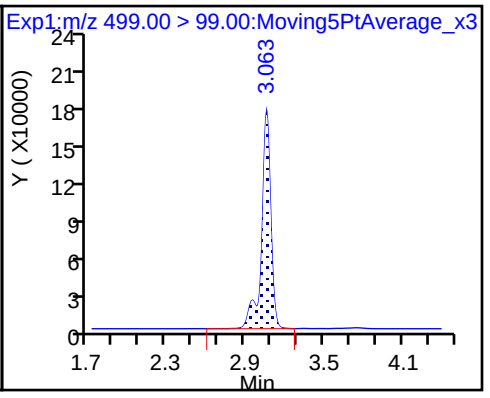
D 18 13C4 PFOS



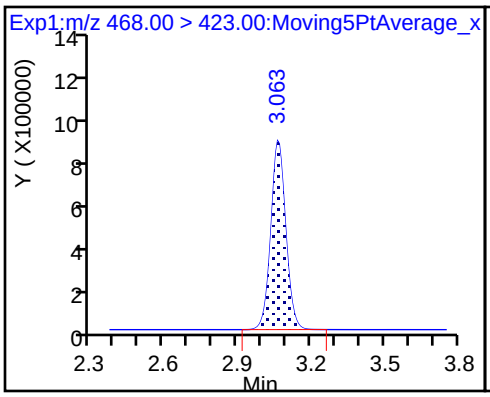
17 Perfluorooctane sulfonic acid



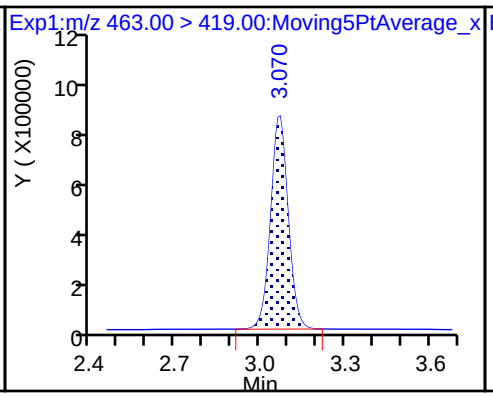
17 Perfluorooctane sulfonic acid



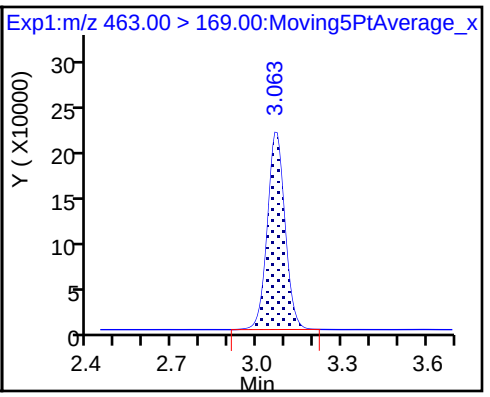
D 19 13C5 PFNA



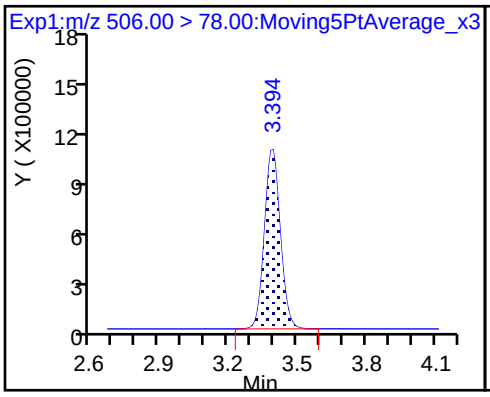
20 Perfluorononanoic acid



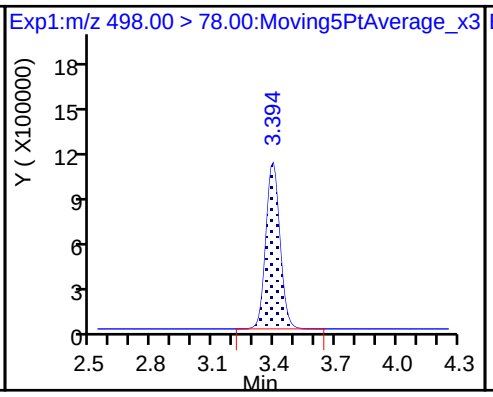
20 Perfluorononanoic acid



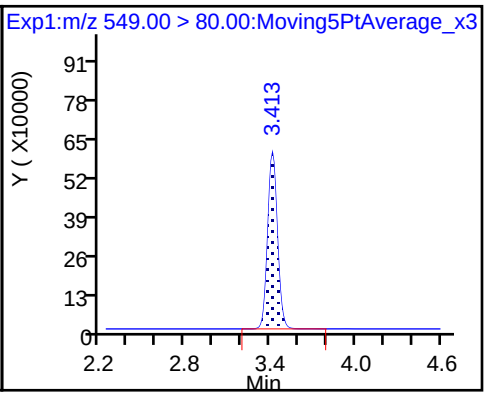
D 21 13C8 FOSA



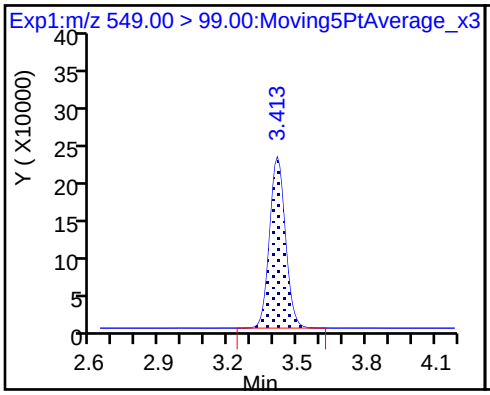
22 Perfluorooctane Sulfonamide



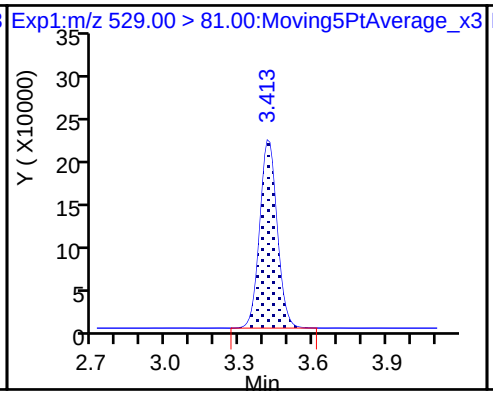
68 Perfluorononanesulfonic acid



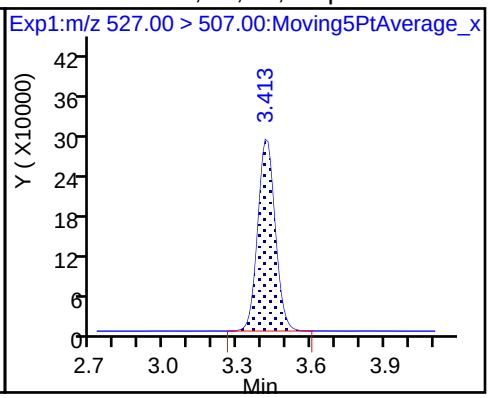
68 Perfluorononanesulfonic acid



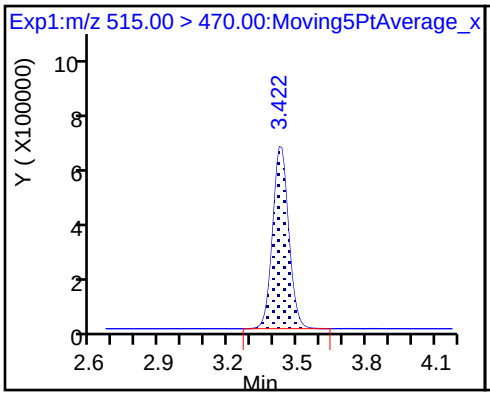
D 26 M2-8:2FTS



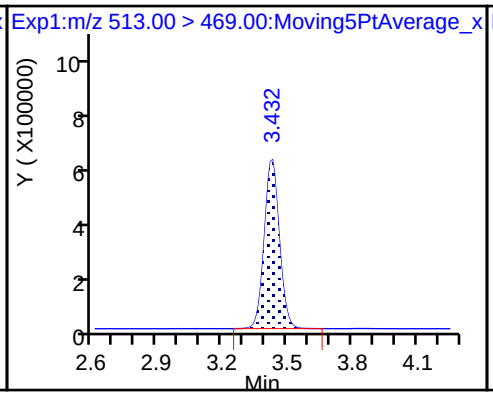
25 Sodium 1H,1H,2H,2H-perfluorodecane



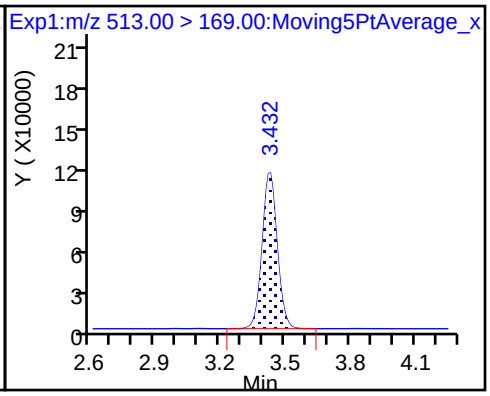
D 23 13C2 PFDA



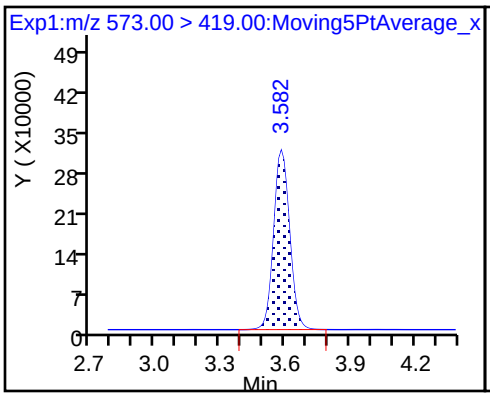
24 Perfluorodecanoic acid



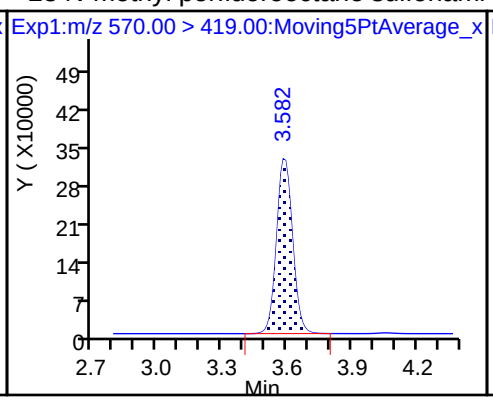
24 Perfluorodecanoic acid



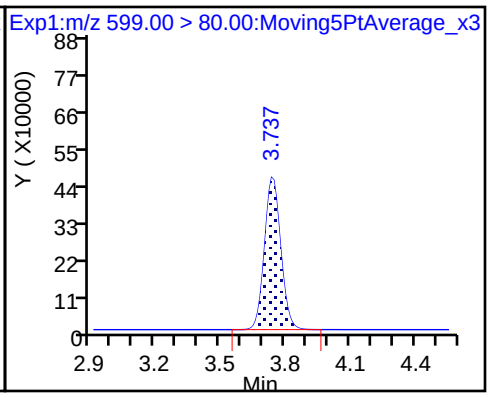
D 27 d3-NMeFOSAA



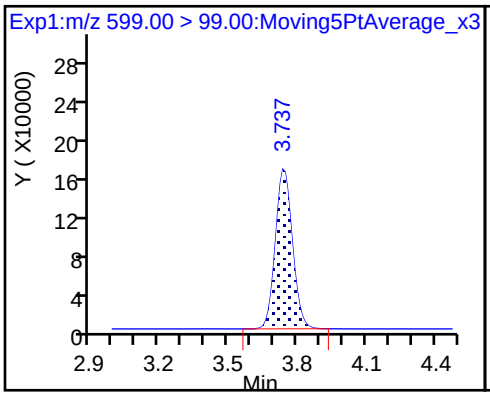
28 N-methyl perfluorooctane sulfonami



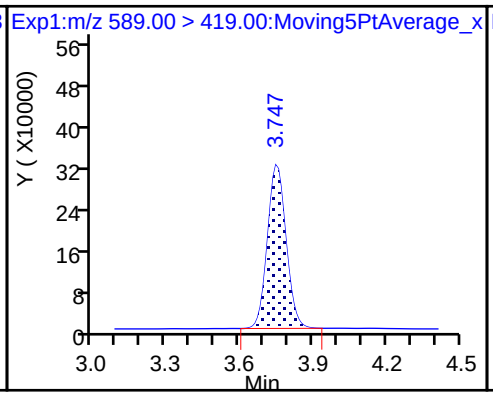
29 Perfluorodecane Sulfonic acid



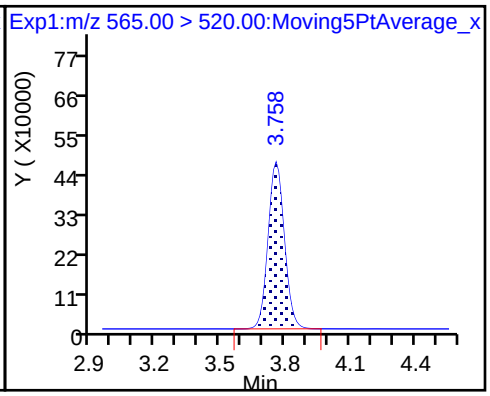
29 Perfluorodecane Sulfonic acid



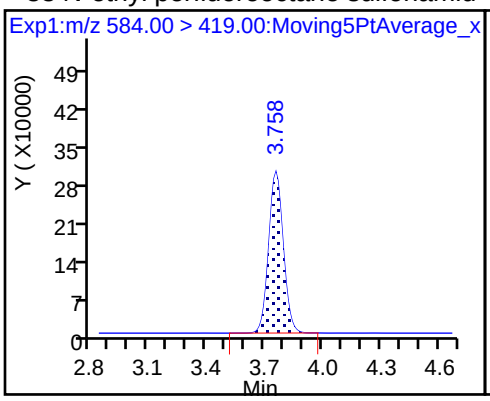
D 32 d5-NEtFOSAA



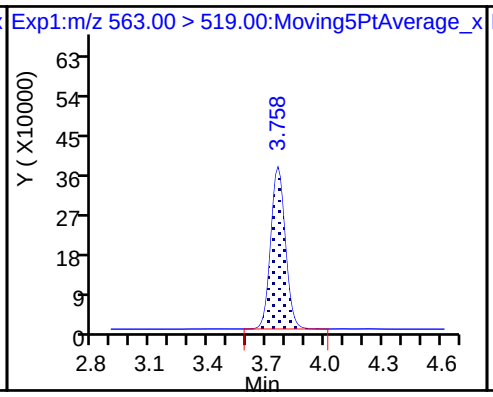
D 30 13C2 PFUnA



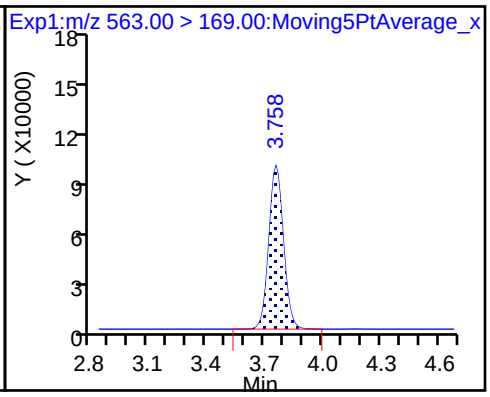
33 N-ethyl perfluorooctane sulfonamid



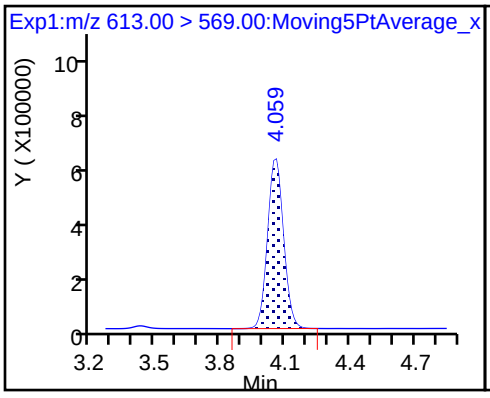
31 Perfluoroundecanoic acid



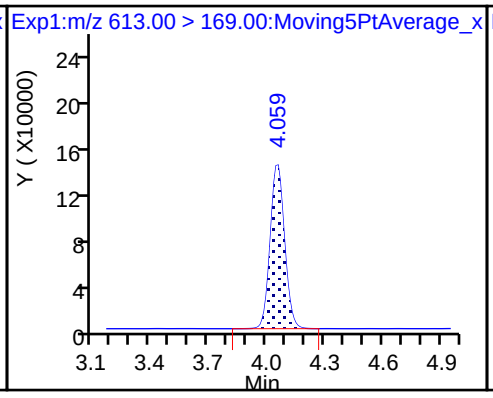
31 Perfluoroundecanoic acid



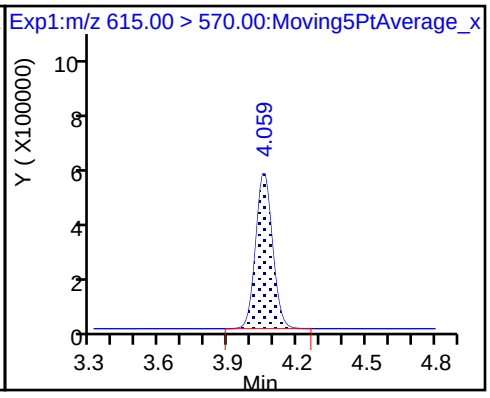
37 Perfluorododecanoic acid



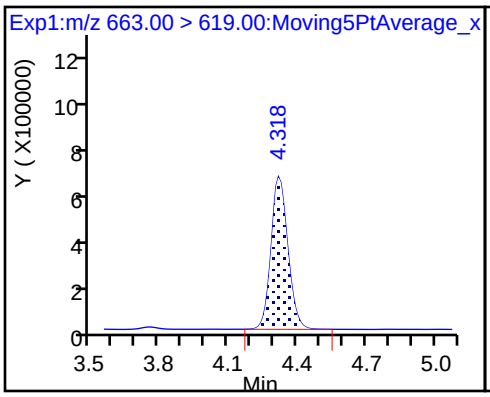
37 Perfluorododecanoic acid



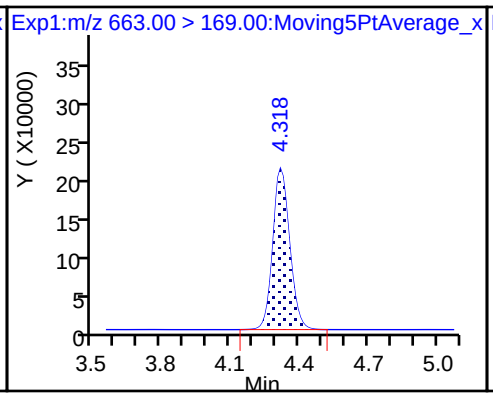
D 36 13C2 PFDoA



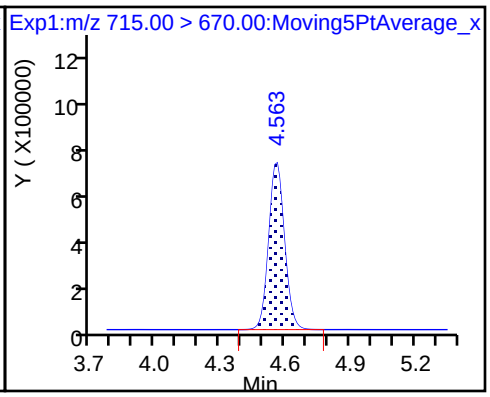
41 Perfluorotridecanoic acid



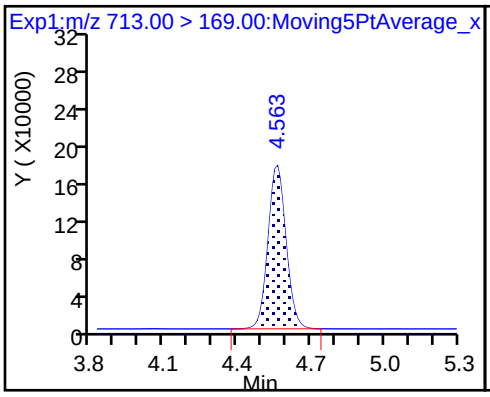
41 Perfluorotridecanoic acid



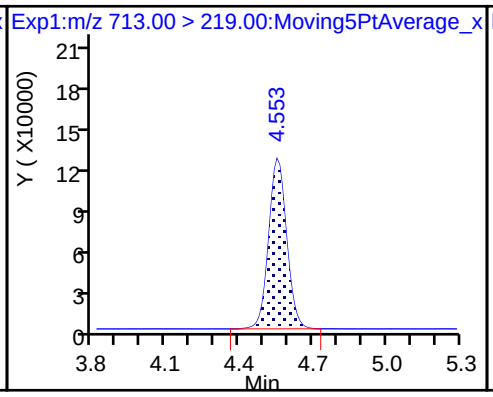
D 43 13C2-PFTeDA



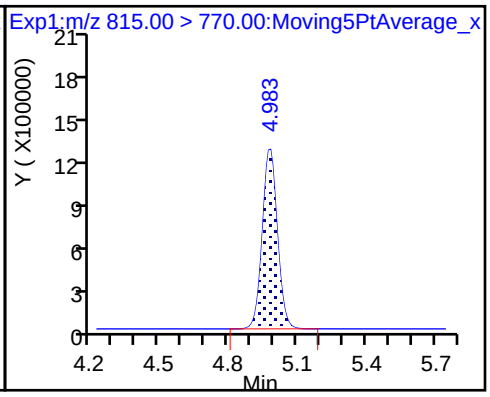
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_007.d
Lims ID: IC L6 Full
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 29-Mar-2018 18:06:29 ALS Bottle#: 15 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:48:21 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

First Level Reviewer: westendorfc Date: 30-Mar-2018 09:39:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.436	0.0	1.000	6363039	2.56		102	54816	
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.437	-0.001	1.000	12187200	5.18		104	6481	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.702	0.001	0.557	3961451	2.45		98.0	97309	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.706	-0.003	1.000	9830479	5.18		104	4891	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.738	0.001	1.000	87650	2.37		102	504	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.739	1.742	-0.003	1.000	13230767	4.45		101	8592	
298.90 > 99.00	1.739	1.742	-0.003	1.000	5640052		2.35(1.25-3.74)	101	8383	
D 60 M2-4:2FTS										
329.00 > 81.00	1.950	1.955	-0.005	1.000	663538	NC			9348	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.950	1.955	-0.005	1.000	3033560	4.66		99.9	184398	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.991	0.003	1.000	4716939	2.65		106	121152	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.992	0.001	1.000	9564151	4.95		99.1	15110	
313.00 > 119.00	1.993	1.992	0.001	1.000	872950		10.96(5.03-15.10)	99.1	8742	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.013	0.003	1.000	13067667	4.87		104	259659	
349.00 > 99.00	2.016	2.013	0.003	1.000	4761447		2.74(1.36-4.07)	104	77322	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.092	0.003	1.000	1481837	NC			13884	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.092	0.003	1.000	218882	NC			3534	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.326	-0.005	1.000	4500718	2.63		105	126673	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.327	-0.006	1.000	9347366	4.78		95.6	9088	
363.00 > 169.00	2.321	2.327	-0.006	1.000	3572887		2.62(1.13-3.40)	95.6	9323	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.339	-0.005	1.000	10543701	4.34		95.4	35174	
399.00 > 99.00	2.334	2.339	-0.005	1.000	3551342		2.97(1.50-4.49)	95.4	18598	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.340	-0.006	1.000	5143358	2.41		102	86865	
65 Adona										
377.00 > 251.00	2.372	2.372	0.0	1.000	25789461	NC			221483	
377.00 > 85.00	2.372	2.372	0.0	1.000	15807587		1.63(0.84-2.53)		105371	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.660	2.664	-0.004	1.000	3287357	4.56		96.3	17017	
D 12 M2-6:2FTS										
429.00 > 81.00	2.660	2.664	-0.004	1.000	916140	2.31		97.4	21243	
D 14 13C4 PFOA										
417.00 > 372.00	2.682	2.688	-0.006	1.000	4062703	2.41		96.5	84227	
* 62 13C2-PFOA										
415.00 > 370.00	2.690	2.689	0.001		4493229	2.50			64333	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.690	2.690	0.0	1.003	9813194	5.09		102	3288	
413.00 > 169.00	2.682	2.690	-0.008	1.000	5156114		1.90(0.84-2.52)	102	16091	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.690	2.695	-0.005	1.000	9738630	5.00		105	86778	
449.00 > 99.00	2.690	2.695	-0.005	1.000	2682283		3.63(1.94-5.82)	105	39216	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.056	3.060	-0.004	1.000	8034226	4.81		104	16486	
499.00 > 99.00	3.056	3.060	-0.004	1.000	1733798		4.63(2.31-6.93)	104	13930	
D 18 13C4 PFOS										
503.00 > 80.00	3.056	3.060	-0.004	1.000	3490802	2.35		98.4	31167	
D 19 13C5 PFNA										
468.00 > 423.00	3.056	3.061	-0.005	1.000	3572058	2.51		100	77842	
20 Perfluorononanoic acid										
463.00 > 419.00	3.063	3.064	-0.001	1.002	7571474	5.15		103	11315	
463.00 > 169.00	3.056	3.064	-0.008	1.000	1902565		3.98(1.90-5.69)	103	44805	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.270	3.272	-0.002	1.000	13425151	NC			107518	
D 21 13C8 FOSA										
506.00 > 78.00	3.385	3.388	-0.003	1.000	5241388	2.50		100	61882	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.385	3.389	-0.004	1.000	10438342	5.04		101	59624	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.403	3.409	-0.006	1.000	5885424	5.03		105	77768	
549.00 > 99.00	3.403	3.409	-0.006	1.000	2251448		2.61(1.33-3.97)	105	39310	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.413	3.413	0.0	1.000	1118796	2.43		101	38584	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.413	3.415	-0.002	1.000	2997433	4.76		99.3	31180	
D 23 13C2 PFDA										
515.00 > 470.00	3.422	3.423	-0.001	1.000	3100672	2.58		103	50163	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.422	3.427	-0.005	1.000	6258242	5.10		102	35393	
513.00 > 169.00	3.422	3.427	-0.005	1.000	1123617		5.57(2.36-7.09)	102	33516	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.578	-0.007	1.000	1583848	2.46		98.4	51851	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.582	3.581	0.001	1.003	3541055	5.30		106	21924	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.736	3.738	-0.002	1.000	5212375	5.14		107	67650	
599.00 > 99.00	3.736	3.738	-0.002	1.000	1752151		2.97(1.39-4.16)	107	42671	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.747	3.749	-0.002	1.000	1635848	2.42		96.8	4348	
D 30 13C2 PFUnA										
565.00 > 520.00	3.747	3.753	-0.006	1.000	2347134	2.39		95.5	41021	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.747	3.755	-0.008	1.000	3233549	5.39		108	38395	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.757	3.755	0.002	1.003	4020256	5.34		107	13507	
563.00 > 169.00	3.747	3.755	-0.008	1.000	1081558		3.72(2.12-6.36)	107	34506	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.905	3.910	-0.005	1.000	20815228	NC			177470	
D 36 13C2 PFDoA										
615.00 > 570.00	4.048	4.052	-0.004	1.000	2678243	2.45		97.9	19671	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.048	4.052	-0.004	1.000	5893687	5.09		102	4450	
613.00 > 169.00	4.048	4.052	-0.004	1.000	1477794		3.99(2.13-6.40)	102	17225	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.317	4.316	0.001	1.000	6588893	5.32		106	2657	
663.00 > 169.00	4.317	4.316	0.001	1.000	2142952		3.07(1.25-3.76)	106	32063	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.552	4.558	-0.006	1.000	1845416	5.27		105	23086	
713.00 > 219.00	4.552	4.558	-0.006	1.000	1280490		1.44(0.71-2.13)	105	17866	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.552	4.558	-0.006	1.000	3502295	2.52		101	21295	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.974	4.977	-0.003	1.000	5553497	2.59		104	14945	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.974	4.977	-0.003	1.000	10532699	NC			2265	
813.00 > 169.00	4.974	4.977	-0.003	1.000	1838779		5.73(2.86-8.58)		11748	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.342	5.344	-0.002	1.000	11463437	NC			1718	
913.00 > 169.00	5.342	5.344	-0.002	1.000	1443777		7.94(3.83-11.48)		8603	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL6_00005 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:48:27 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_007.d

Injection Date: 29-Mar-2018 18:06:29 Instrument ID: A8_N

Lims ID: IC L6 Full

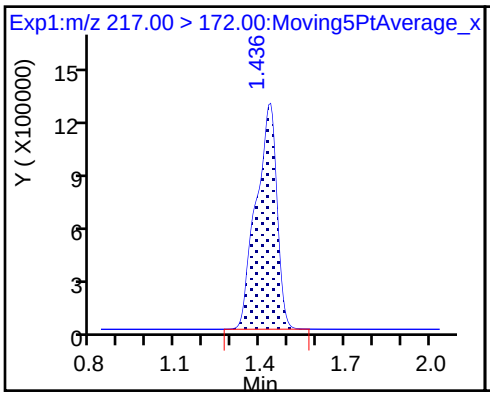
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 7

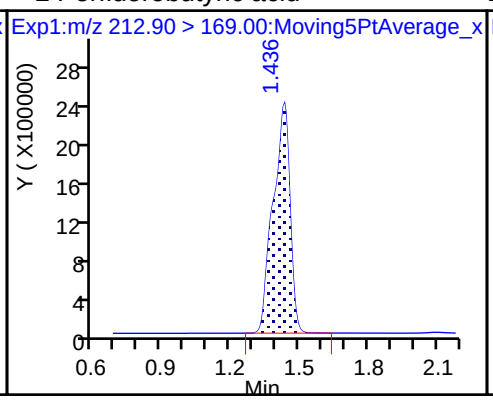
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

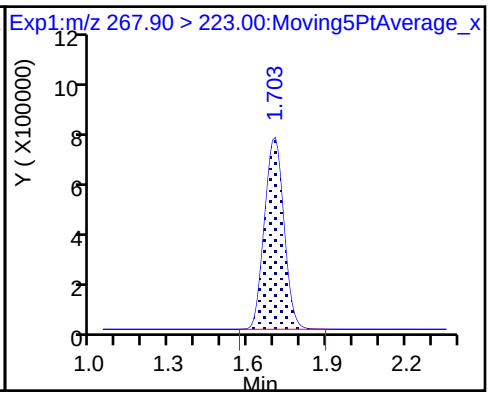
D 1 13C4 PFBA



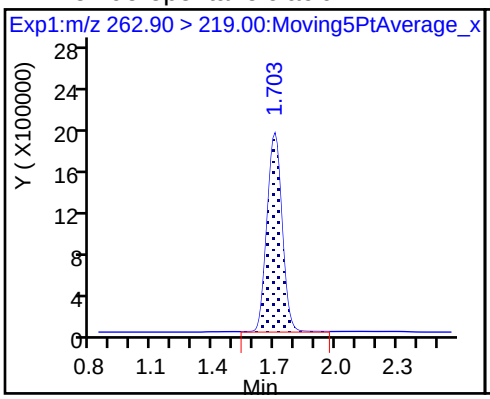
2 Perfluorobutyric acid



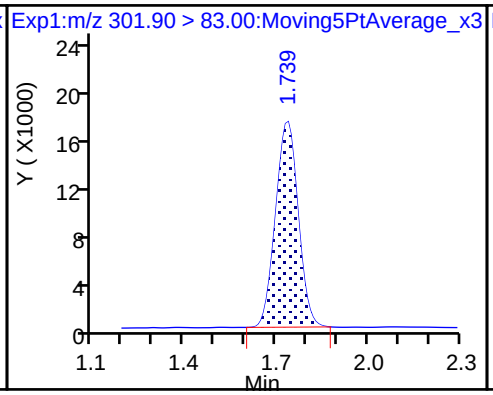
D 3 13C5-PFPeA



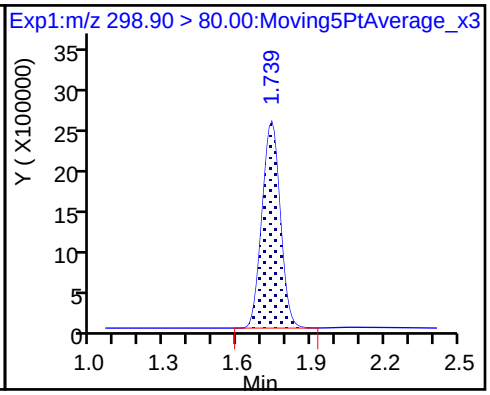
4 Perfluoropentanoic acid



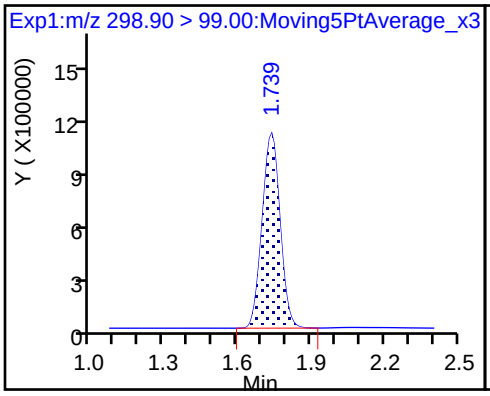
D 47 13C3-PFBS



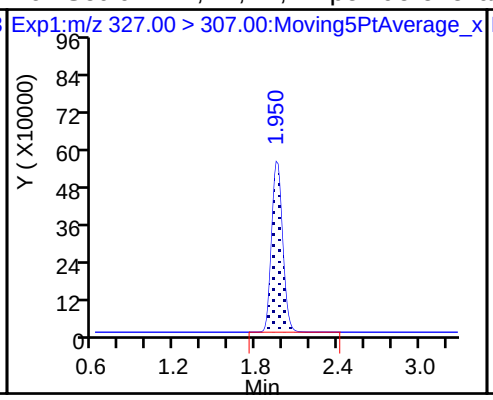
5 Perfluorobutanesulfonic acid



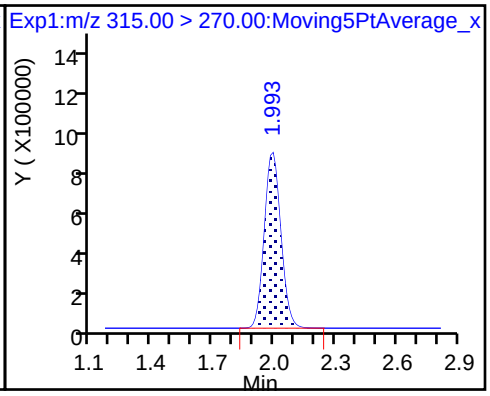
5 Perfluorobutanesulfonic acid



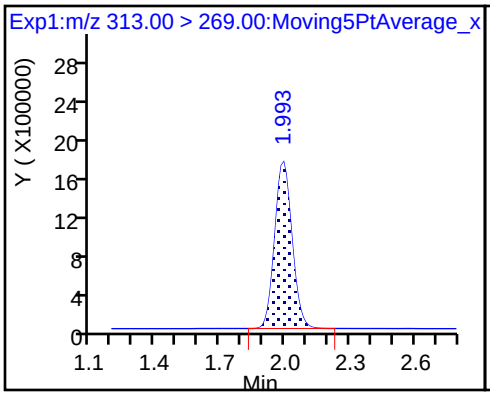
61 Sodium 1H,1H,2H,2H-perfluorohexa



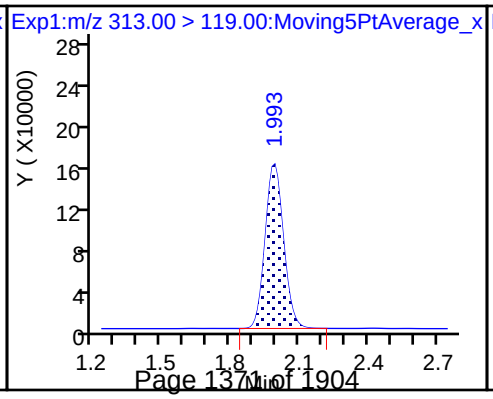
D 7 13C2 PFHxA



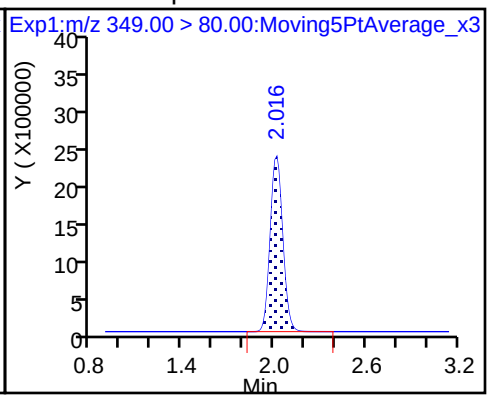
6 Perfluorohexanoic acid



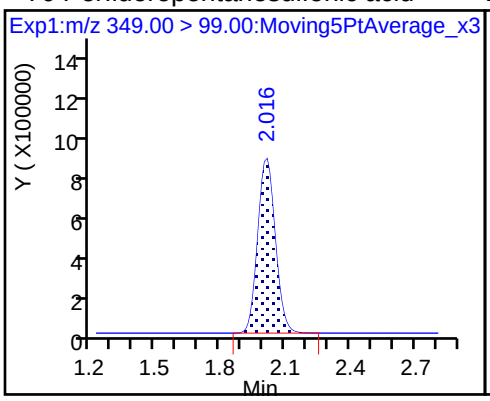
6 Perfluorohexanoic acid



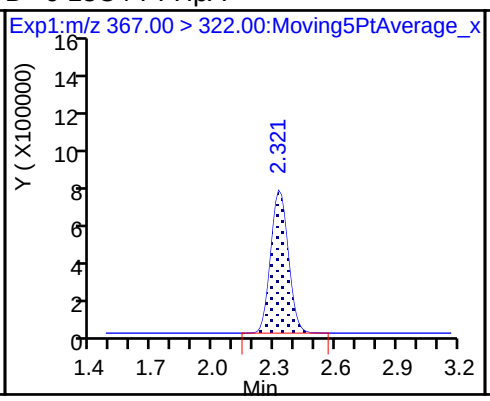
70 Perfluoropentanesulfonic acid



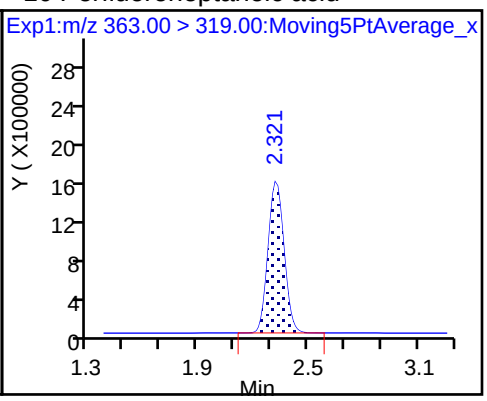
70 Perfluoropentanesulfonic acid



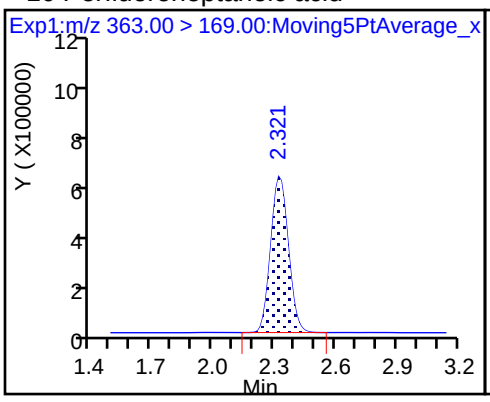
D 9 13C4-PFHpA



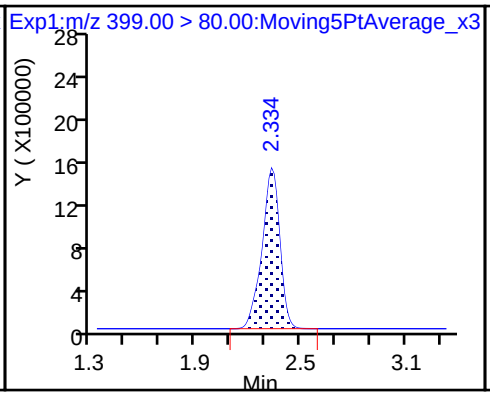
10 Perfluoroheptanoic acid



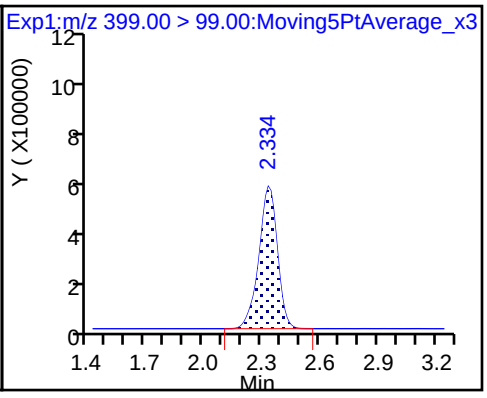
10 Perfluoroheptanoic acid



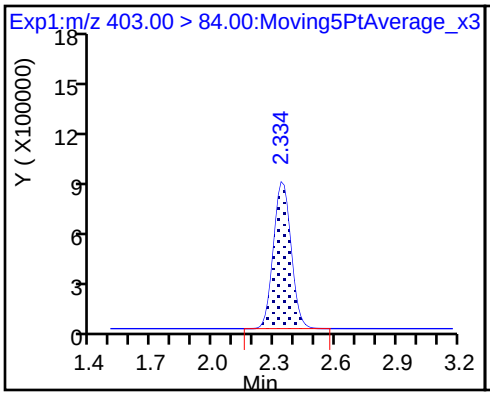
8 Perfluorohexanesulfonic acid



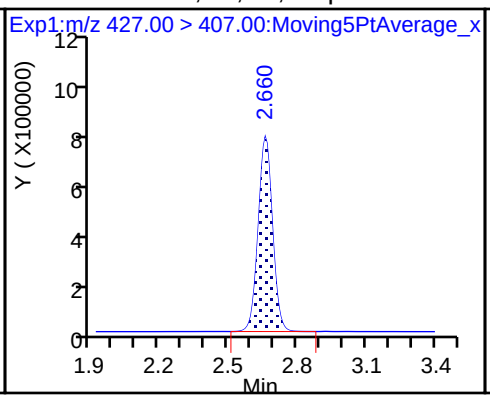
8 Perfluorohexanesulfonic acid



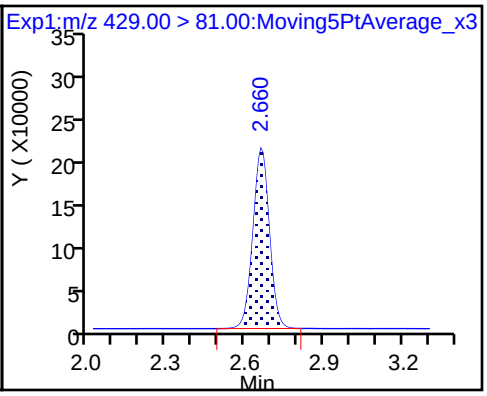
D 11 18O2 PFHxS



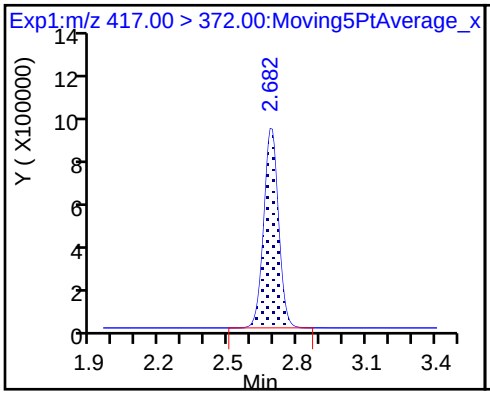
13 Sodium 1H,1H,2H,2H-perfluorooctane



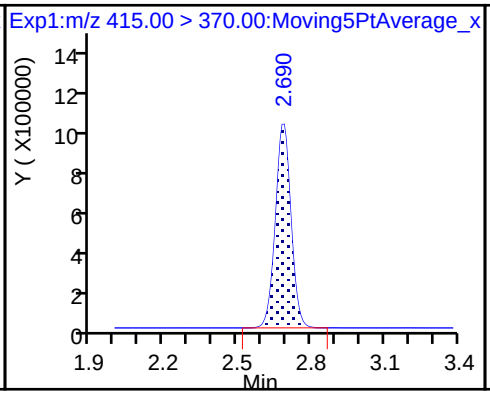
D 12 M2-6:2FTS



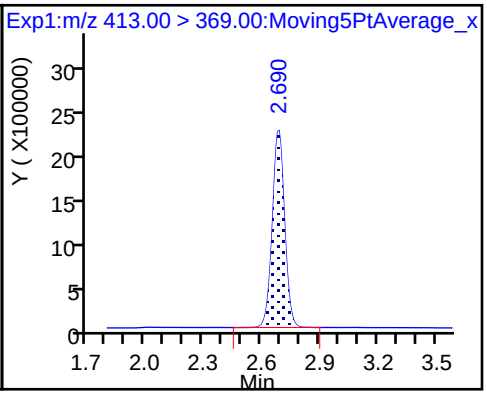
D 14 13C4 PFOA



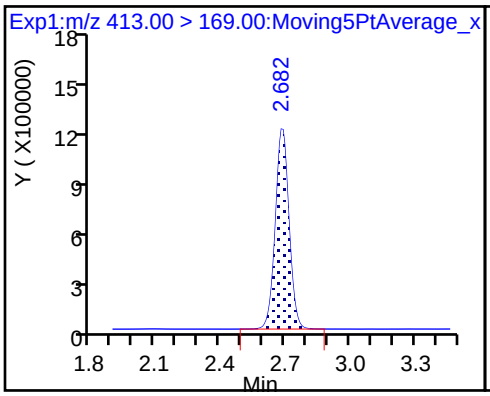
* 62 13C2-PFOA



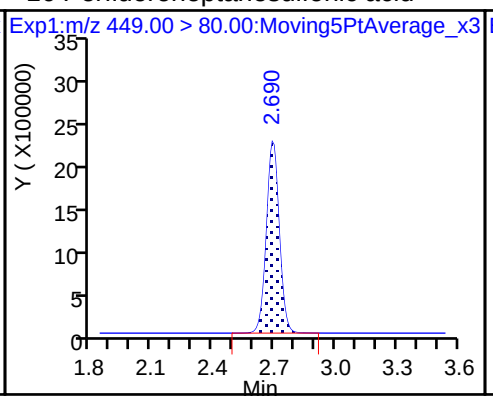
15 Perfluorooctanoic acid



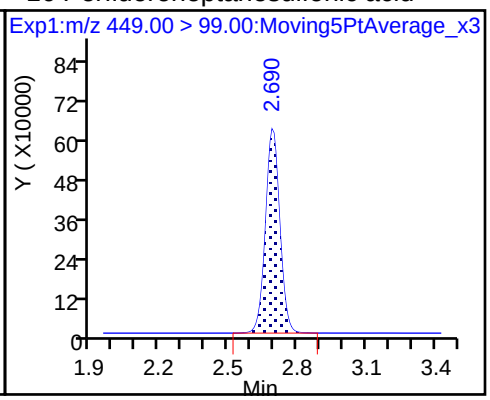
15 Perfluorooctanoic acid



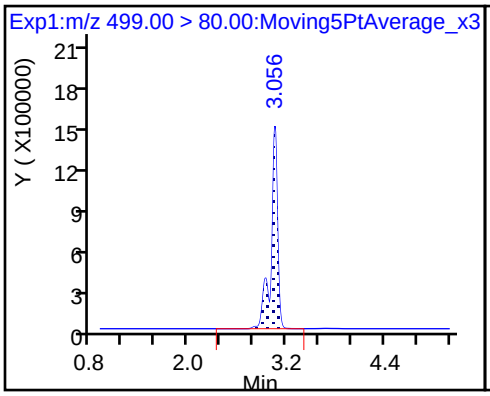
16 Perfluoroheptanesulfonic acid



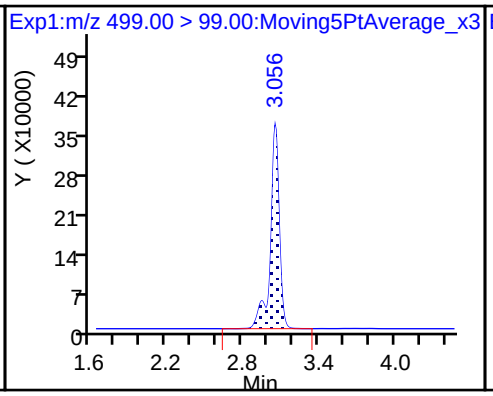
16 Perfluoroheptanesulfonic acid



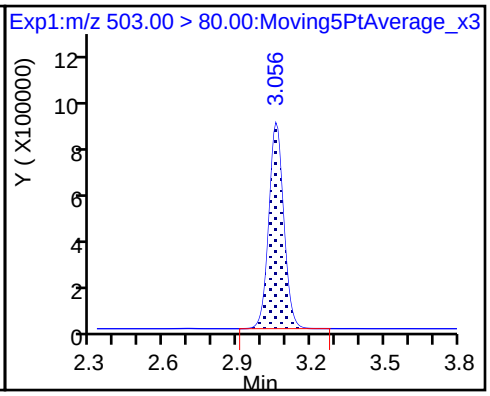
17 Perfluorooctane sulfonic acid



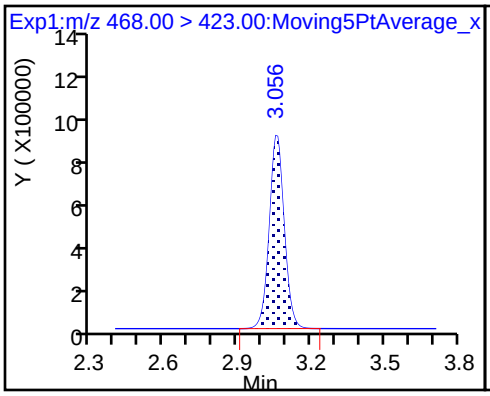
17 Perfluorooctane sulfonic acid



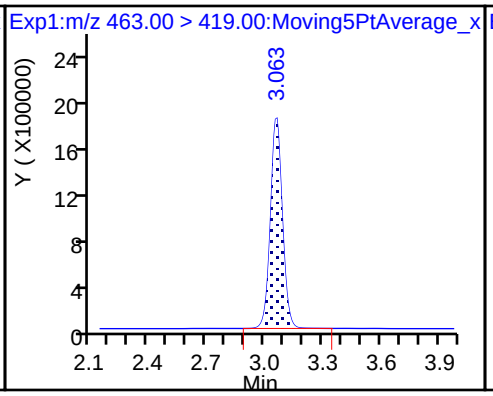
D 18 13C4 PFOS



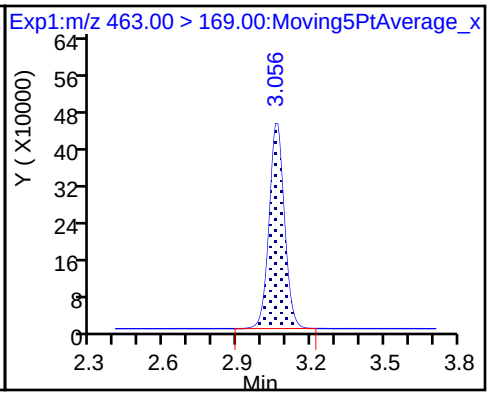
D 19 13C5 PFNA



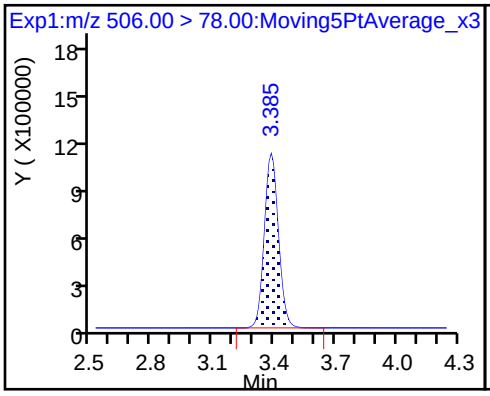
20 Perfluorononanoic acid



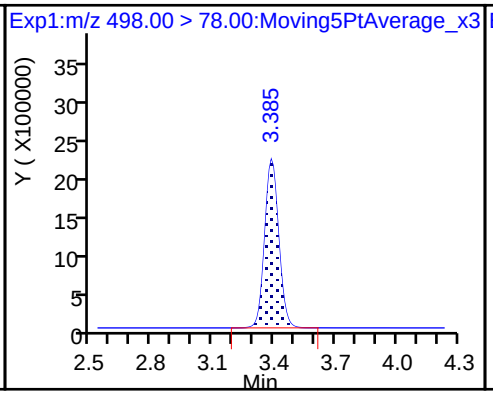
20 Perfluorononanoic acid



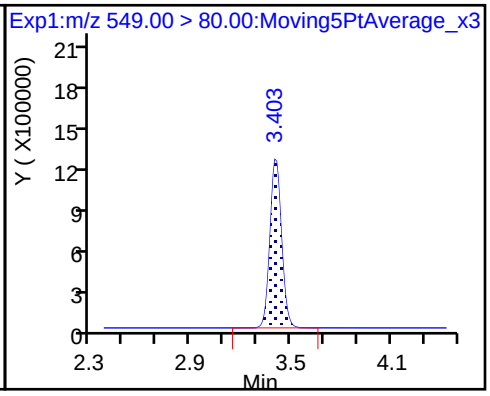
D 21 13C8 FOSA



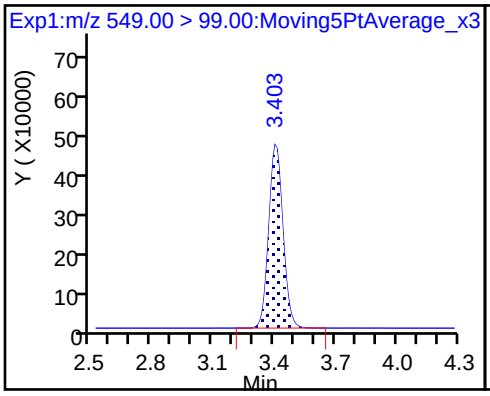
22 Perfluorooctane Sulfonamide



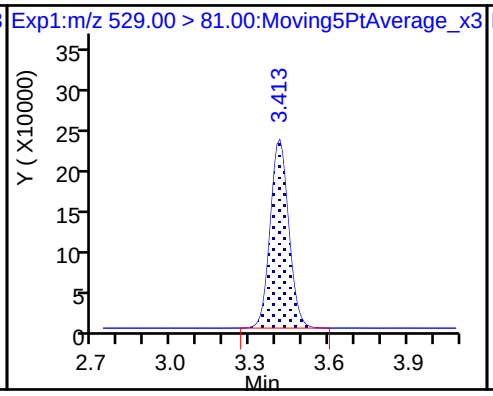
68 Perfluorononanesulfonic acid



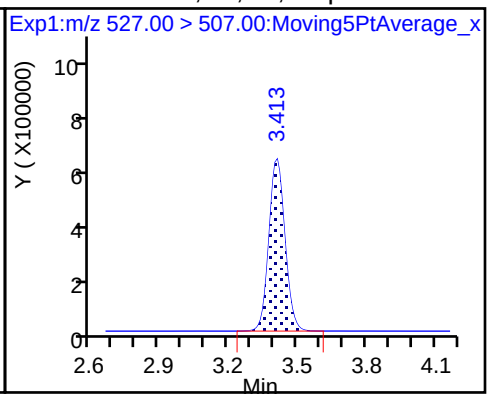
68 Perfluorononanesulfonic acid



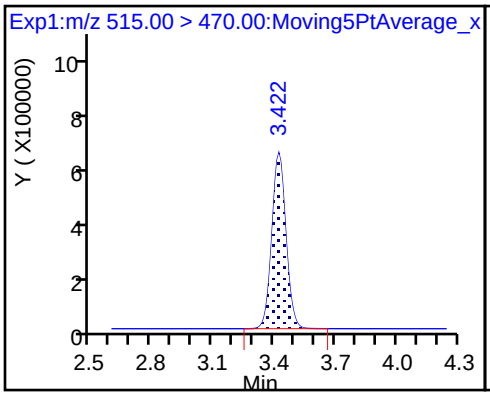
D 26 M2-8:2FTS



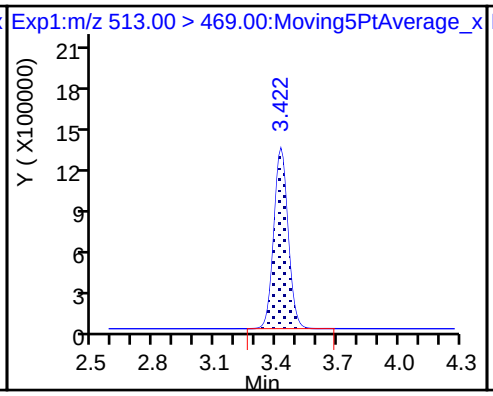
25 Sodium 1H,1H,2H,2H-perfluorodecane



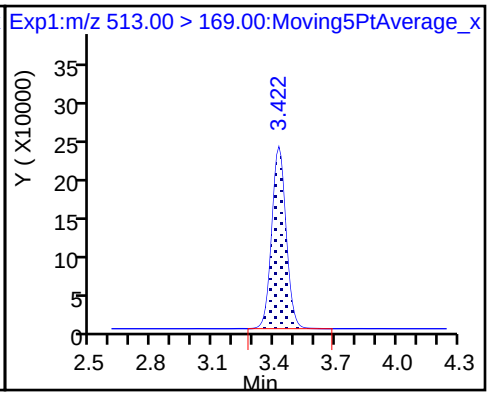
D 23 13C2 PFDA



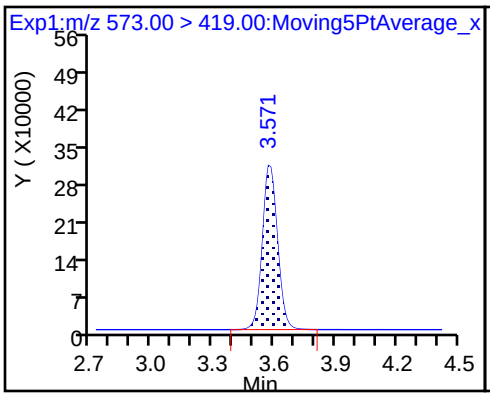
24 Perfluorodecanoic acid



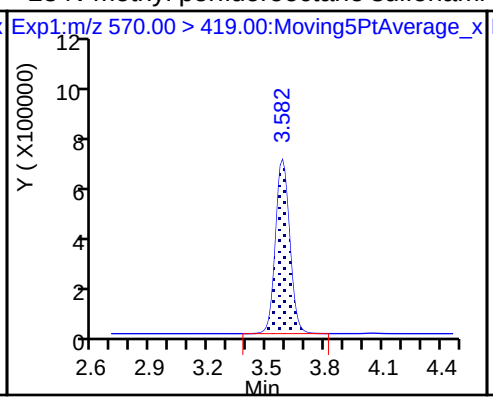
24 Perfluorodecanoic acid



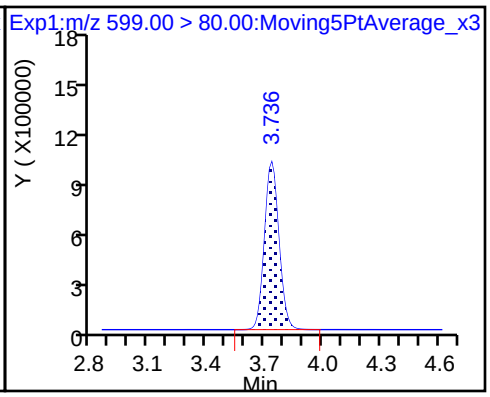
D 27 d3-NMeFOSAA



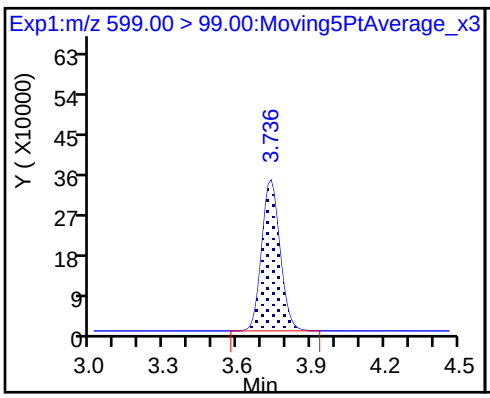
28 N-methyl perfluorooctane sulfonami



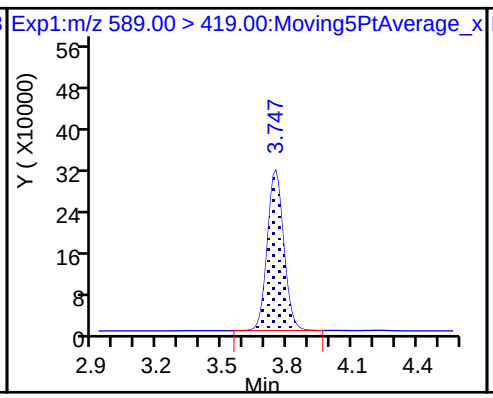
29 Perfluorodecane Sulfonic acid



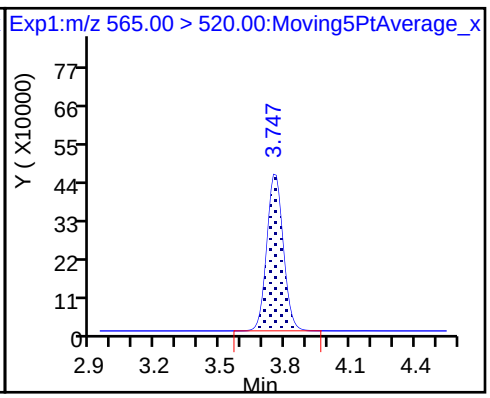
29 Perfluorodecane Sulfonic acid



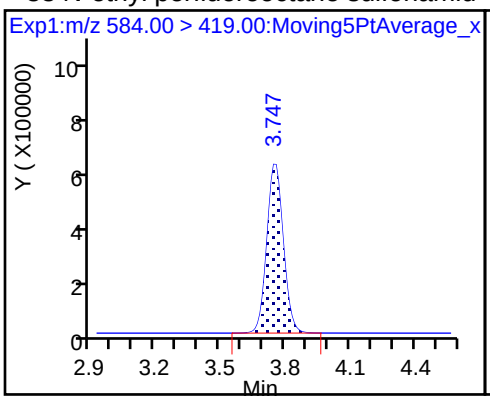
D 32 d5-NEtFOSAA



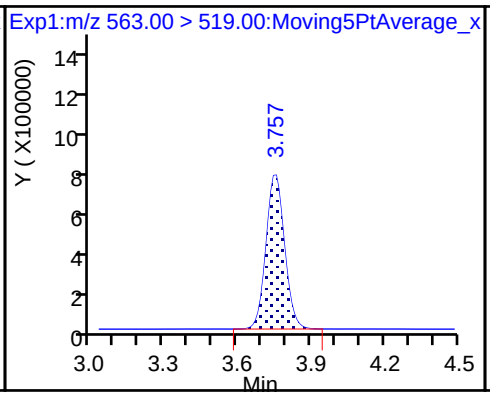
D 30 13C2 PFUnA



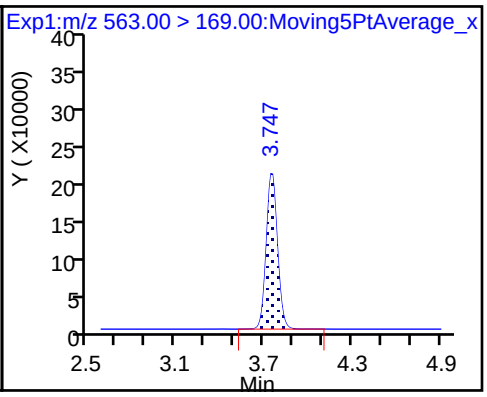
33 N-ethyl perfluorooctane sulfonamid



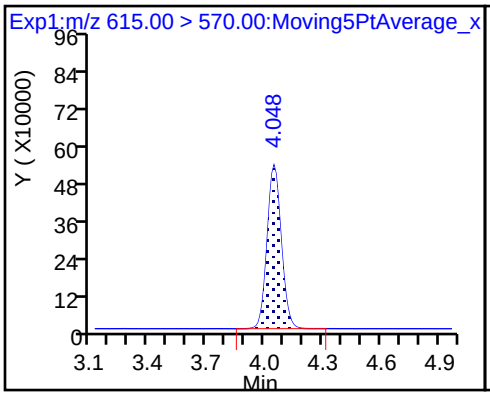
31 Perfluoroundecanoic acid



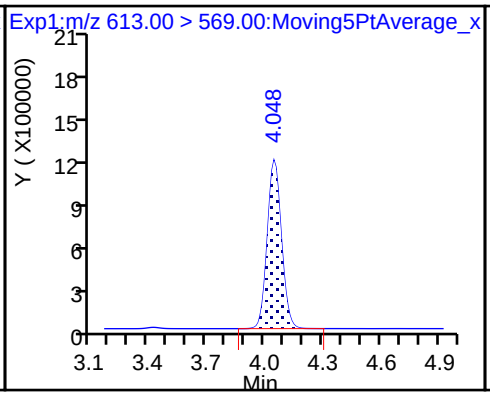
31 Perfluoroundecanoic acid



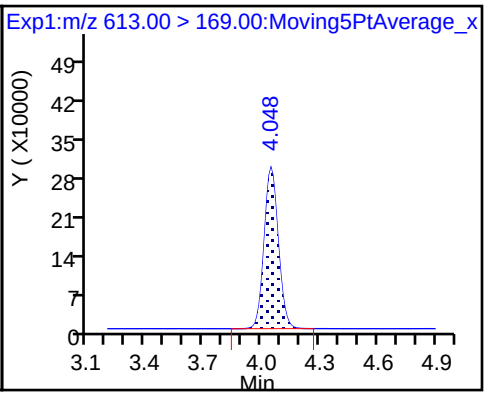
D 36 13C2 PFDoA



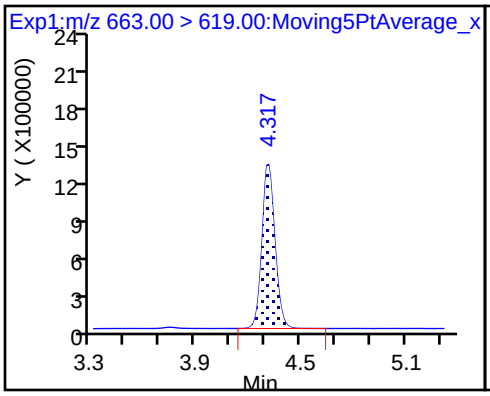
37 Perfluorododecanoic acid



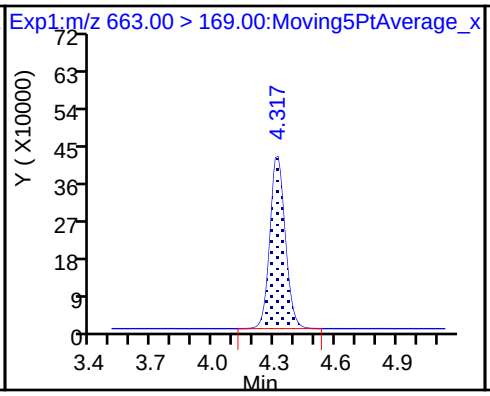
37 Perfluorododecanoic acid



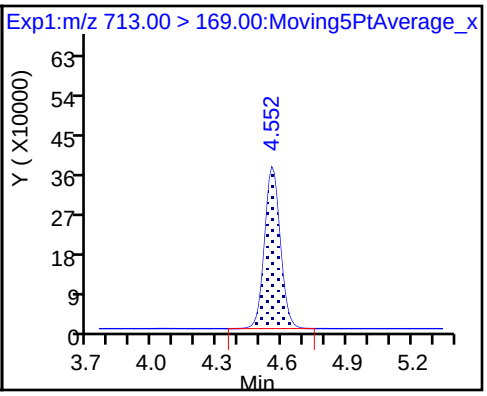
41 Perfluorotridecanoic acid



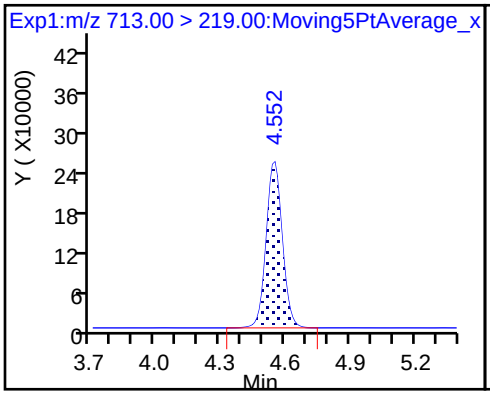
41 Perfluorotridecanoic acid



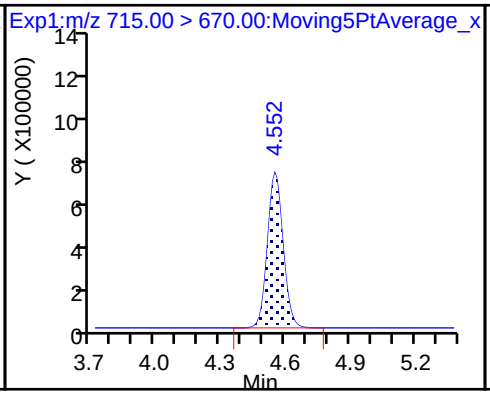
42 Perfluorotetradecanoic acid



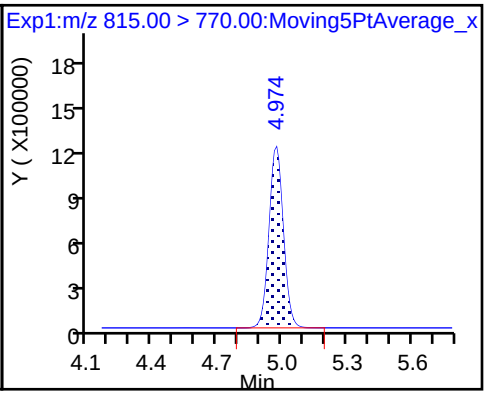
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d
Lims ID: IC L7 Full
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 29-Mar-2018 18:14:21 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L7-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:48:31 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

First Level Reviewer: westendorfc Date: 30-Mar-2018 09:48:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.436	-0.006	1.000	5735604	2.58		103	58531	
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.437	-0.001	1.004	21580046	10.2		102	11632	
D 3 13C5-PFPeA										
267.90 > 223.00	1.694	1.702	-0.008	0.554	3687266	2.55		102	78635	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.706	-0.003	1.005	17152403	9.72		97.2	7365	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.738	0.001	1.000	78326	2.37		102	501	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.739	1.742	-0.003	1.000	22689760	8.54		96.6	14590	
298.90 > 99.00	1.739	1.742	-0.003	1.000	9957917		2.28(1.25-3.74)	96.6	14342	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.950	1.955	-0.005	1.000	5058050	8.70		93.2	228018	
D 60 M2-4:2FTS										
329.00 > 81.00	1.950	1.955	-0.005	1.000	570582	NC			8489	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.991	-0.008	1.000	3845737	2.42		96.6	134352	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.992	0.001	1.006	16338328	10.4		104	22572	
313.00 > 119.00	1.982	1.992	-0.010	1.000	1517062		10.77(5.03-15.10)	104	17707	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.005	2.013	-0.008	1.000	21196987	8.84		94.2	244099	
349.00 > 99.00	2.005	2.013	-0.008	1.000	8492802		2.50(1.36-4.07)	94.2	186040	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.084	2.092	-0.008	1.000	207020	NC			2646	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.084	2.092	-0.008	1.000	2889144	NC			25368	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.326	-0.005	1.000	3833624	2.50		100	63922	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.327	-0.006	1.000	15839255	9.51		95.1	14396	
363.00 > 169.00	2.321	2.327	-0.006	1.000	6592946		2.40(1.13-3.40)	95.1	19234	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.339	-0.005	1.000	18176626	8.82		96.9	48609	
399.00 > 99.00	2.334	2.339	-0.005	1.000	6162005		2.95(1.50-4.49)	96.9	26079	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.340	-0.006	1.000	4362929	2.29		96.7	73318	
65 Adona										
377.00 > 251.00	2.372	2.372	0.0	1.000	40218776	NC			276919	
377.00 > 85.00	2.372	2.372	0.0	1.000	25804266		1.56(0.84-2.53)		154557	
D 12 M2-6:2FTS										
429.00 > 81.00	2.660	2.664	-0.004	1.000	800357	2.26		95.3	22425	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.660	2.664	-0.004	1.000	5791627	9.20		97.1	28921	
D 14 13C4 PFOA										
417.00 > 372.00	2.682	2.688	-0.006	1.000	3749304	2.49		99.7	60903	
* 62 13C2-PFOA										
415.00 > 370.00	2.682	2.689	-0.007		4014147	2.50			76434	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.682	2.690	-0.008	1.000	16926232	9.52		95.2	5748	
413.00 > 169.00	2.682	2.690	-0.008	1.000	8823163		1.92(0.84-2.52)	95.2	19945	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.690	2.695	-0.005	1.000	16813478	9.12		95.8	151715	
449.00 > 99.00	2.690	2.695	-0.005	1.000	4717497		3.56(1.94-5.82)	95.8	51657	
D 18 13C4 PFOS										
503.00 > 80.00	3.056	3.060	-0.004	1.000	3306882	2.49		104	18604	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.056	3.060	-0.004	1.000	14234234	9.00		97.0	26257	
499.00 > 99.00	3.056	3.060	-0.004	1.000	3253738		4.37(2.31-6.93)	97.0	29168	
D 19 13C5 PFNA										
468.00 > 423.00	3.056	3.061	-0.005	1.000	3201114	2.51		101	68857	
20 Perfluorononanoic acid										
463.00 > 419.00	3.056	3.064	-0.008	1.000	13303148	10.1		101	13860	
463.00 > 169.00	3.056	3.064	-0.008	1.000	3354345		3.97(1.90-5.69)	101	61290	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.270	3.272	-0.002	1.000	23393631	NC			229068	
D 21 13C8 FOSA										
506.00 > 78.00	3.385	3.388	-0.003	1.000	4756992	2.54		102	41758	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.385	3.389	-0.004	1.000	18498081	9.84		98.4	132507	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.403	3.409	-0.006	1.000	10261449	9.25		96.4	89713	
549.00 > 99.00	3.403	3.409	-0.006	1.000	3784203		2.71(1.33-3.97)	96.4	36264	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.413	3.413	0.0	1.000	932507	2.27		94.7	27454	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.413	3.415	-0.002	1.000	4947631	9.42		98.3	45864	
D 23 13C2 PFDA										
515.00 > 470.00	3.422	3.423	-0.001	1.000	2662530	2.48		99.0	34367	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.422	3.427	-0.005	1.000	10958309	10.4		104	51617	
513.00 > 169.00	3.422	3.427	-0.005	1.000	2047409		5.35(2.36-7.09)	104	70662	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.578	-0.007	1.000	1563764	2.72		109	31151	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.581	-0.010	1.000	6681300	10.1		101	34744	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.736	3.738	-0.002	1.000	8752766	9.12		94.6	88915	
599.00 > 99.00	3.736	3.738	-0.002	1.000	3105143		2.82(1.39-4.16)	94.6	75140	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.747	3.749	-0.002	1.000	1483924	2.46		98.3	3885	
D 30 13C2 PFUnA										
565.00 > 520.00	3.747	3.753	-0.006	1.000	2255059	2.57		103	43512	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.747	3.755	-0.008	1.000	5395434	9.91		99.1	67492	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.747	3.755	-0.008	1.000	7311434	10.1		101	27118	
563.00 > 169.00	3.747	3.755	-0.008	1.000	1915144		3.82(2.12-6.36)	101	40854	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.905	3.910	-0.005	1.000	33023539	NC			221031	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.048	4.052	-0.004	1.000	10879941	10.0		99.9	7960	
613.00 > 169.00	4.048	4.052	-0.004	1.000	2711112		4.01(2.13-6.40)	99.9	35603	
D 36 13C2 PFDoA										
615.00 > 570.00	4.048	4.052	-0.004	1.000	2518124	2.58		103	17246	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.306	4.316	-0.010	1.000	12483957	10.7		107	5334	
663.00 > 169.00	4.306	4.316	-0.010	1.000	3993723		3.13(1.25-3.76)	107	49346	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.552	4.558	-0.006	1.000	3237082	2.61		104	15279	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.552	4.558	-0.006	1.000	3274341	10.1		101	29447	
713.00 > 219.00	4.542	4.558	-0.016	0.998	2448380		1.34(0.71-2.13)	101	26681	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.974	4.977	-0.003	1.000	19206042	NC			3791	
813.00 > 169.00	4.974	4.977	-0.003	1.000	3117440		6.16(2.86-8.58)		14123	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.974	4.977	-0.003	1.000	4864202	2.54		101	13665	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.335	5.344	-0.009	1.000	18744405	NC			2469	
913.00 > 169.00	5.335	5.344	-0.009	1.000	2456528		7.63(3.83-11.48)		10562	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL7_00004 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:48:37 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Injection Date: 29-Mar-2018 18:14:21 Instrument ID: A8_N

Lims ID: IC L7 Full

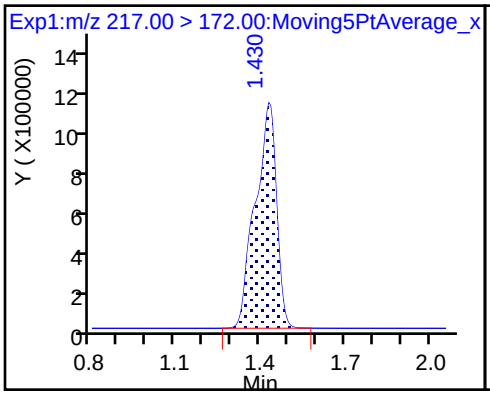
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8

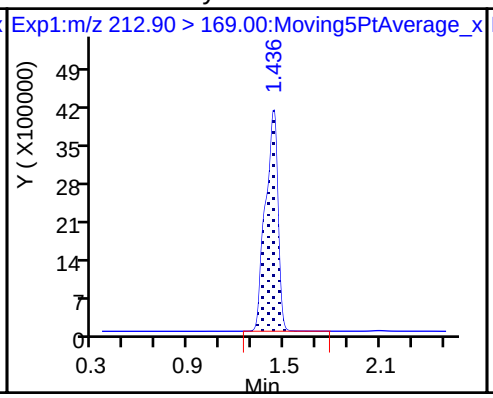
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

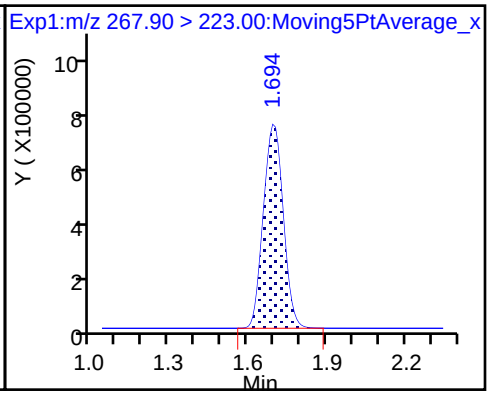
D 1 13C4 PFBA



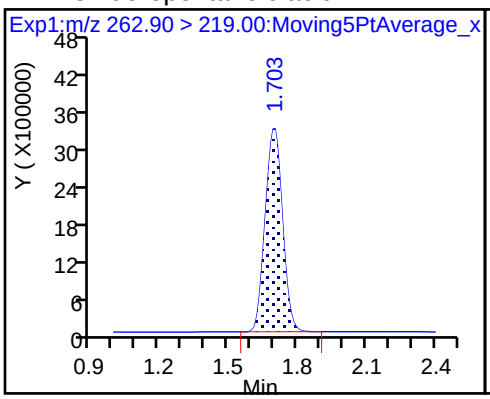
2 Perfluorobutyric acid



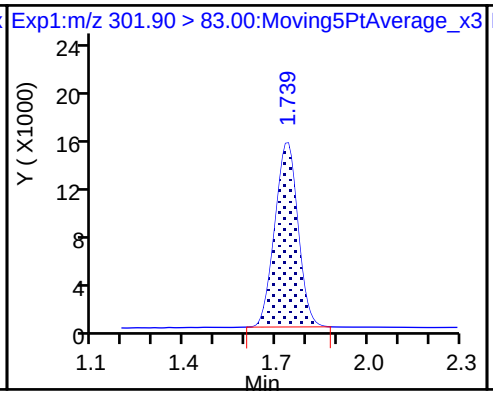
D 3 13C5-PFPeA



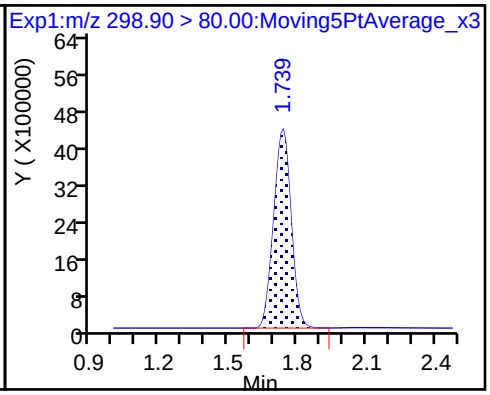
4 Perfluoropentanoic acid



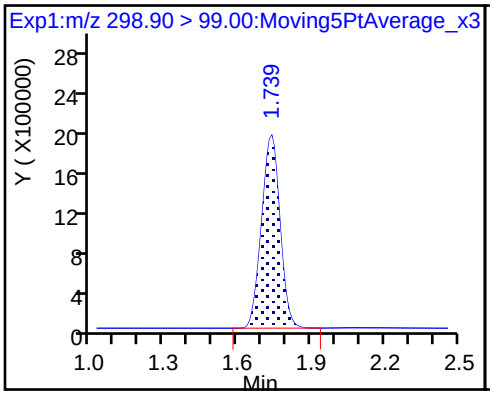
D 47 13C3-PFBS



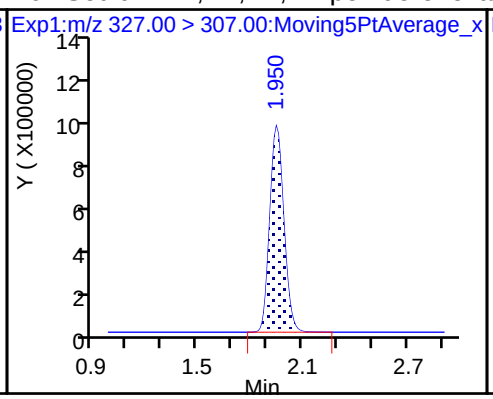
5 Perfluorobutanesulfonic acid



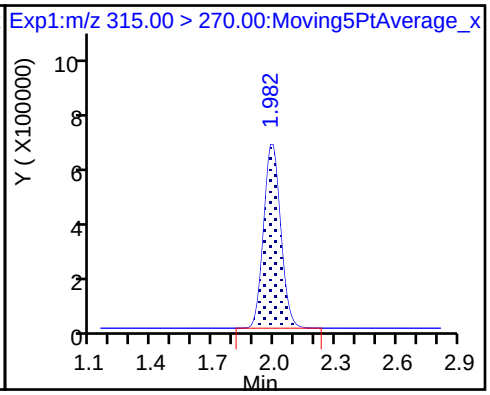
5 Perfluorobutanesulfonic acid



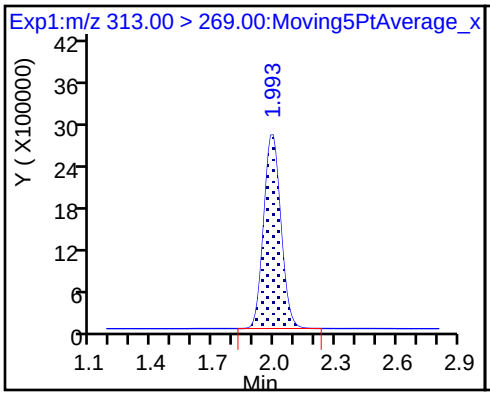
61 Sodium 1H,1H,2H,2H-perfluorohexa



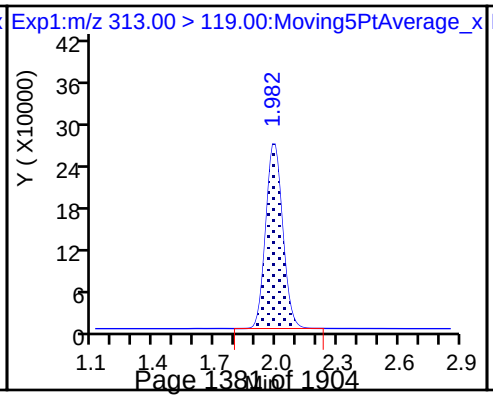
De 7 13C2 PFHxA



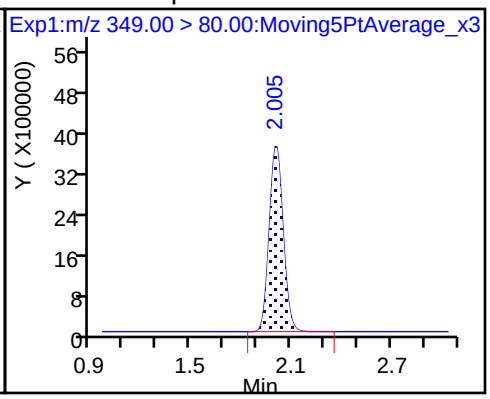
6 Perfluorohexanoic acid



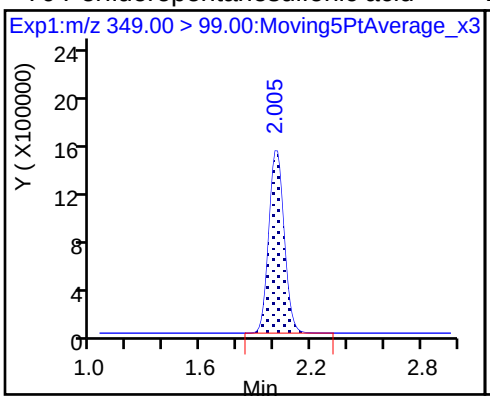
6 Perfluorohexanoic acid



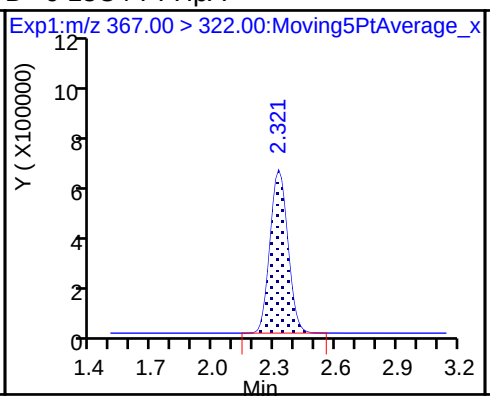
70 Perfluoropentanesulfonic acid



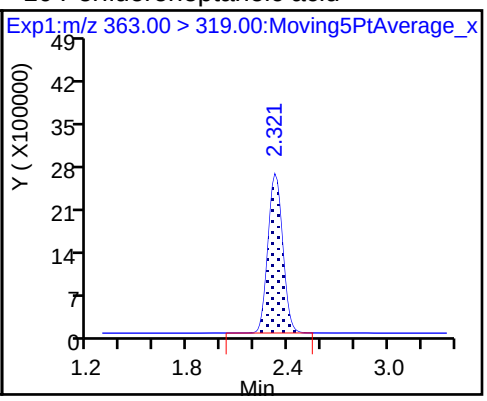
70 Perfluoropentanesulfonic acid



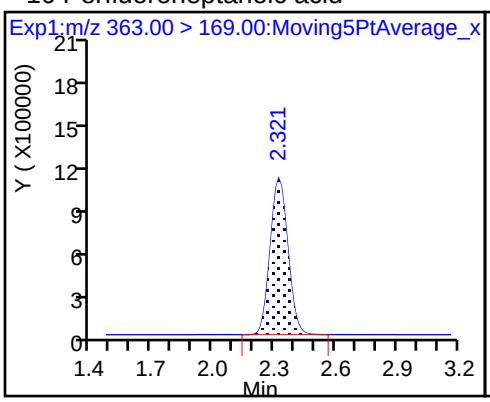
D 9 13C4-PFHpA



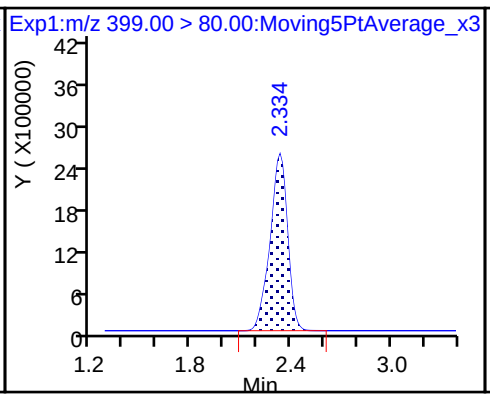
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid



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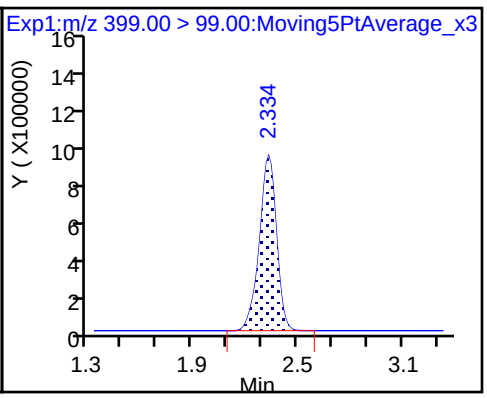
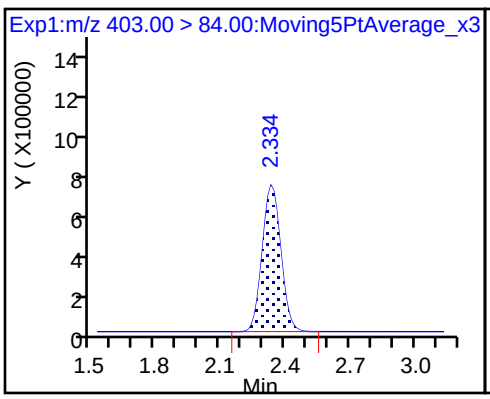
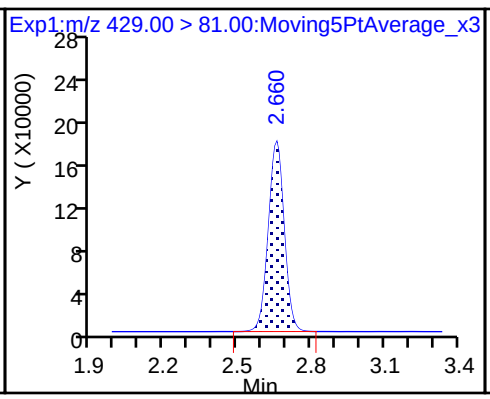


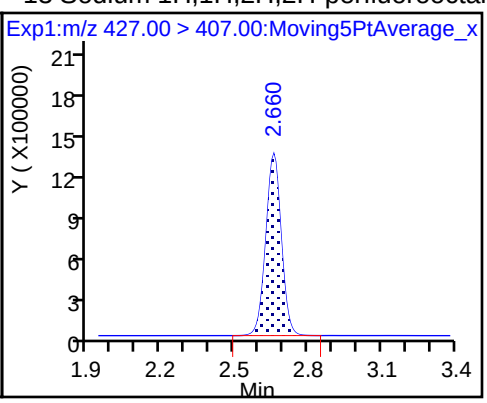
D 11 18O2 PFHxS



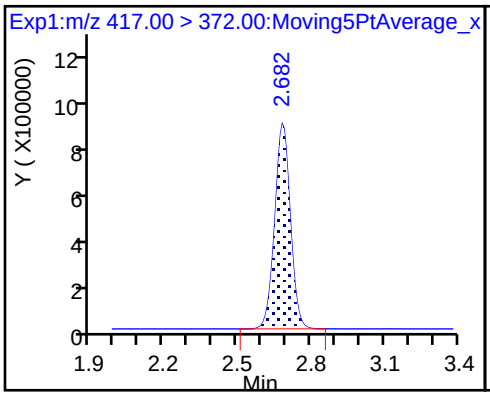
D 12 M2-6:2FTS



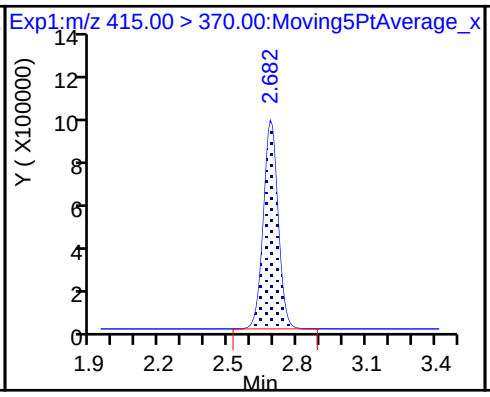
13 Sodium 1H,1H,2H,2H-perfluorooctane



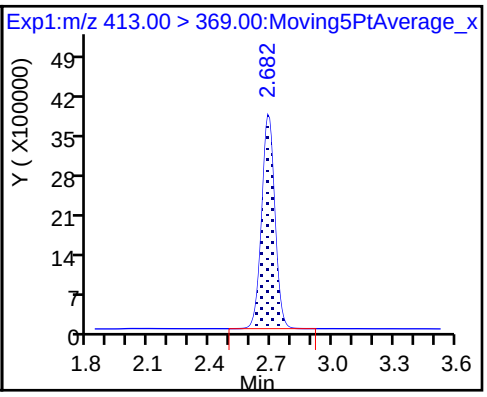
D 14 13C4 PFOA



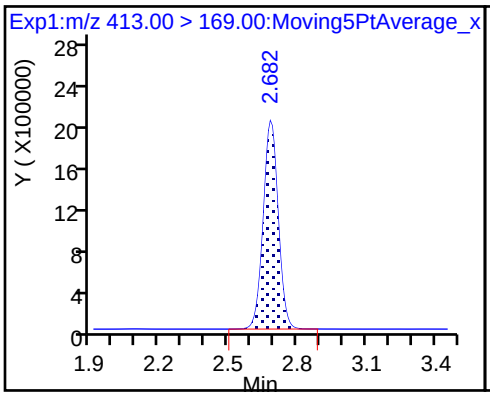
* 62 13C2-PFOA



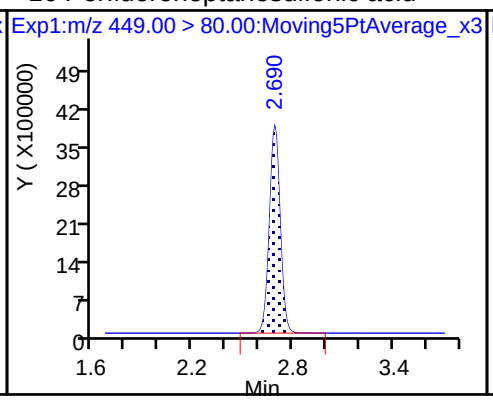
15 Perfluorooctanoic acid



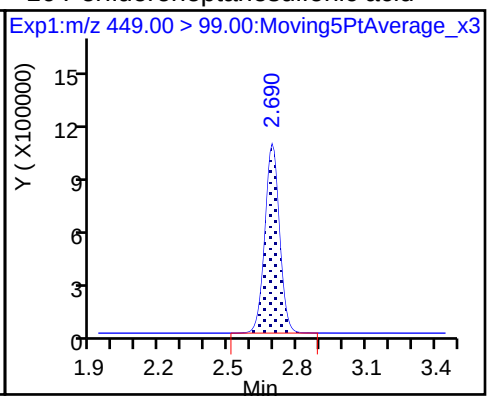
15 Perfluorooctanoic acid



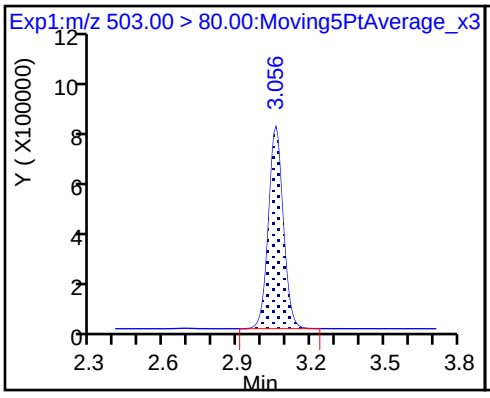
16 Perfluoroheptanesulfonic acid



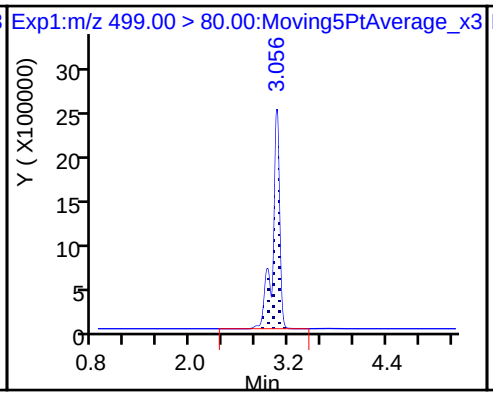
16 Perfluoroheptanesulfonic acid



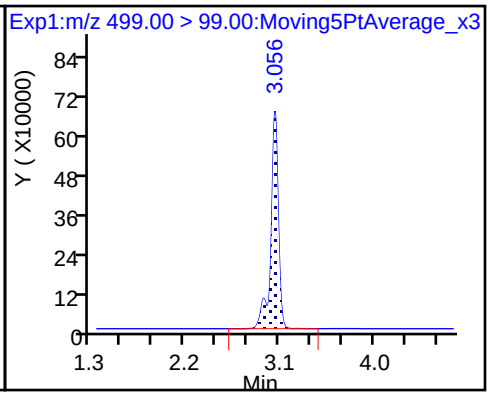
D 18 13C4 PFOS



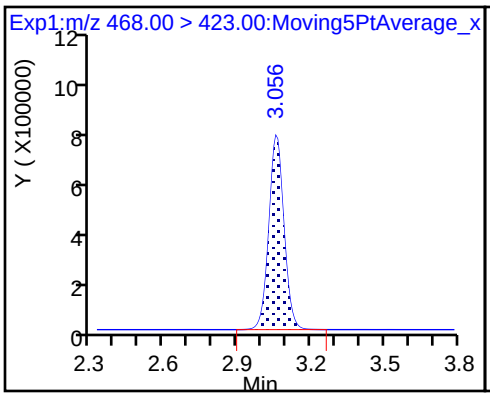
17 Perfluorooctane sulfonic acid



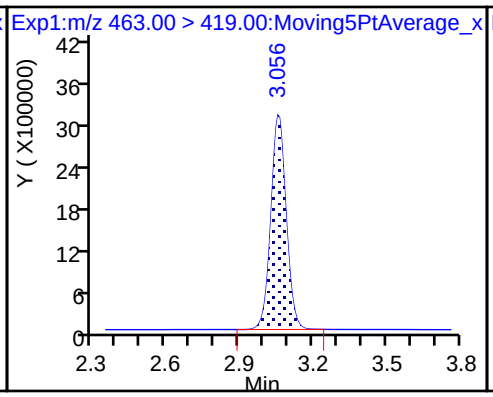
17 Perfluorooctane sulfonic acid



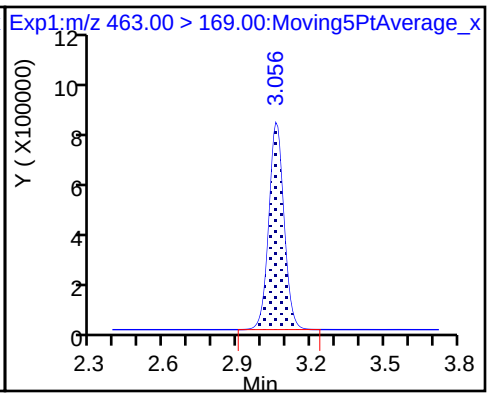
D 19 13C5 PFNA



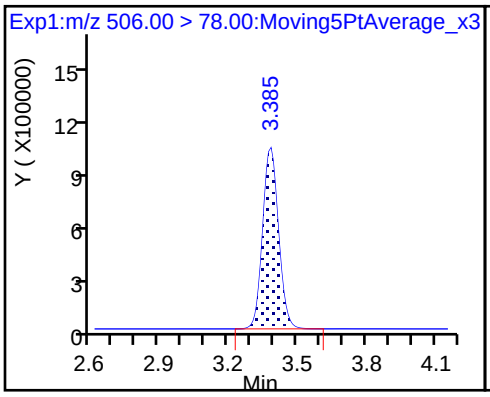
20 Perfluorononanoic acid



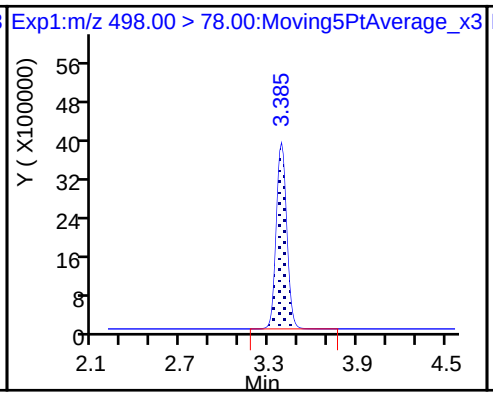
20 Perfluorononanoic acid



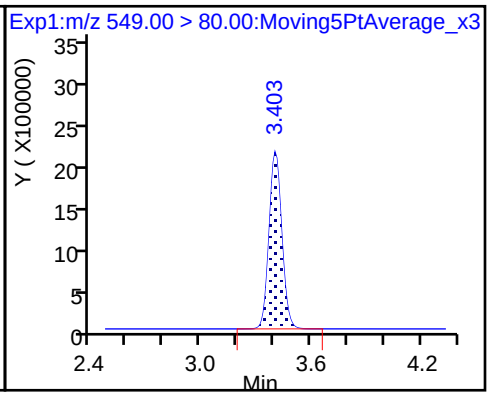
D 21 13C8 FOSA



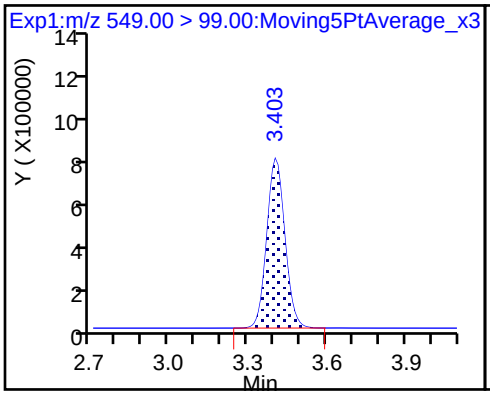
22 Perfluorooctane Sulfonamide



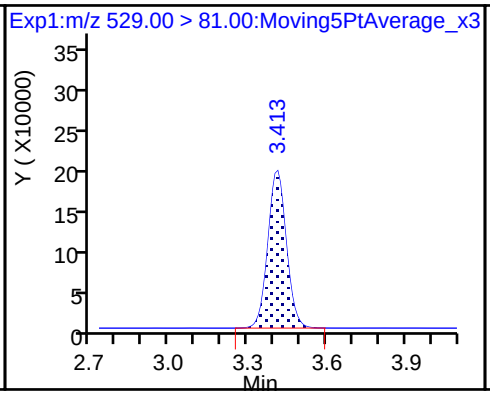
68 Perfluorononanesulfonic acid



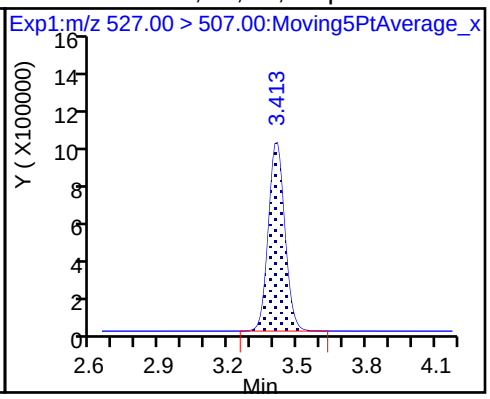
68 Perfluorononanesulfonic acid



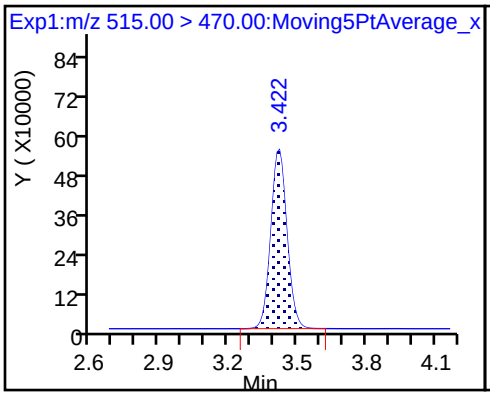
D 26 M2-8:2FTS



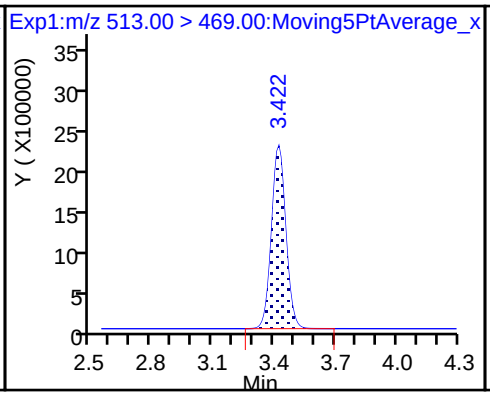
25 Sodium 1H,1H,2H,2H-perfluorodecane



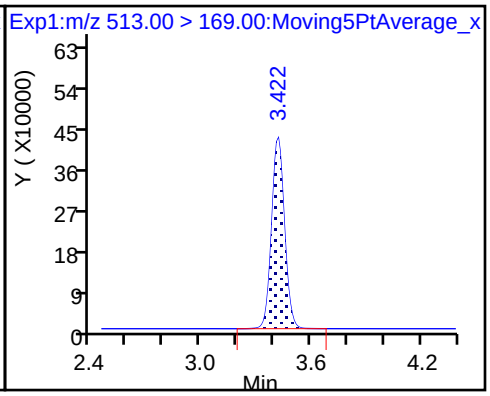
D 23 13C2 PFDA



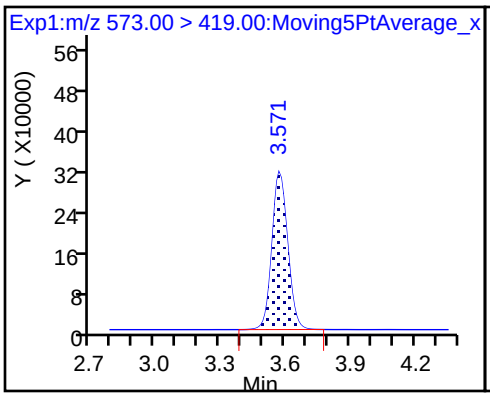
24 Perfluorodecanoic acid



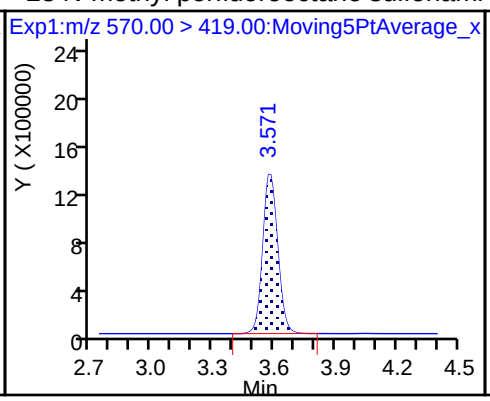
24 Perfluorodecanoic acid



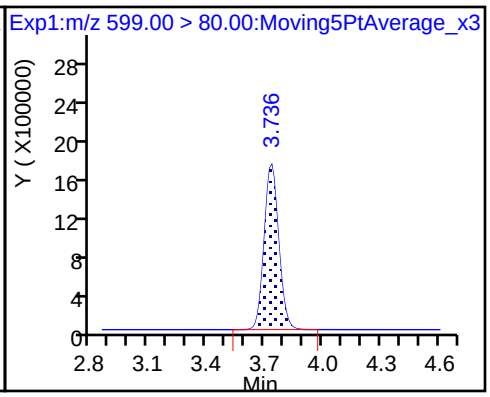
D 27 d3-NMeFOSAA



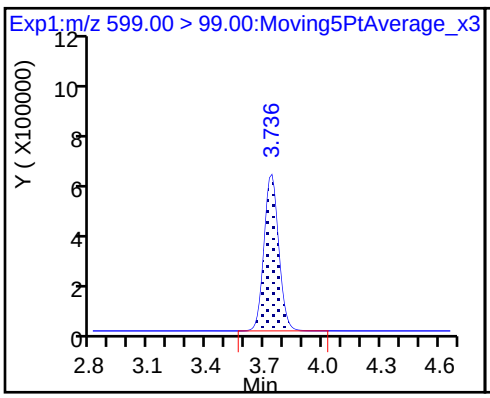
28 N-methyl perfluorooctane sulfonami



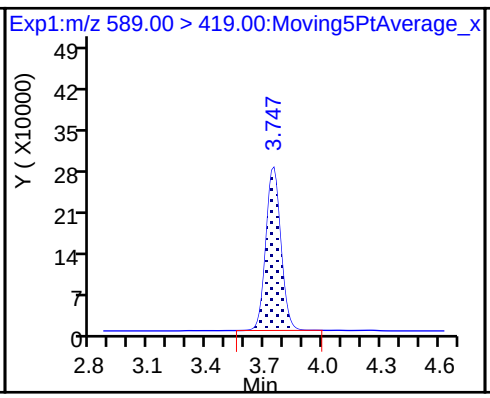
29 Perfluorodecane Sulfonic acid



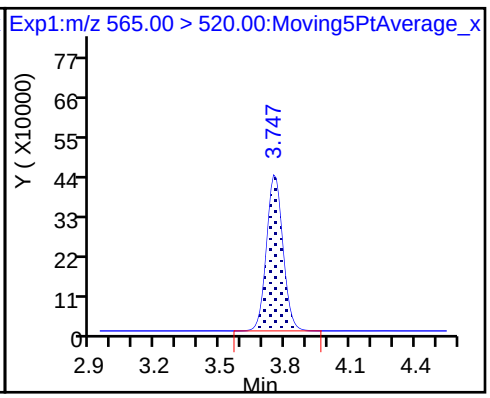
29 Perfluorodecane Sulfonic acid



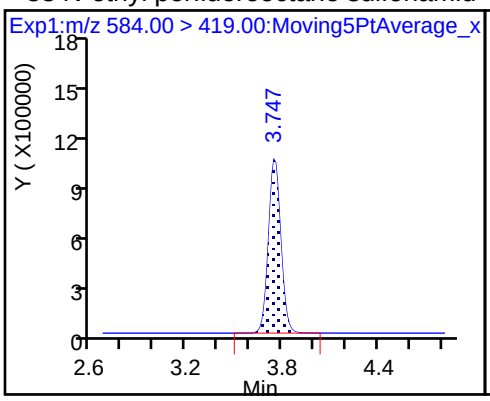
D 32 d5-NEtFOSAA



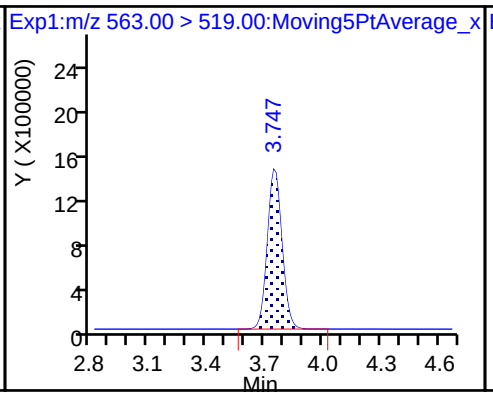
D 30 13C2 PFUnA



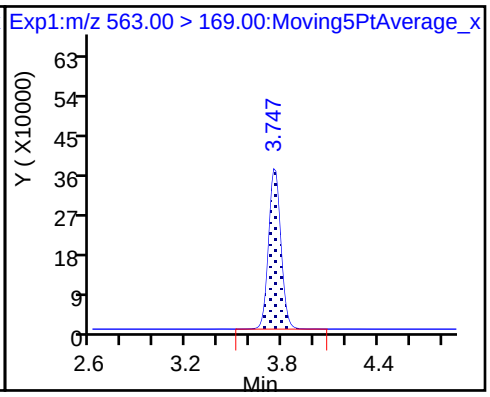
33 N-ethyl perfluorooctane sulfonamid



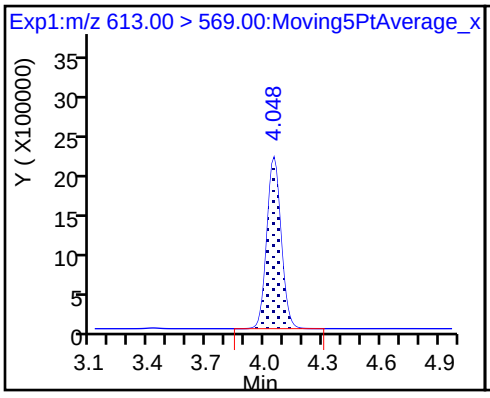
31 Perfluoroundecanoic acid



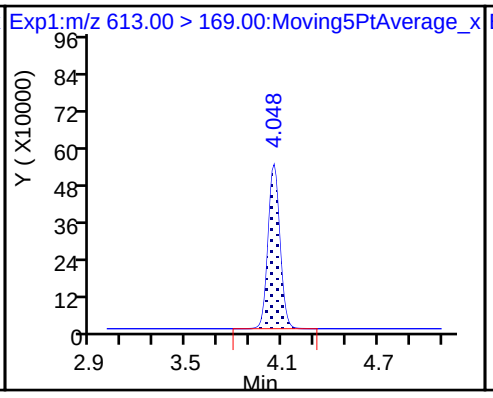
31 Perfluoroundecanoic acid



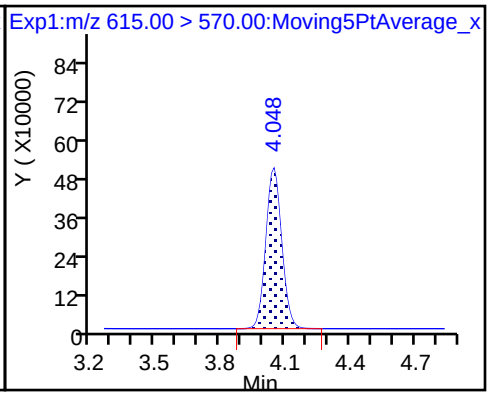
37 Perfluorododecanoic acid



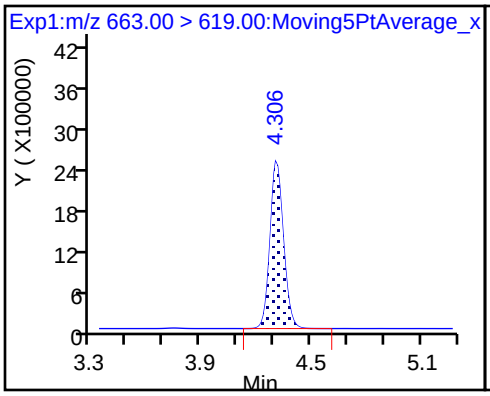
37 Perfluorododecanoic acid



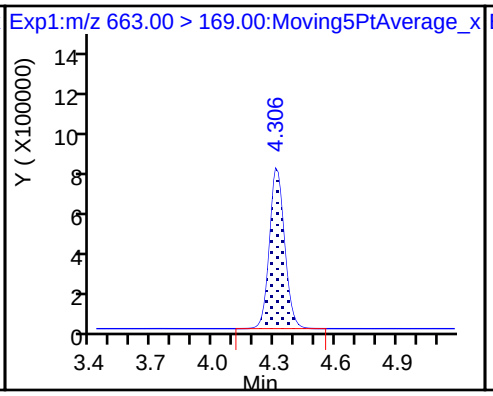
D 36 13C2 PFDoA



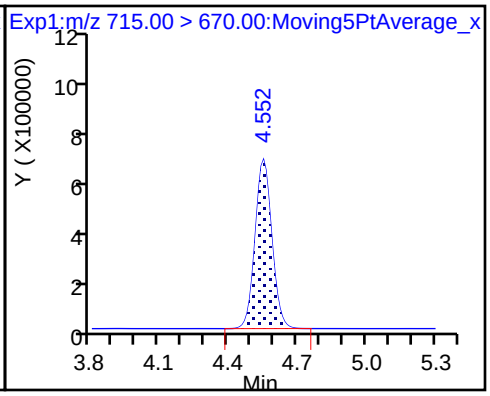
41 Perfluorotridecanoic acid



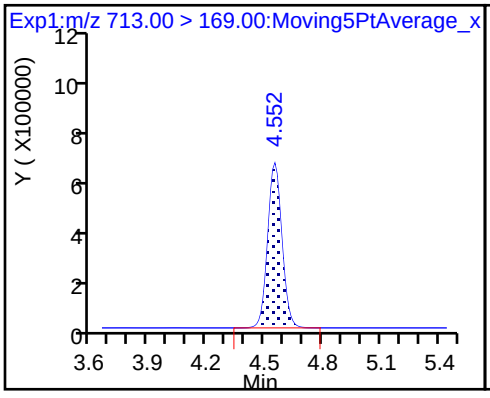
41 Perfluorotridecanoic acid



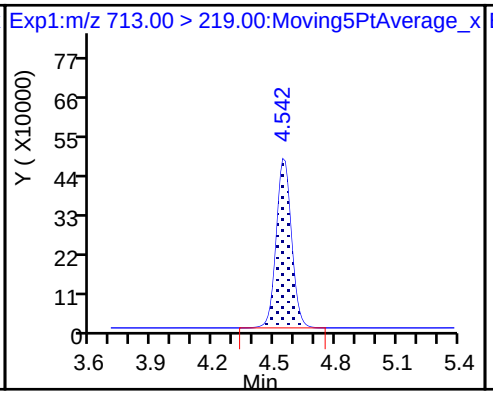
D 43 13C2-PFTeDA



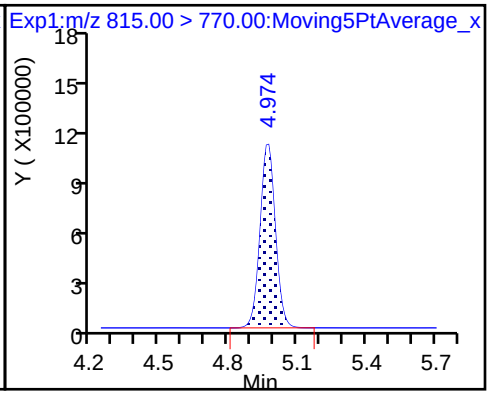
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



Calibration / Perfluorobutyric acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

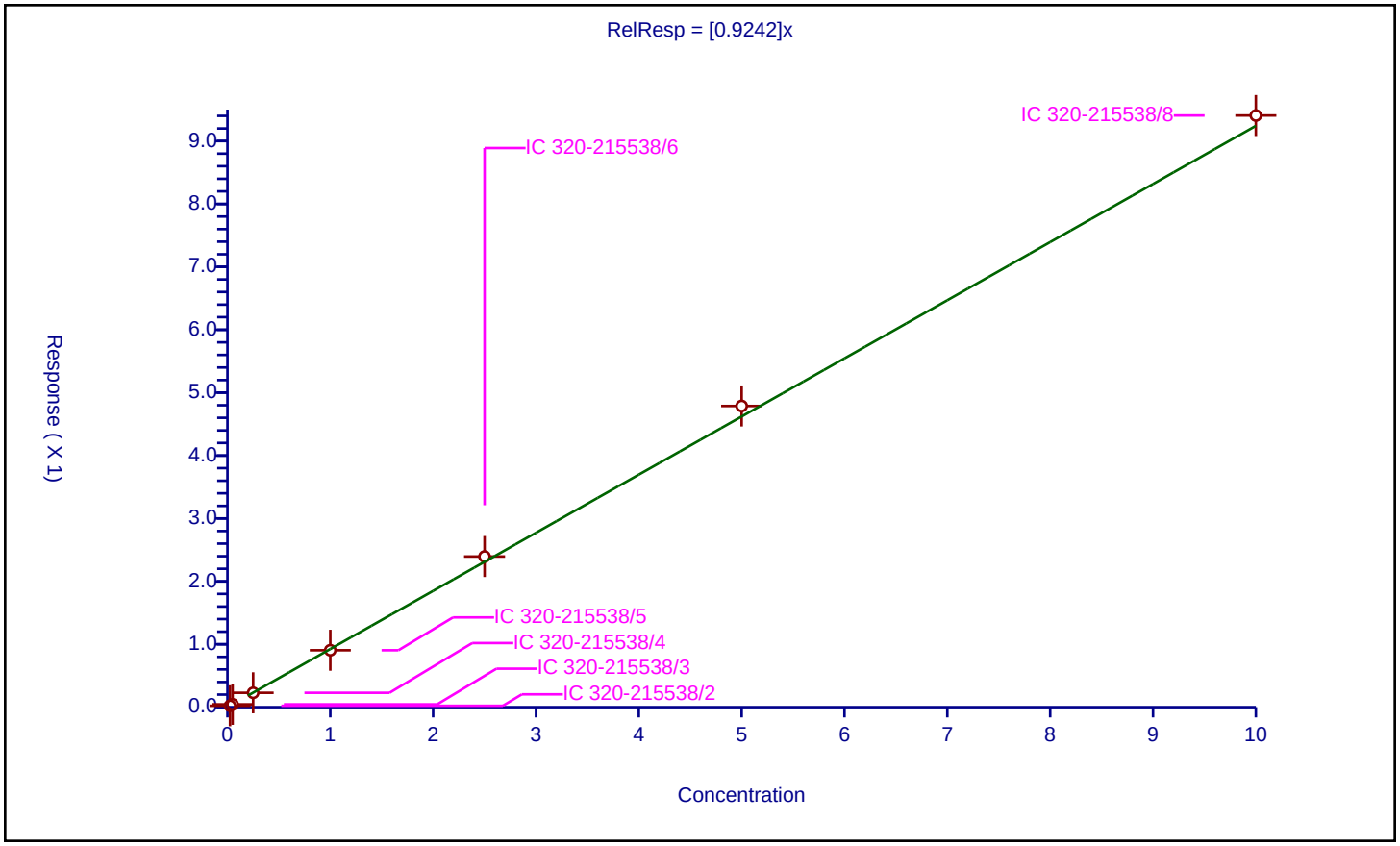
Curve Coefficients

Intercept:	0
Slope:	0.9242

Error Coefficients

Standard Error:	10400000
Relative Standard Error:	3.0
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.022288	2.5	6166712.0	0.891529	Y
2	IC 320-215538/3	0.05	0.045114	2.5	6349810.0	0.902287	Y
3	IC 320-215538/4	0.25	0.228496	2.5	6060888.0	0.913983	Y
4	IC 320-215538/5	1.0	0.905115	2.5	6326878.0	0.905115	Y
5	IC 320-215538/6	2.5	2.395154	2.5	6030203.0	0.958062	Y
6	IC 320-215538/7	5.0	4.788278	2.5	6363039.0	0.957656	Y
7	IC 320-215538/8	10.0	9.406178	2.5	5735604.0	0.940618	Y



Calibration / Perfluoropentanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

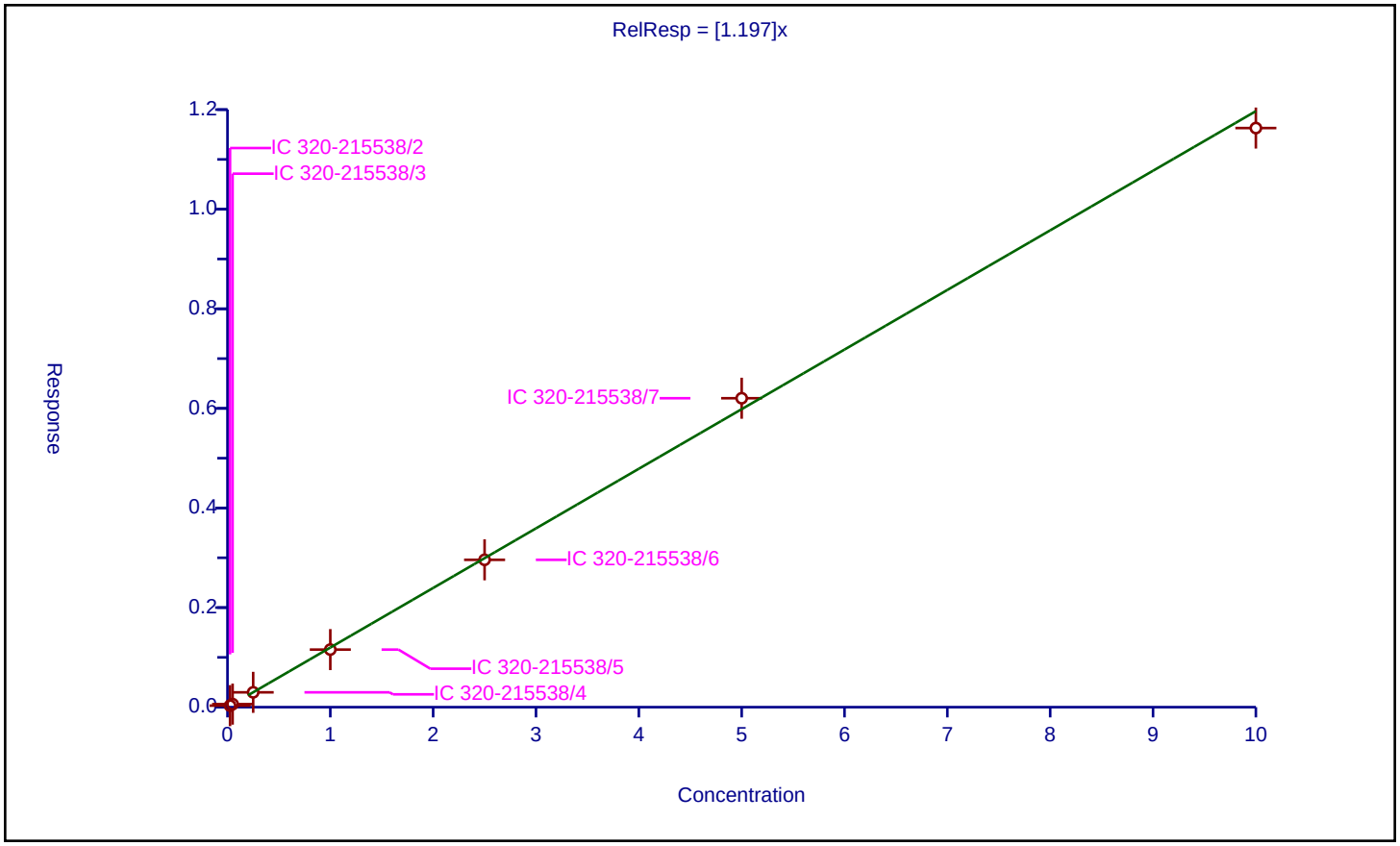
Curve Coefficients

Intercept:	0
Slope:	1.197

Error Coefficients

Standard Error:	8340000
Relative Standard Error:	2.7
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.03055	2.5	4098537.0	1.221997	Y
2	IC 320-215538/3	0.05	0.061123	2.5	4057226.0	1.222461	Y
3	IC 320-215538/4	0.25	0.297609	2.5	4032497.0	1.190436	Y
4	IC 320-215538/5	1.0	1.156101	2.5	4176477.0	1.156101	Y
5	IC 320-215538/6	2.5	2.959118	2.5	3998575.0	1.183647	Y
6	IC 320-215538/7	5.0	6.203837	2.5	3961451.0	1.240767	Y
7	IC 320-215538/8	10.0	11.629486	2.5	3687266.0	1.162949	Y



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

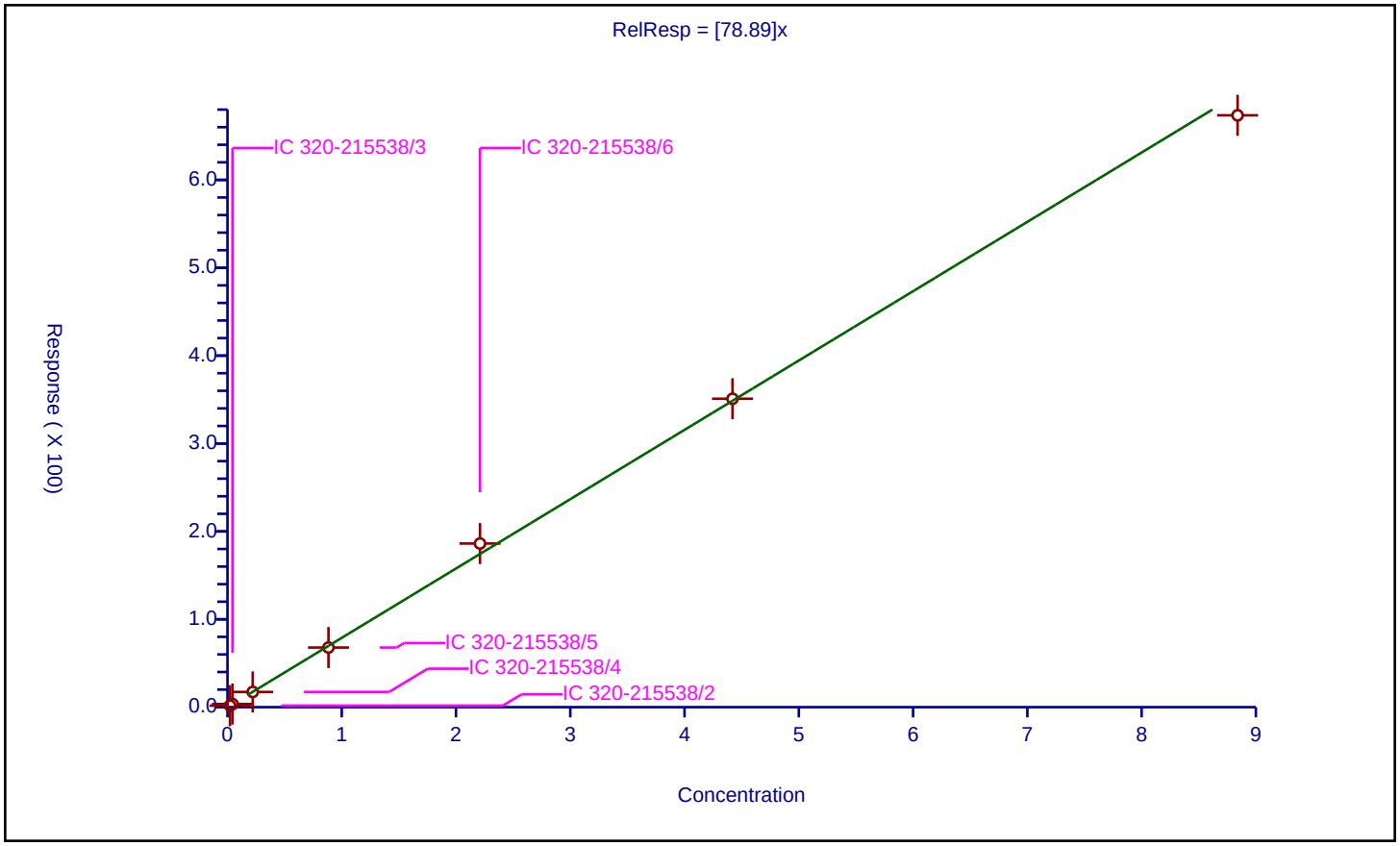
Curve Coefficients

Intercept:	0
Slope:	78.89

Error Coefficients

Standard Error:	11100000
Relative Standard Error:	3.5
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.0221	1.708988	2.325	83555.0	77.329791	Y
2	IC 320-215538/3	0.0442	3.53254	2.325	86826.0	79.921721	Y
3	IC 320-215538/4	0.221	17.324567	2.325	87970.0	78.391705	Y
4	IC 320-215538/5	0.884	67.849837	2.325	90179.0	76.753209	Y
5	IC 320-215538/6	2.21	186.204426	2.325	82172.0	84.255397	Y
6	IC 320-215538/7	4.42	350.958737	2.325	87650.0	79.402429	Y
7	IC 320-215538/8	8.84	673.51444	2.325	78326.0	76.189416	Y



Calibration / Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

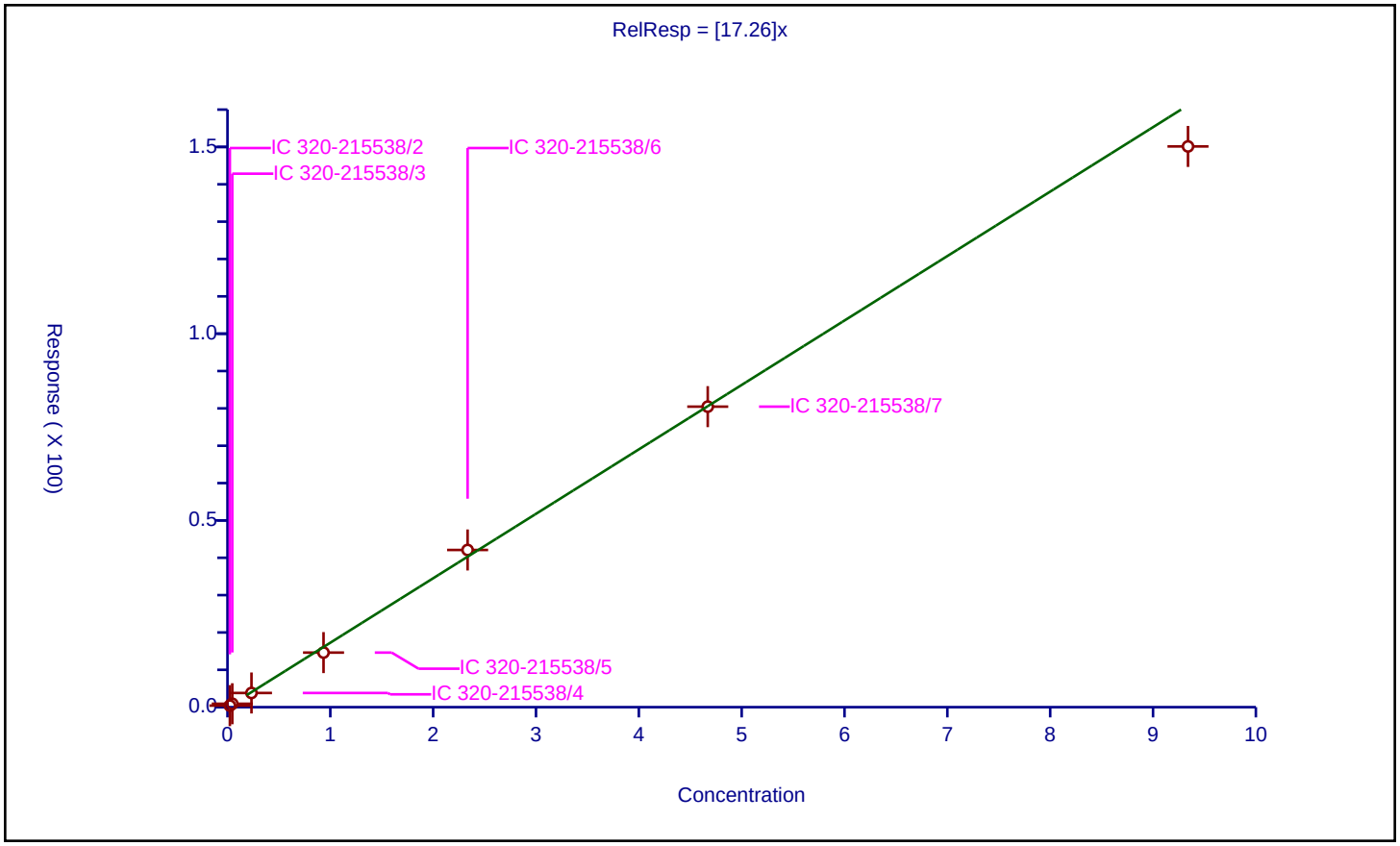
Curve Coefficients

Intercept:	0
Slope:	17.26

Error Coefficients

Standard Error:	2490000
Relative Standard Error:	8.1
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.02335	0.416833	2.325	83555.0	17.85153	Y
2	IC 320-215538/3	0.0467	0.919332	2.325	86826.0	19.685905	Y
3	IC 320-215538/4	0.2335	3.800187	2.325	87970.0	16.274891	Y
4	IC 320-215538/5	0.934	14.611387	2.325	90179.0	15.643883	Y
5	IC 320-215538/6	2.335	42.088295	2.325	82172.0	18.024966	Y
6	IC 320-215538/7	4.67	80.468078	2.325	87650.0	17.230852	Y
7	IC 320-215538/8	9.34	150.141285	2.325	78326.0	16.075084	Y



Calibration / Perfluorohexanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

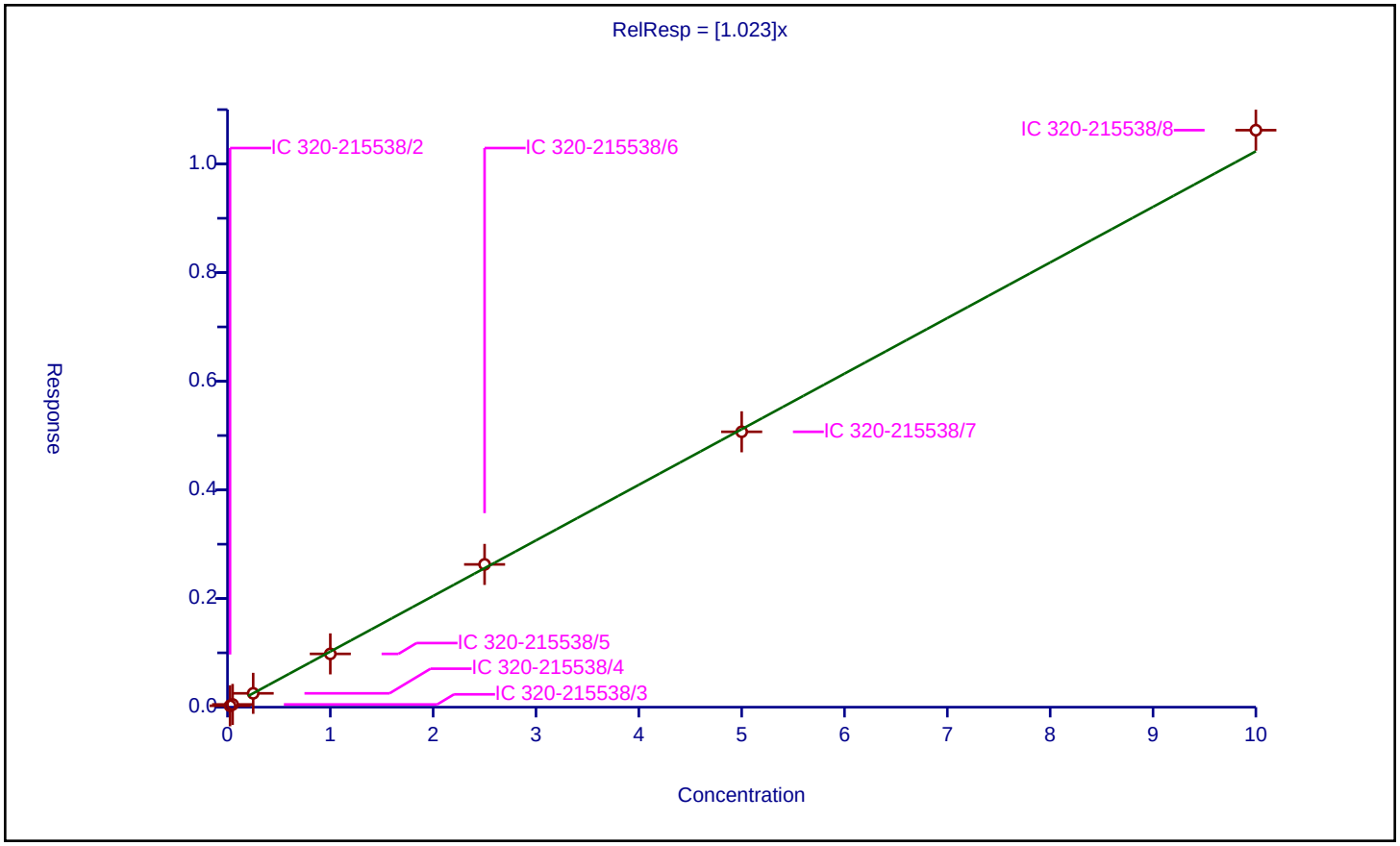
Curve Coefficients

Intercept:	0
Slope:	1.023

Error Coefficients

Standard Error:	8000000
Relative Standard Error:	2.7
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.025737	2.5	4468019.0	1.029494	Y
2	IC 320-215538/3	0.05	0.050393	2.5	4516262.0	1.007869	Y
3	IC 320-215538/4	0.25	0.254402	2.5	4418534.0	1.017609	Y
4	IC 320-215538/5	1.0	0.981072	2.5	4494490.0	0.981072	Y
5	IC 320-215538/6	2.5	2.627751	2.5	4449369.0	1.0511	Y
6	IC 320-215538/7	5.0	5.069045	2.5	4716939.0	1.013809	Y
7	IC 320-215538/8	10.0	10.621064	2.5	3845737.0	1.062106	Y



Calibration / Perfluoropentanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

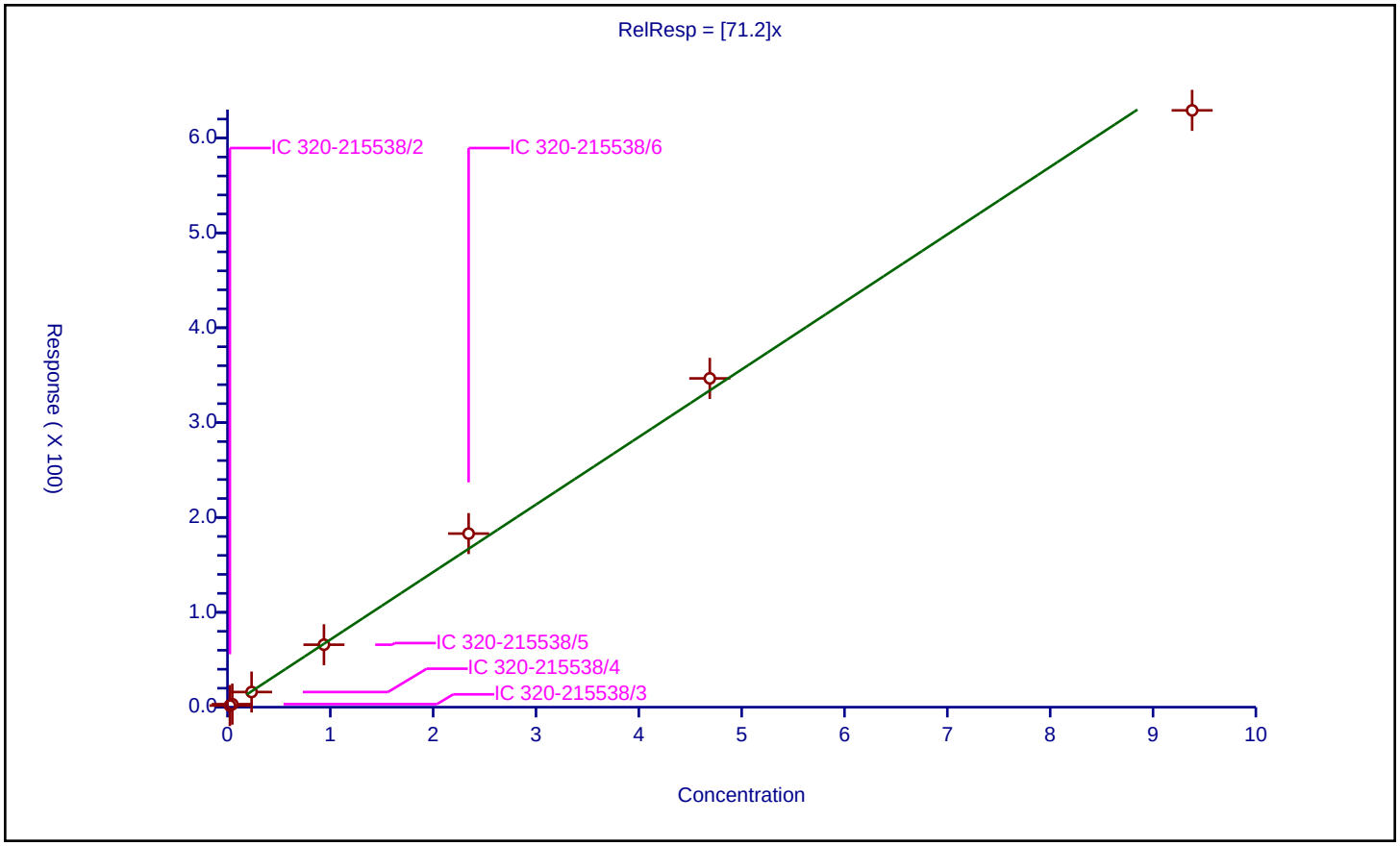
Curve Coefficients

Intercept:	0
Slope:	71.2

Error Coefficients

Standard Error:	10600000
Relative Standard Error:	5.8
Correlation Coefficient:	0.987
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.02345	1.727047	2.325	83555.0	73.648079	Y
2	IC 320-215538/3	0.0469	3.162579	2.325	86826.0	67.432398	Y
3	IC 320-215538/4	0.2345	15.970744	2.325	87970.0	68.105518	Y
4	IC 320-215538/5	0.938	65.849716	2.325	90179.0	70.202256	Y
5	IC 320-215538/6	2.345	182.986401	2.325	82172.0	78.032581	Y
6	IC 320-215538/7	4.69	346.632353	2.325	87650.0	73.908817	Y
7	IC 320-215538/8	9.38	629.203518	2.325	78326.0	67.079266	Y



Calibration / Perfluoroheptanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

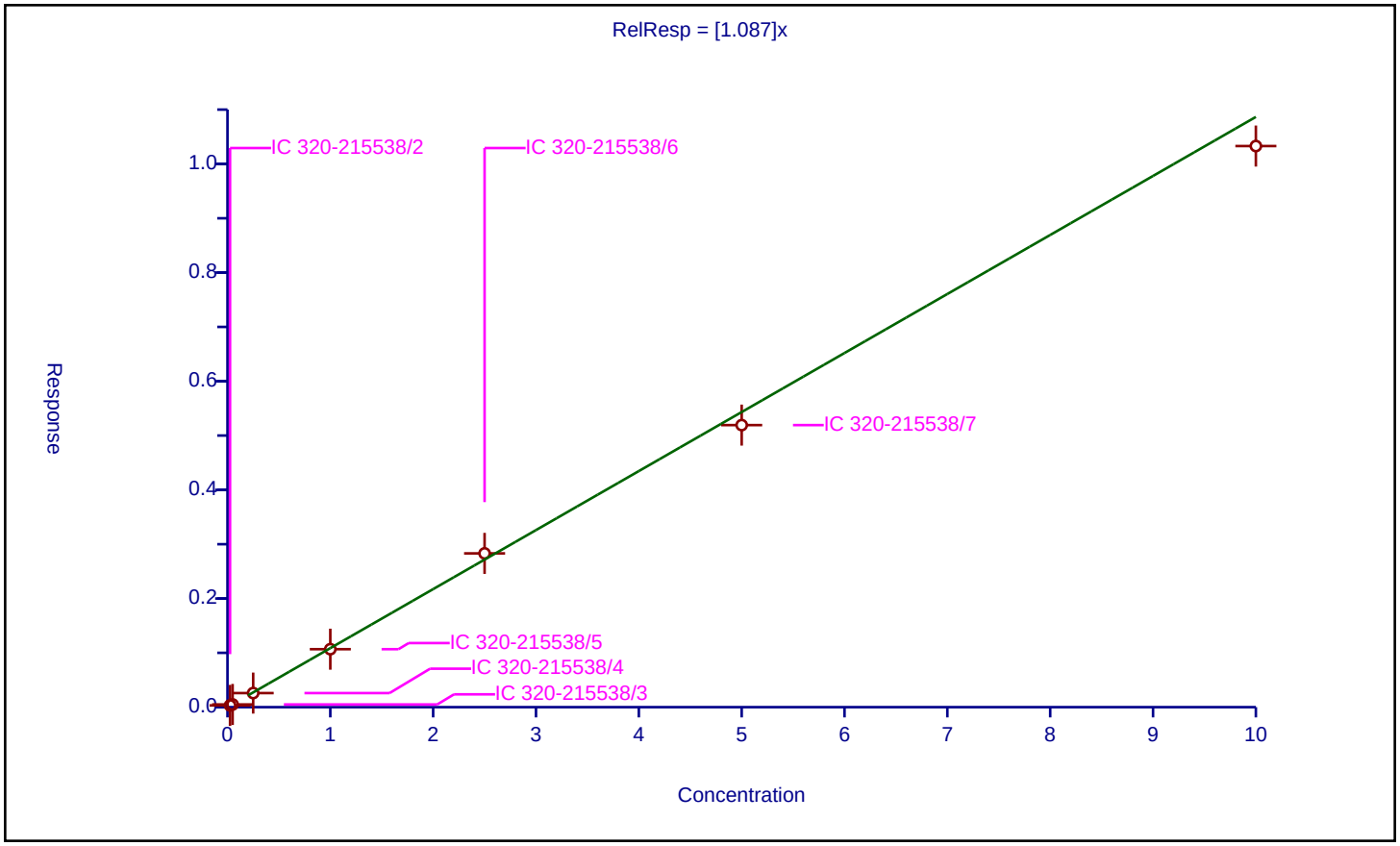
Curve Coefficients

Intercept:	0
Slope:	1.087

Error Coefficients

Standard Error:	7780000
Relative Standard Error:	9.4
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.988

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.032461	2.5	4411051.0	1.298421	Y
2	IC 320-215538/3	0.05	0.04994	2.5	4349189.0	0.998795	Y
3	IC 320-215538/4	0.25	0.259393	2.5	4242345.0	1.037572	Y
4	IC 320-215538/5	1.0	1.067345	2.5	4235886.0	1.067345	Y
5	IC 320-215538/6	2.5	2.830592	2.5	4131012.0	1.132237	Y
6	IC 320-215538/7	5.0	5.192153	2.5	4500718.0	1.038431	Y
7	IC 320-215538/8	10.0	10.329166	2.5	3833624.0	1.032917	Y



Calibration / Perfluorohexanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

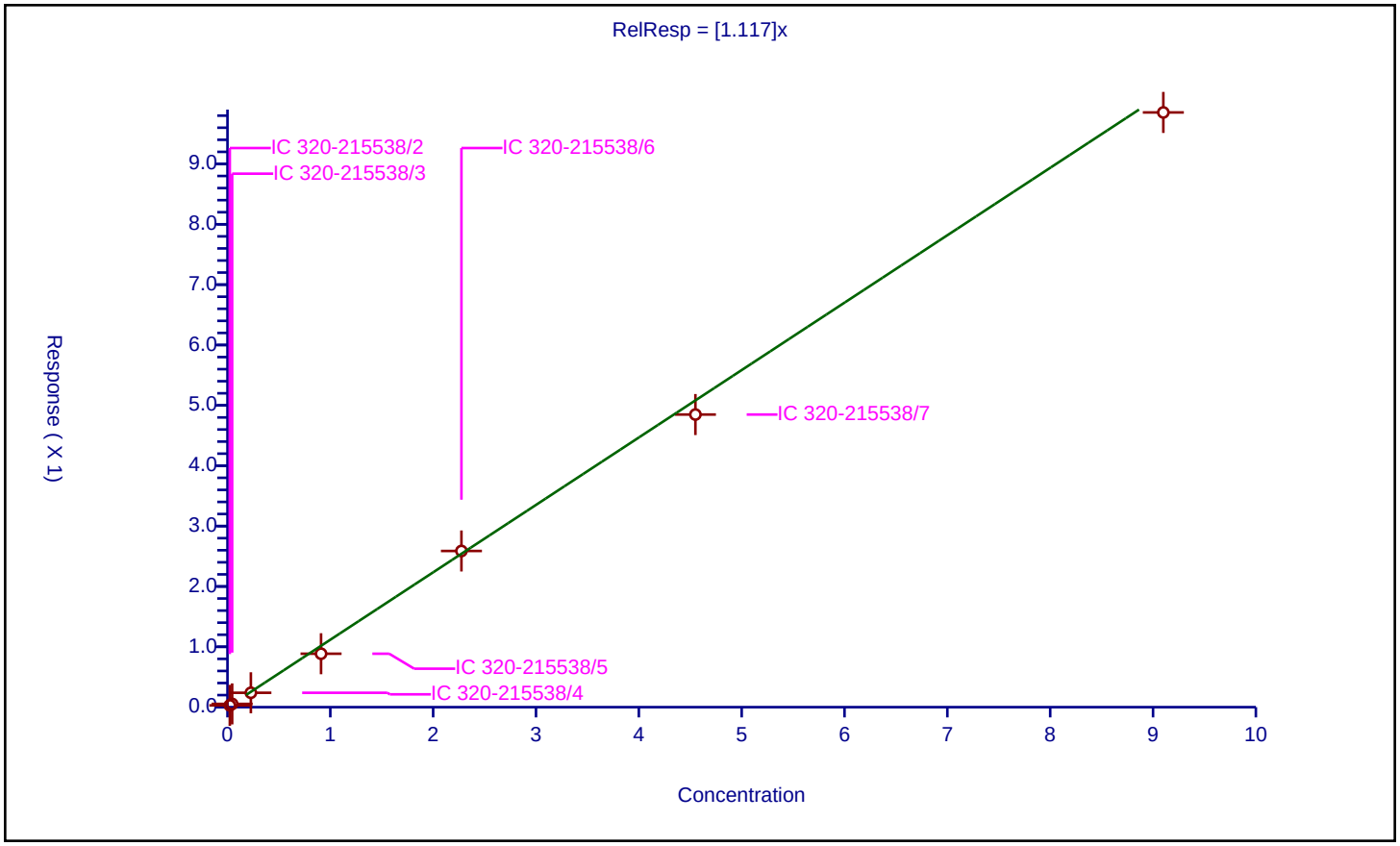
Curve Coefficients

Intercept:	0
Slope:	1.117

Error Coefficients

Standard Error:	8890000
Relative Standard Error:	10.2
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.986

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.02275	0.030124	2.365	5250229.0	1.324124	Y
2	IC 320-215538/3	0.0455	0.054061	2.365	5097412.0	1.188148	Y
3	IC 320-215538/4	0.2275	0.238353	2.365	5084038.0	1.047705	Y
4	IC 320-215538/5	0.91	0.885234	2.365	5285294.0	0.972785	Y
5	IC 320-215538/6	2.275	2.587767	2.365	4833301.0	1.13748	Y
6	IC 320-215538/7	4.55	4.848166	2.365	5143358.0	1.065531	Y
7	IC 320-215538/8	9.1	9.85295	2.365	4362929.0	1.082742	Y



Calibration / Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

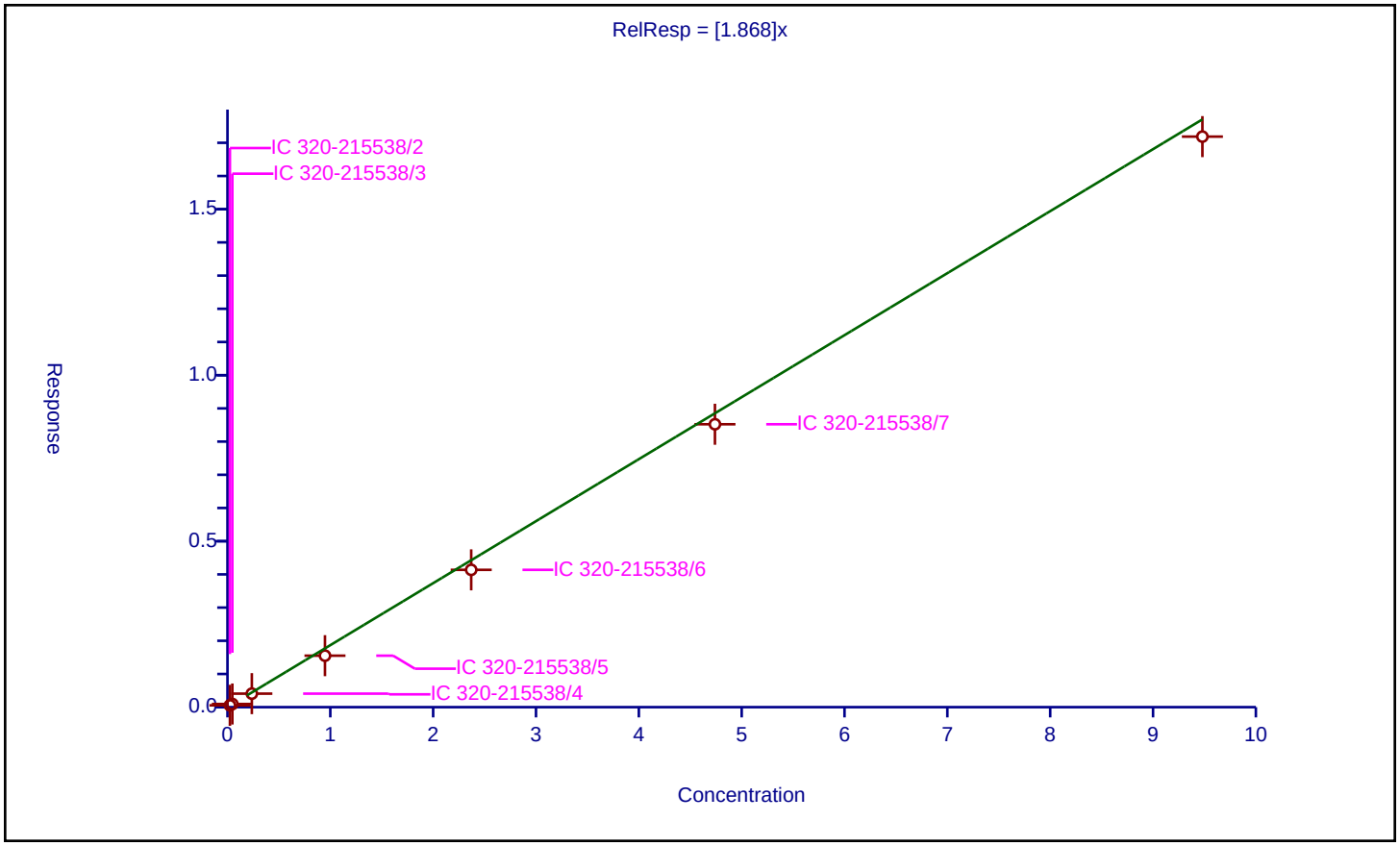
Curve Coefficients

Intercept:	0
Slope:	1.868

Error Coefficients

Standard Error:	2800000
Relative Standard Error:	12.9
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.976

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.0237	0.055549	2.375	971099.0	2.343831	Y
2	IC 320-215538/3	0.0474	0.095698	2.375	991613.0	2.018948	Y
3	IC 320-215538/4	0.237	0.407237	2.375	1019321.0	1.718298	Y
4	IC 320-215538/5	0.948	1.550836	2.375	945777.0	1.635903	Y
5	IC 320-215538/6	2.37	4.136353	2.375	884202.0	1.745297	Y
6	IC 320-215538/7	4.74	8.522139	2.375	916140.0	1.79792	Y
7	IC 320-215538/8	9.48	17.186223	2.375	800357.0	1.812893	Y



Calibration / Perfluorooctanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

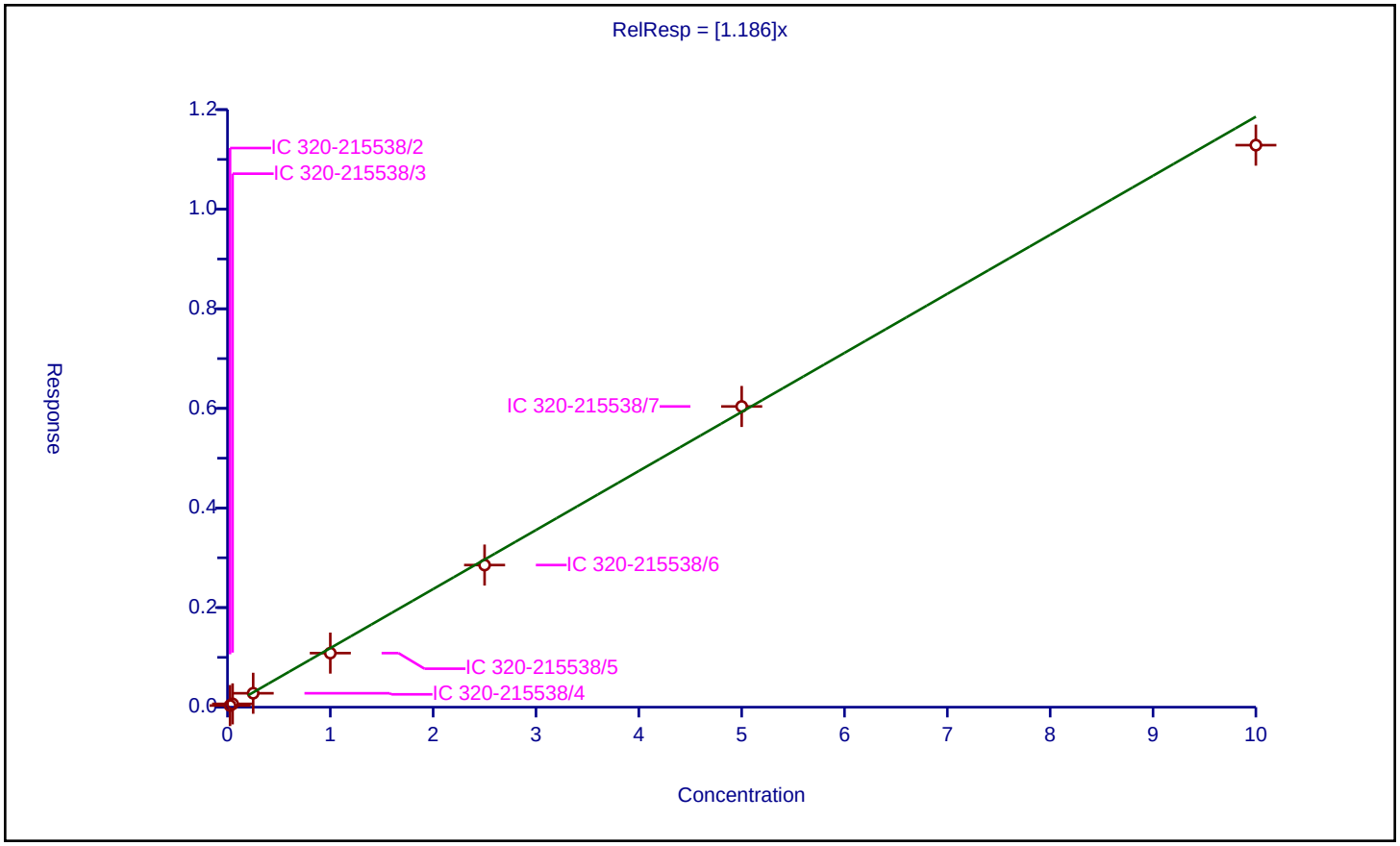
Curve Coefficients

Intercept:	0
Slope:	1.186

Error Coefficients

Standard Error:	8260000
Relative Standard Error:	7.8
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.032436	2.5	4307414.0	1.297437	Y
2	IC 320-215538/3	0.05	0.066103	2.5	4341966.0	1.322051	Y
3	IC 320-215538/4	0.25	0.279457	2.5	4272950.0	1.11783	Y
4	IC 320-215538/5	1.0	1.085464	2.5	4302583.0	1.085464	Y
5	IC 320-215538/6	2.5	2.853793	2.5	4168394.0	1.141517	Y
6	IC 320-215538/7	5.0	6.038587	2.5	4062703.0	1.207717	Y
7	IC 320-215538/8	10.0	11.286249	2.5	3749304.0	1.128625	Y



Calibration / Perfluoroheptanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

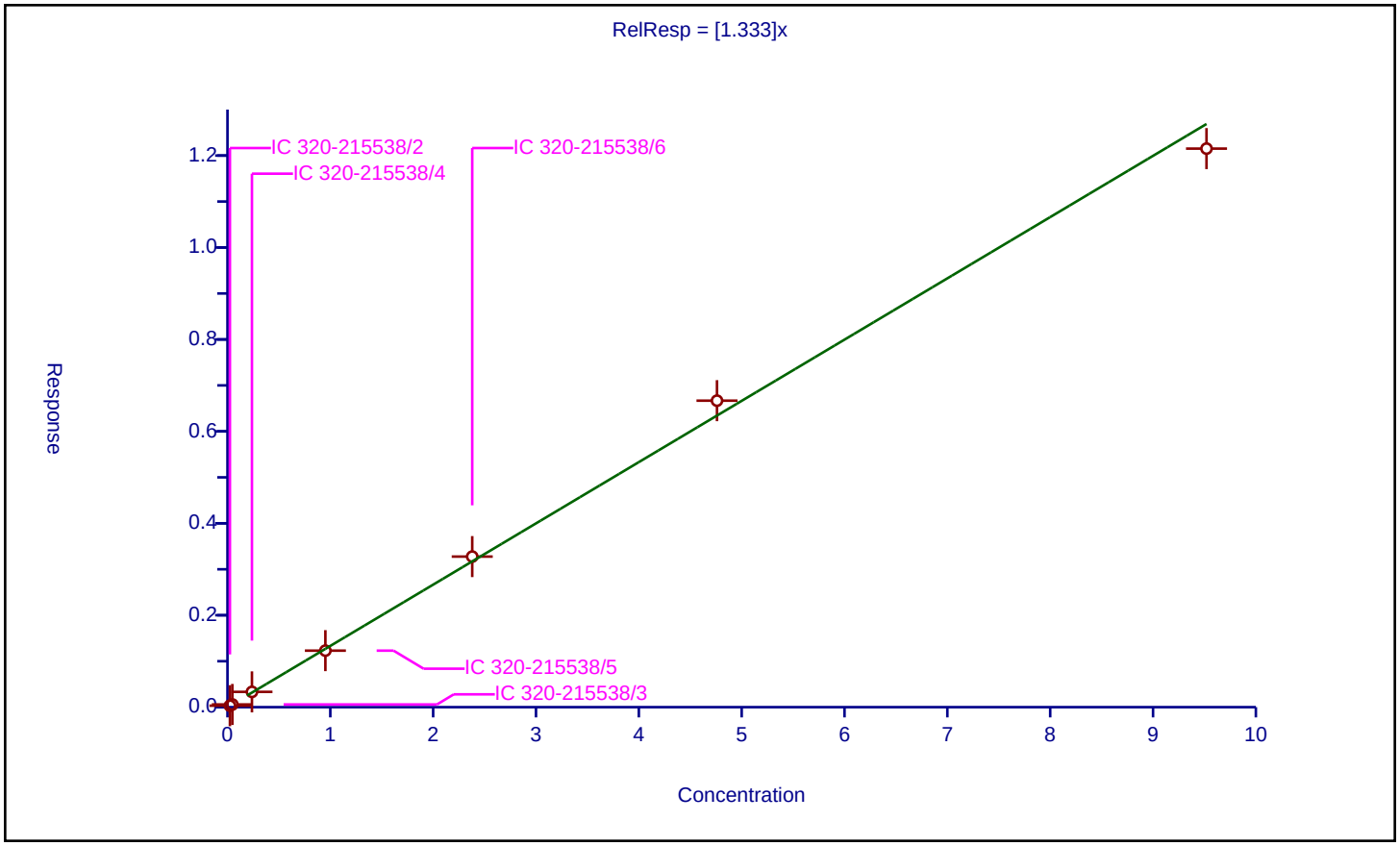
Curve Coefficients

Intercept:	0
Slope:	1.333

Error Coefficients

Standard Error:	8200000
Relative Standard Error:	4.8
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.0238	0.032035	2.39	3544609.0	1.346005	Y
2	IC 320-215538/3	0.0476	0.059069	2.39	3668029.0	1.240951	Y
3	IC 320-215538/4	0.238	0.332473	2.39	3434108.0	1.396946	Y
4	IC 320-215538/5	0.952	1.229382	2.39	3709075.0	1.291368	Y
5	IC 320-215538/6	2.38	3.275761	2.39	3426212.0	1.37637	Y
6	IC 320-215538/7	4.76	6.667616	2.39	3490802.0	1.40076	Y
7	IC 320-215538/8	9.52	12.151692	2.39	3306882.0	1.276438	Y



Calibration / Perfluorononanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

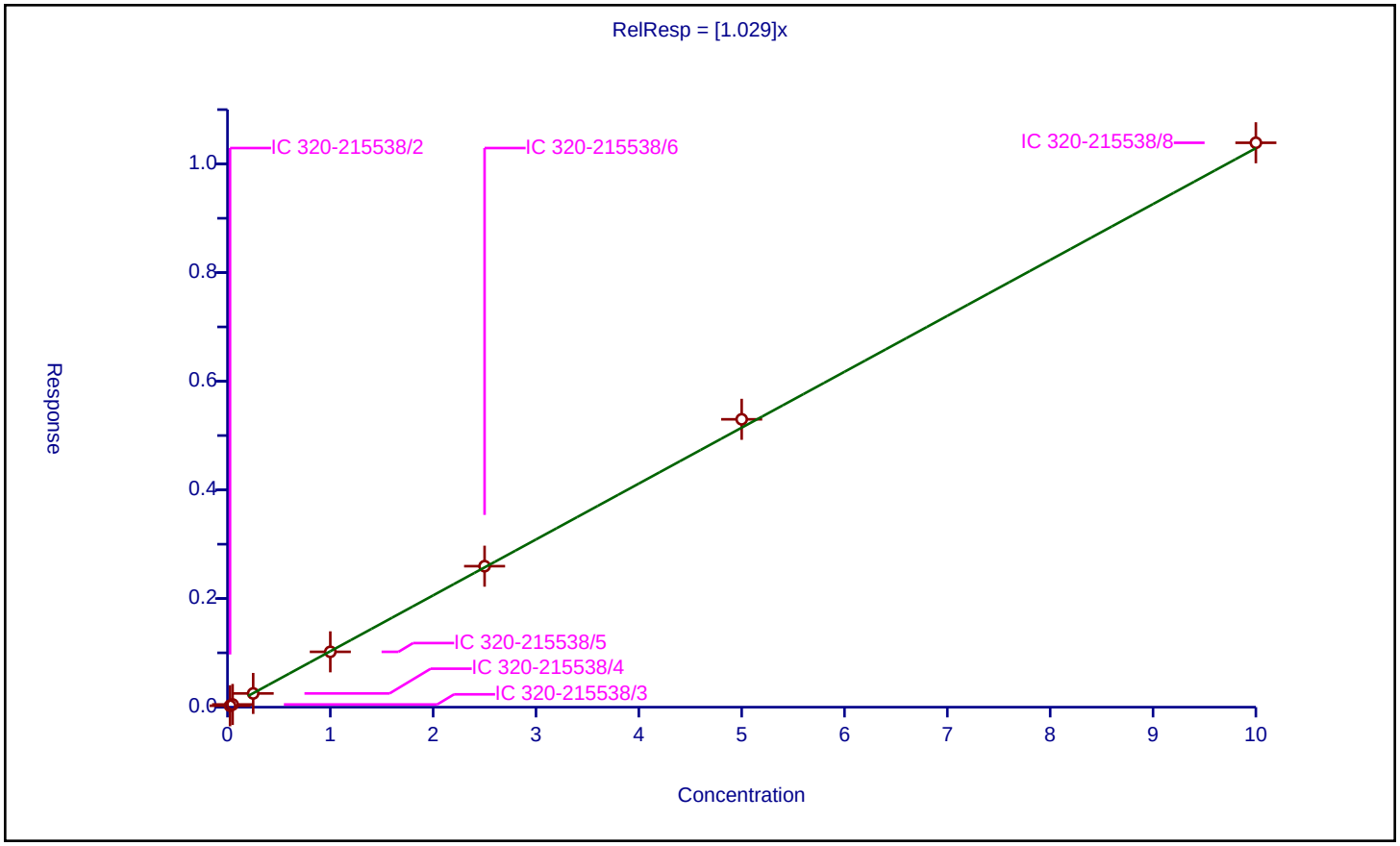
Curve Coefficients

Intercept:	0
Slope:	1.029

Error Coefficients

Standard Error:	6460000
Relative Standard Error:	2.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.026029	2.5	3578216.0	1.041161	Y
2	IC 320-215538/3	0.05	0.049784	2.5	3693528.0	0.995674	Y
3	IC 320-215538/4	0.25	0.252627	2.5	3523980.0	1.010508	Y
4	IC 320-215538/5	1.0	1.018799	2.5	3594883.0	1.018799	Y
5	IC 320-215538/6	2.5	2.595431	2.5	3540108.0	1.038173	Y
6	IC 320-215538/7	5.0	5.299098	2.5	3572058.0	1.05982	Y
7	IC 320-215538/8	10.0	10.389468	2.5	3201114.0	1.038947	Y



Calibration / Perfluorooctane sulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

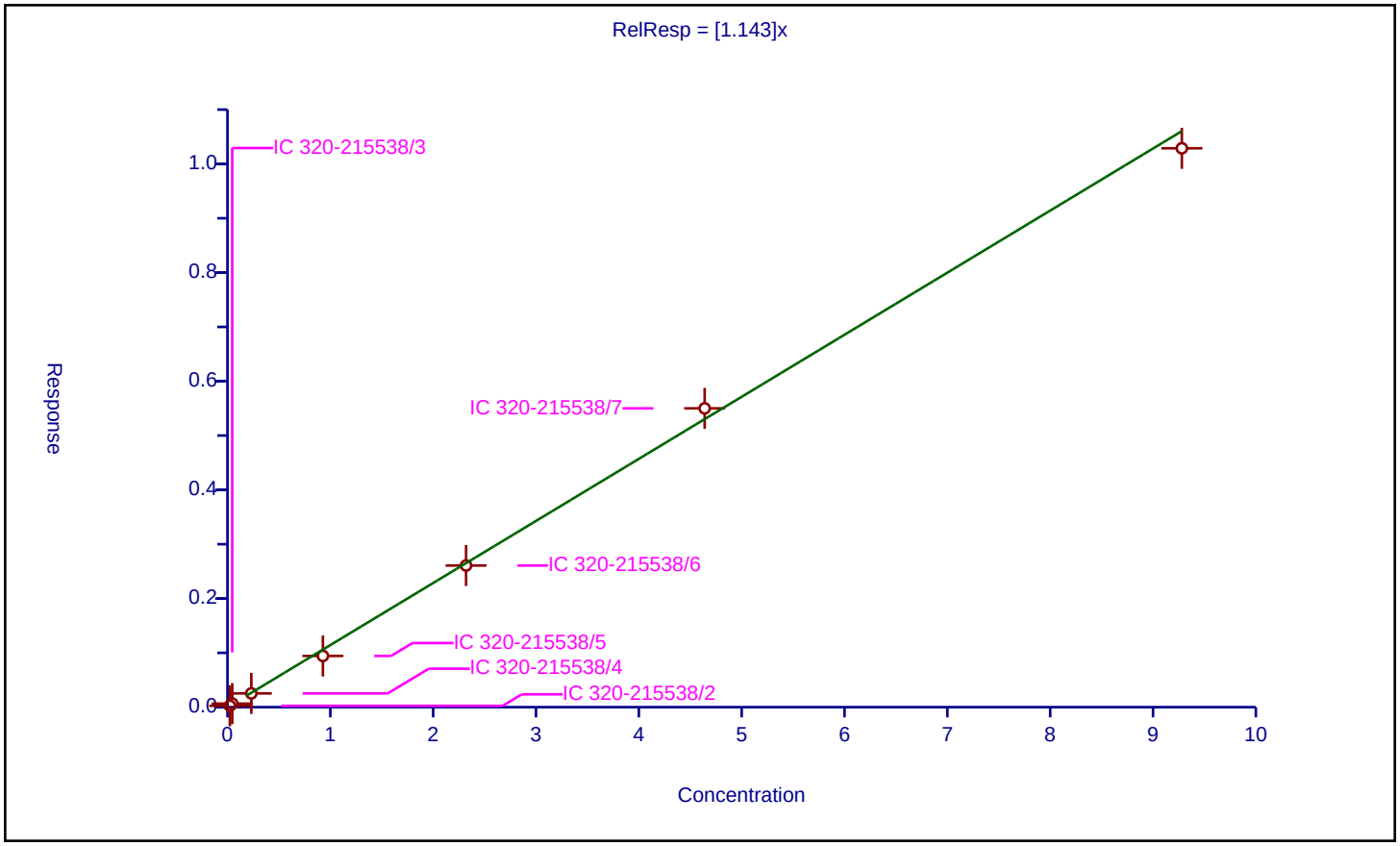
Curve Coefficients

Intercept:	0
Slope:	1.143

Error Coefficients

Standard Error:	6870000
Relative Standard Error:	11.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.985

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.0232	0.024749	2.39	3544609.0	1.06676	Y
2	IC 320-215538/3	0.0464	0.06523	2.39	3668029.0	1.405818	Y
3	IC 320-215538/4	0.232	0.25326	2.39	3434108.0	1.091636	Y
4	IC 320-215538/5	0.928	0.9431	2.39	3709075.0	1.016271	Y
5	IC 320-215538/6	2.32	2.607507	2.39	3426212.0	1.123926	Y
6	IC 320-215538/7	4.64	5.500684	2.39	3490802.0	1.185492	Y
7	IC 320-215538/8	9.28	10.287582	2.39	3306882.0	1.108576	Y



Calibration / Perfluorooctane Sulfonamide

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

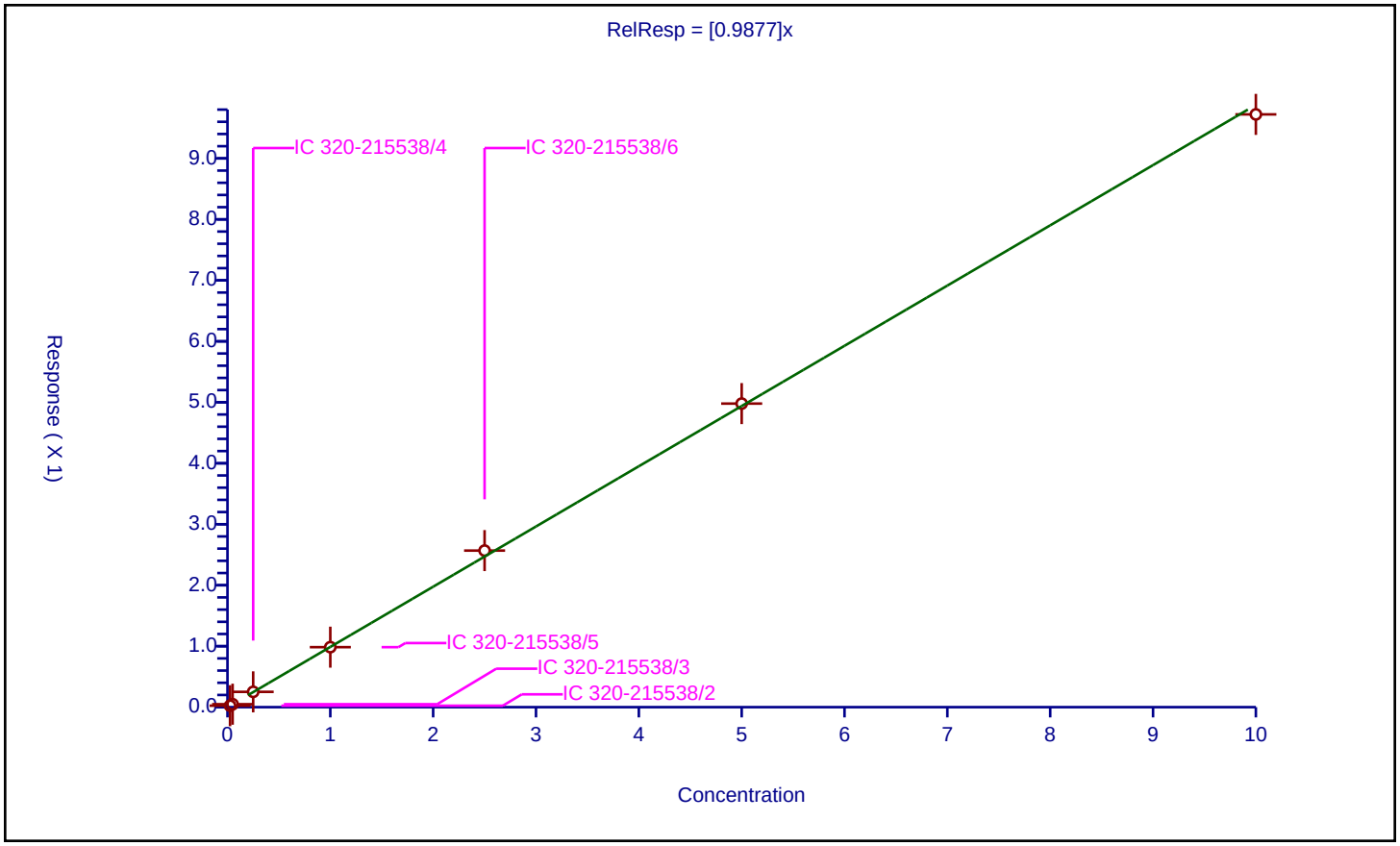
Curve Coefficients

Intercept:	0
Slope:	0.9877

Error Coefficients

Standard Error:	8980000
Relative Standard Error:	2.4
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.023983	2.5	5242954.0	0.959326	Y
2	IC 320-215538/3	0.05	0.048533	2.5	5426551.0	0.970653	Y
3	IC 320-215538/4	0.25	0.251258	2.5	5204720.0	1.005032	Y
4	IC 320-215538/5	1.0	0.984007	2.5	5326321.0	0.984007	Y
5	IC 320-215538/6	2.5	2.567743	2.5	5134426.0	1.027097	Y
6	IC 320-215538/7	5.0	4.978806	2.5	5241388.0	0.995761	Y
7	IC 320-215538/8	10.0	9.721522	2.5	4756992.0	0.972152	Y



Calibration / Perfluorononanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

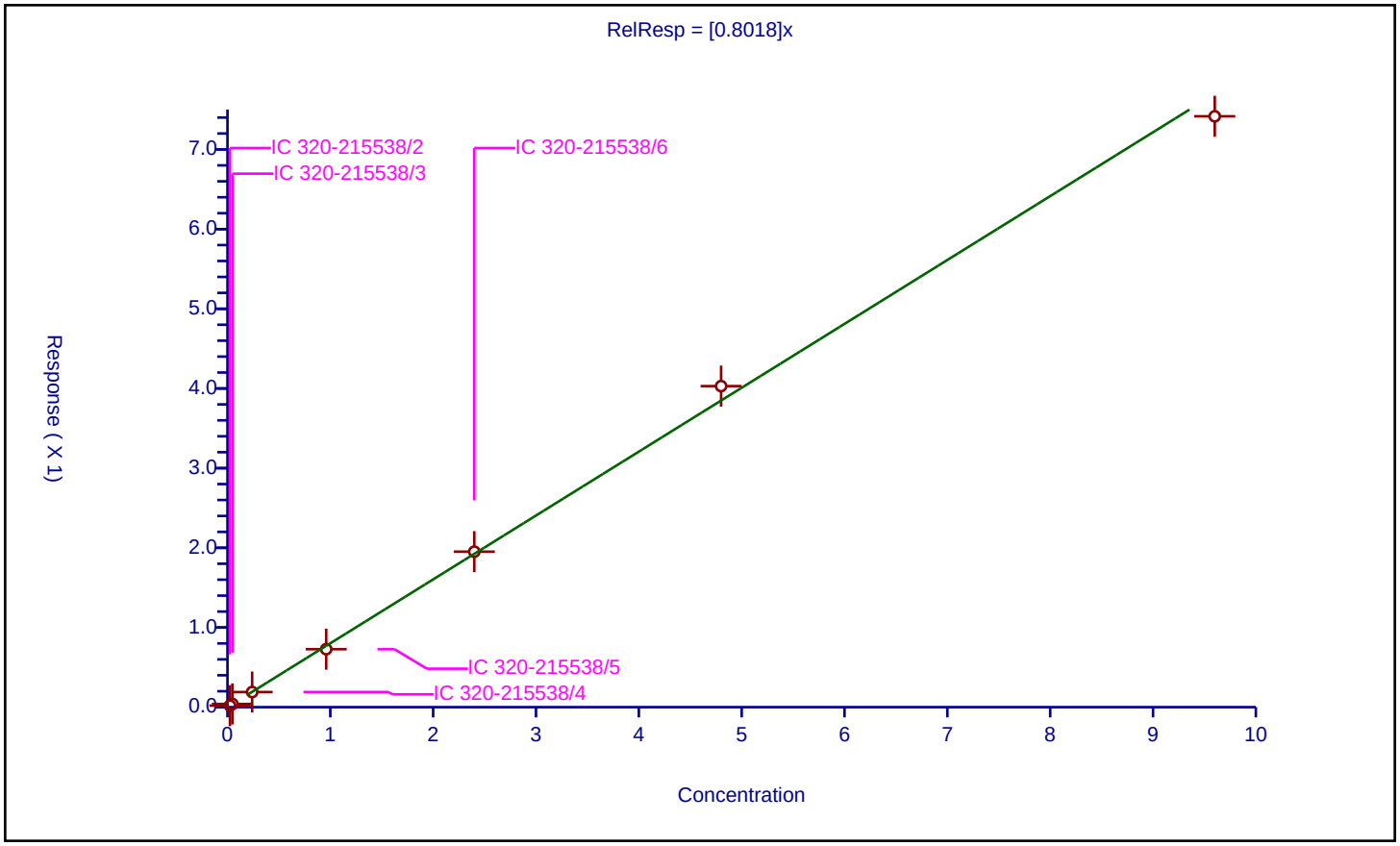
Curve Coefficients

Intercept:	0
Slope:	0.8018

Error Coefficients

Standard Error:	4990000
Relative Standard Error:	3.8
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.024	0.019281	2.39	3544609.0	0.803357	Y
2	IC 320-215538/3	0.048	0.040084	2.39	3668029.0	0.835076	Y
3	IC 320-215538/4	0.24	0.189814	2.39	3434108.0	0.790891	Y
4	IC 320-215538/5	0.96	0.727567	2.39	3709075.0	0.757882	Y
5	IC 320-215538/6	2.4	1.951549	2.39	3426212.0	0.813145	Y
6	IC 320-215538/7	4.8	4.029493	2.39	3490802.0	0.839478	Y
7	IC 320-215538/8	9.6	7.41631	2.39	3306882.0	0.772532	Y



Calibration / Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

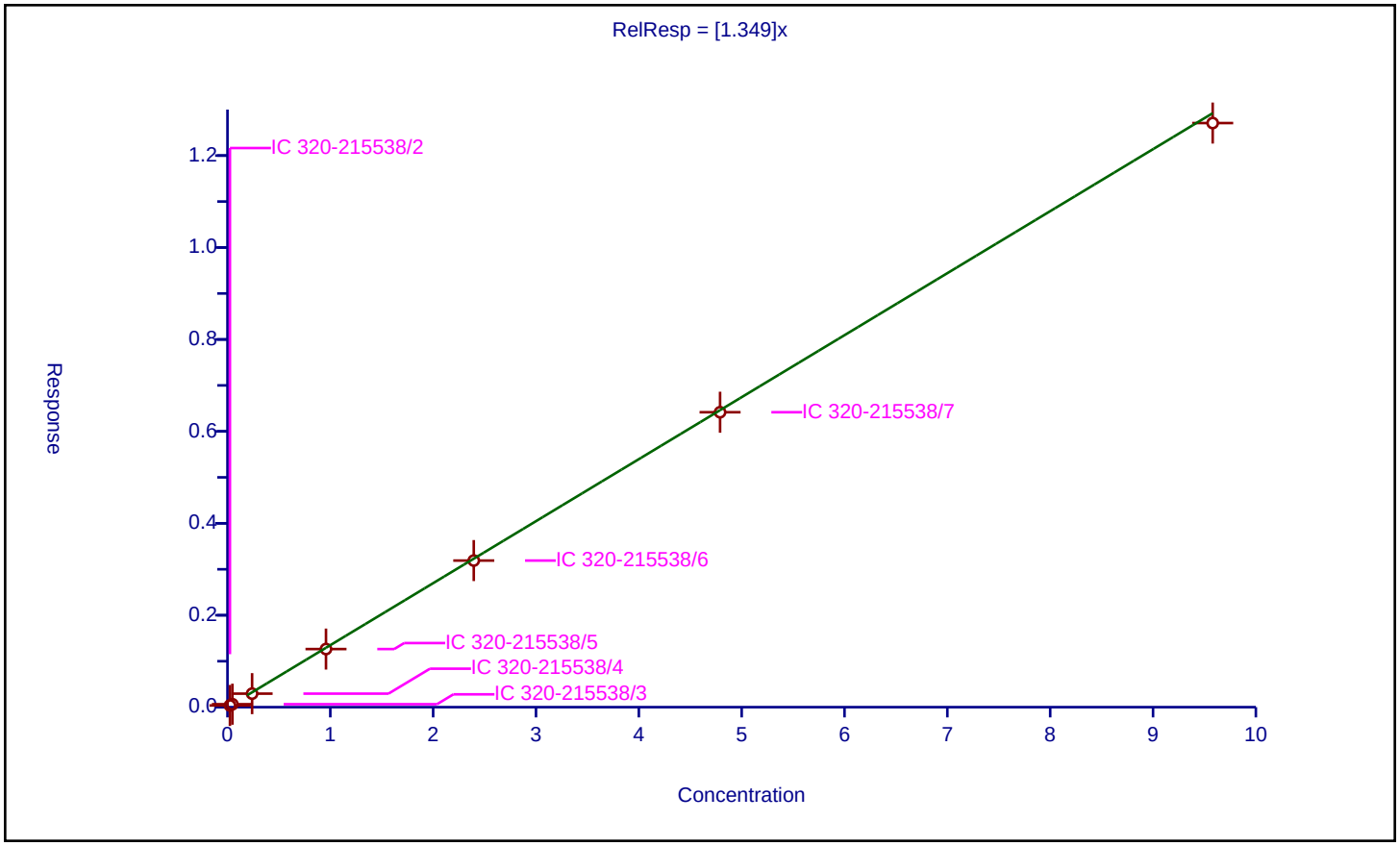
Curve Coefficients

Intercept:	0
Slope:	1.349

Error Coefficients

Standard Error:	2440000
Relative Standard Error:	7.3
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.02395	0.037174	2.395	1128441.0	1.552141	Y
2	IC 320-215538/3	0.0479	0.064347	2.395	1207568.0	1.343361	Y
3	IC 320-215538/4	0.2395	0.294386	2.395	1144081.0	1.22917	Y
4	IC 320-215538/5	0.958	1.263916	2.395	1069323.0	1.319328	Y
5	IC 320-215538/6	2.395	3.189436	2.395	1054813.0	1.331706	Y
6	IC 320-215538/7	4.79	6.416587	2.395	1118796.0	1.33958	Y
7	IC 320-215538/8	9.58	12.707225	2.395	932507.0	1.326433	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

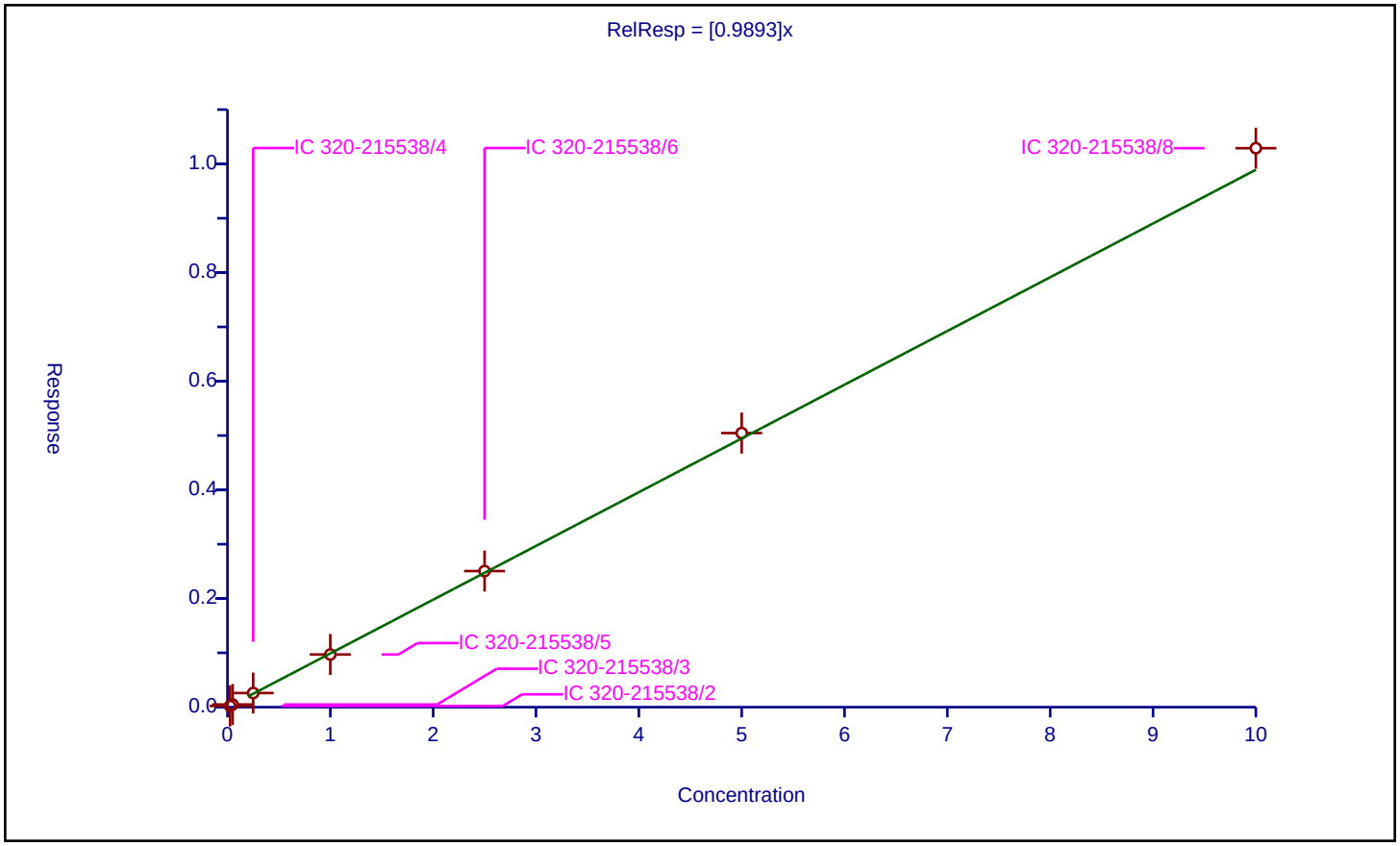
Curve Coefficients

Intercept:	0
Slope:	0.9893

Error Coefficients

Standard Error:	5320000
Relative Standard Error:	5.0
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.022293	2.5	3124013.0	0.891738	Y
2	IC 320-215538/3	0.05	0.04914	2.5	3057872.0	0.982808	Y
3	IC 320-215538/4	0.25	0.260106	2.5	2904523.0	1.040426	Y
4	IC 320-215538/5	1.0	0.969516	2.5	3033191.0	0.969516	Y
5	IC 320-215538/6	2.5	2.505445	2.5	2988519.0	1.002178	Y
6	IC 320-215538/7	5.0	5.045876	2.5	3100672.0	1.009175	Y
7	IC 320-215538/8	10.0	10.289376	2.5	2662530.0	1.028938	Y



Calibration / N-methyl perfluorooctane sulfonamidoacetic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

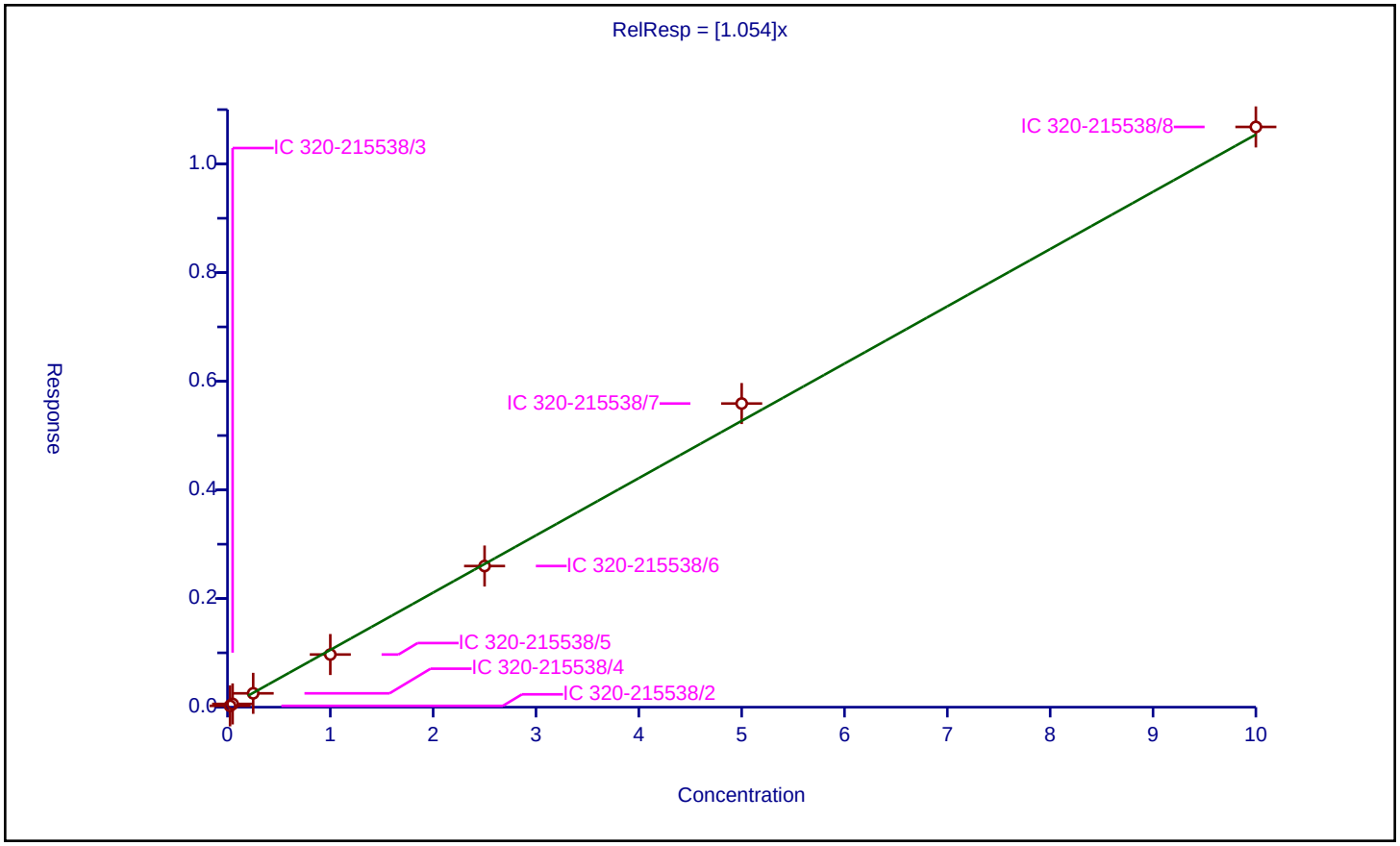
Curve Coefficients

Intercept:	0
Slope:	1.054

Error Coefficients

Standard Error:	3170000
Relative Standard Error:	7.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.024257	2.5	1605692.0	0.970298	Y
2	IC 320-215538/3	0.05	0.059834	2.5	1584763.0	1.196677	Y
3	IC 320-215538/4	0.25	0.254416	2.5	1579046.0	1.017665	Y
4	IC 320-215538/5	1.0	0.968996	2.5	1643657.0	0.968996	Y
5	IC 320-215538/6	2.5	2.59807	2.5	1585449.0	1.039228	Y
6	IC 320-215538/7	5.0	5.589323	2.5	1583848.0	1.117865	Y
7	IC 320-215538/8	10.0	10.681439	2.5	1563764.0	1.068144	Y



Calibration / Perfluorodecane Sulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

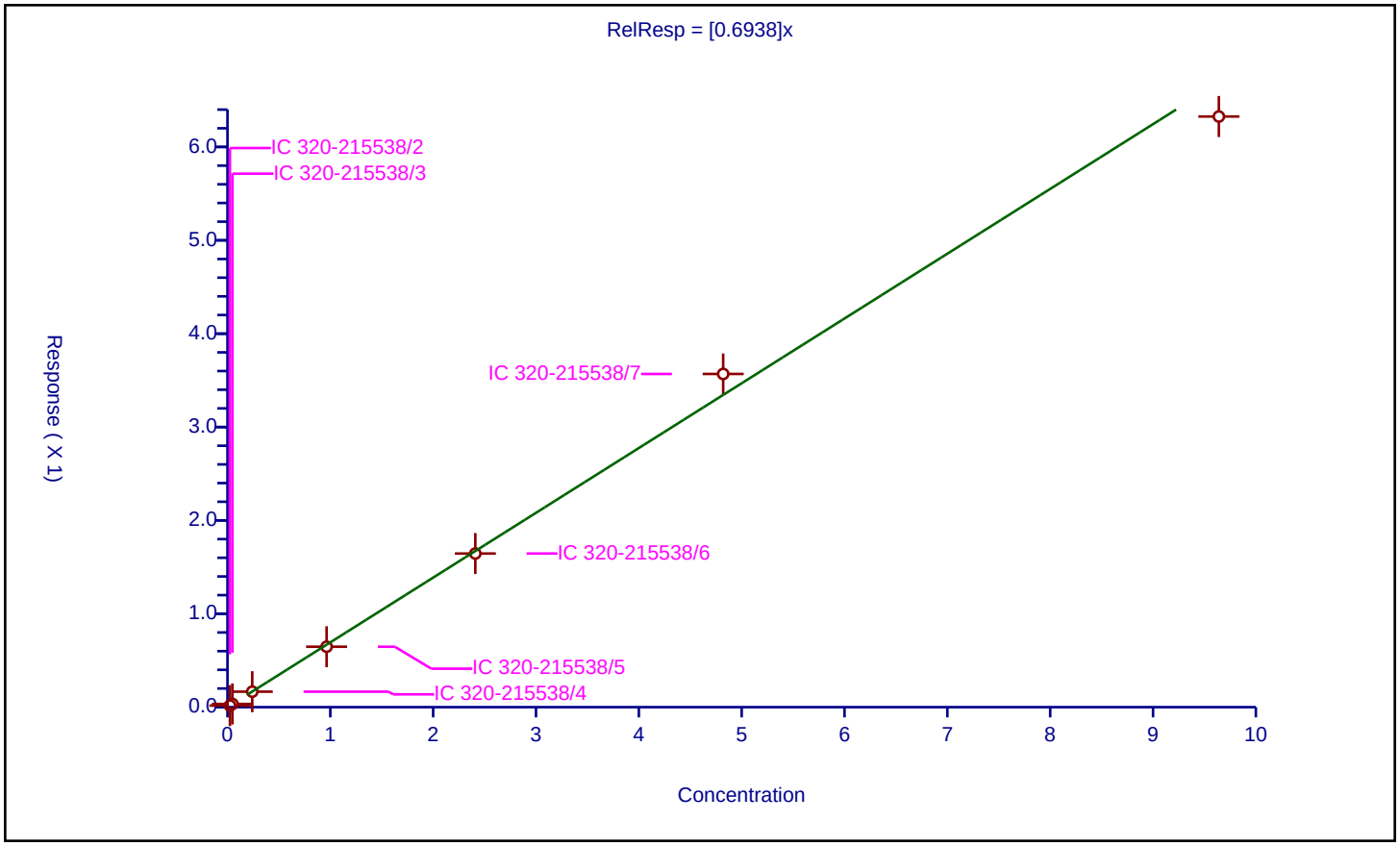
Curve Coefficients

Intercept:	0
Slope:	0.6938

Error Coefficients

Standard Error:	4290000
Relative Standard Error:	4.1
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.0241	0.016921	2.39	3544609.0	0.702129	Y
2	IC 320-215538/3	0.0482	0.034464	2.39	3668029.0	0.715017	Y
3	IC 320-215538/4	0.241	0.165978	2.39	3434108.0	0.688705	Y
4	IC 320-215538/5	0.964	0.647277	2.39	3709075.0	0.67145	Y
5	IC 320-215538/6	2.41	1.645378	2.39	3426212.0	0.682729	Y
6	IC 320-215538/7	4.82	3.568686	2.39	3490802.0	0.740391	Y
7	IC 320-215538/8	9.64	6.325932	2.39	3306882.0	0.656217	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

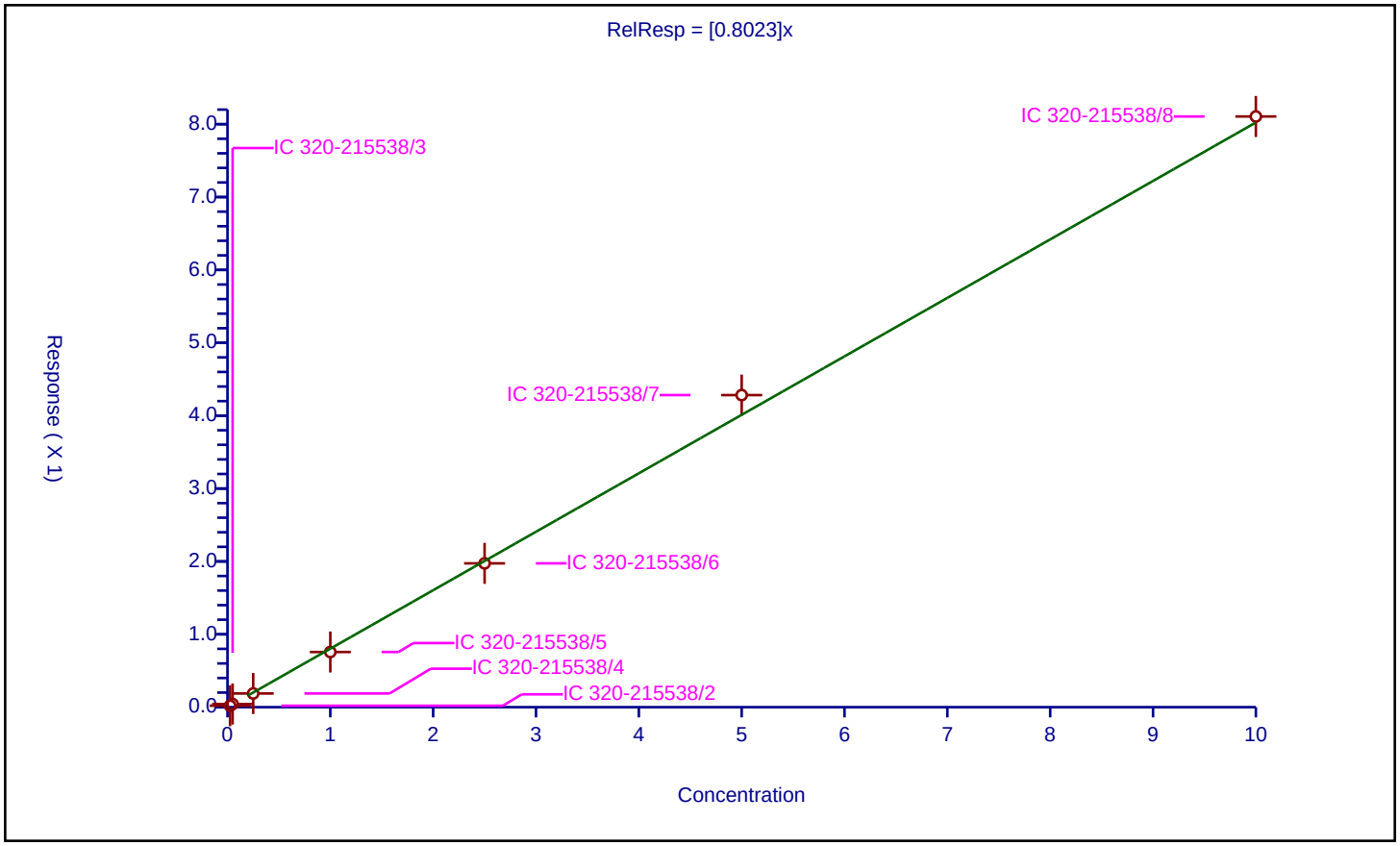
Curve Coefficients

Intercept:	0
Slope:	0.8023

Error Coefficients

Standard Error:	3510000
Relative Standard Error:	5.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.019819	2.5	2484047.0	0.792779	Y
2	IC 320-215538/3	0.05	0.043003	2.5	2598573.0	0.860068	Y
3	IC 320-215538/4	0.25	0.187582	2.5	2421277.0	0.750327	Y
4	IC 320-215538/5	1.0	0.756927	2.5	2514905.0	0.756927	Y
5	IC 320-215538/6	2.5	1.973321	2.5	2409033.0	0.789328	Y
6	IC 320-215538/7	5.0	4.28209	2.5	2347134.0	0.856418	Y
7	IC 320-215538/8	10.0	8.105591	2.5	2255059.0	0.810559	Y



Calibration / N-ethyl perfluorooctane sulfonamidoacetic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

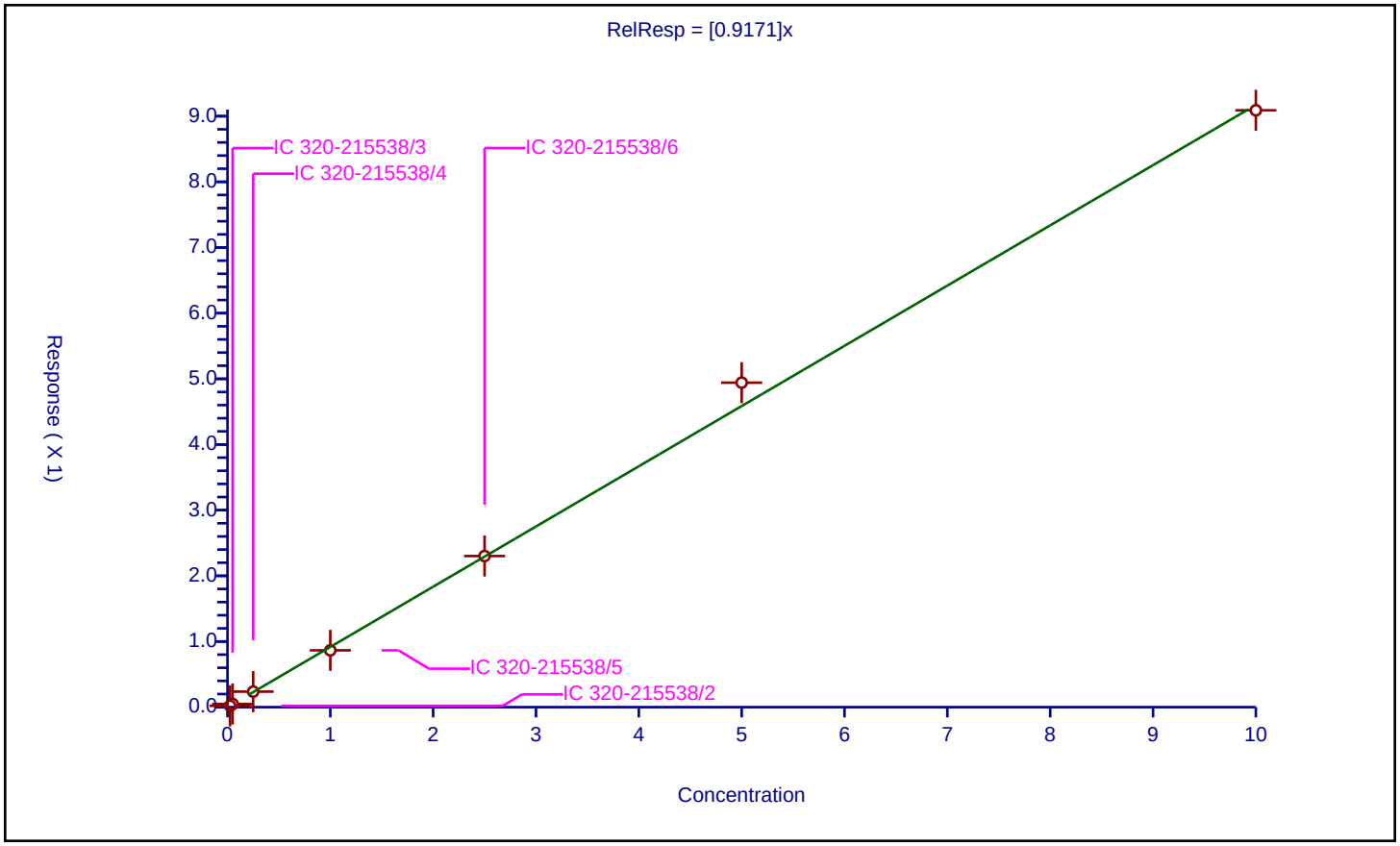
Curve Coefficients

Intercept:	0
Slope:	0.9171

Error Coefficients

Standard Error:	2660000
Relative Standard Error:	6.7
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.020367	2.5	1707772.0	0.814687	Y
2	IC 320-215538/3	0.05	0.048704	2.5	1753746.0	0.974086	Y
3	IC 320-215538/4	0.25	0.236939	2.5	1667774.0	0.947754	Y
4	IC 320-215538/5	1.0	0.865402	2.5	1794427.0	0.865402	Y
5	IC 320-215538/6	2.5	2.301447	2.5	1675412.0	0.920579	Y
6	IC 320-215538/7	5.0	4.941701	2.5	1635848.0	0.98834	Y
7	IC 320-215538/8	10.0	9.089809	2.5	1483924.0	0.908981	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

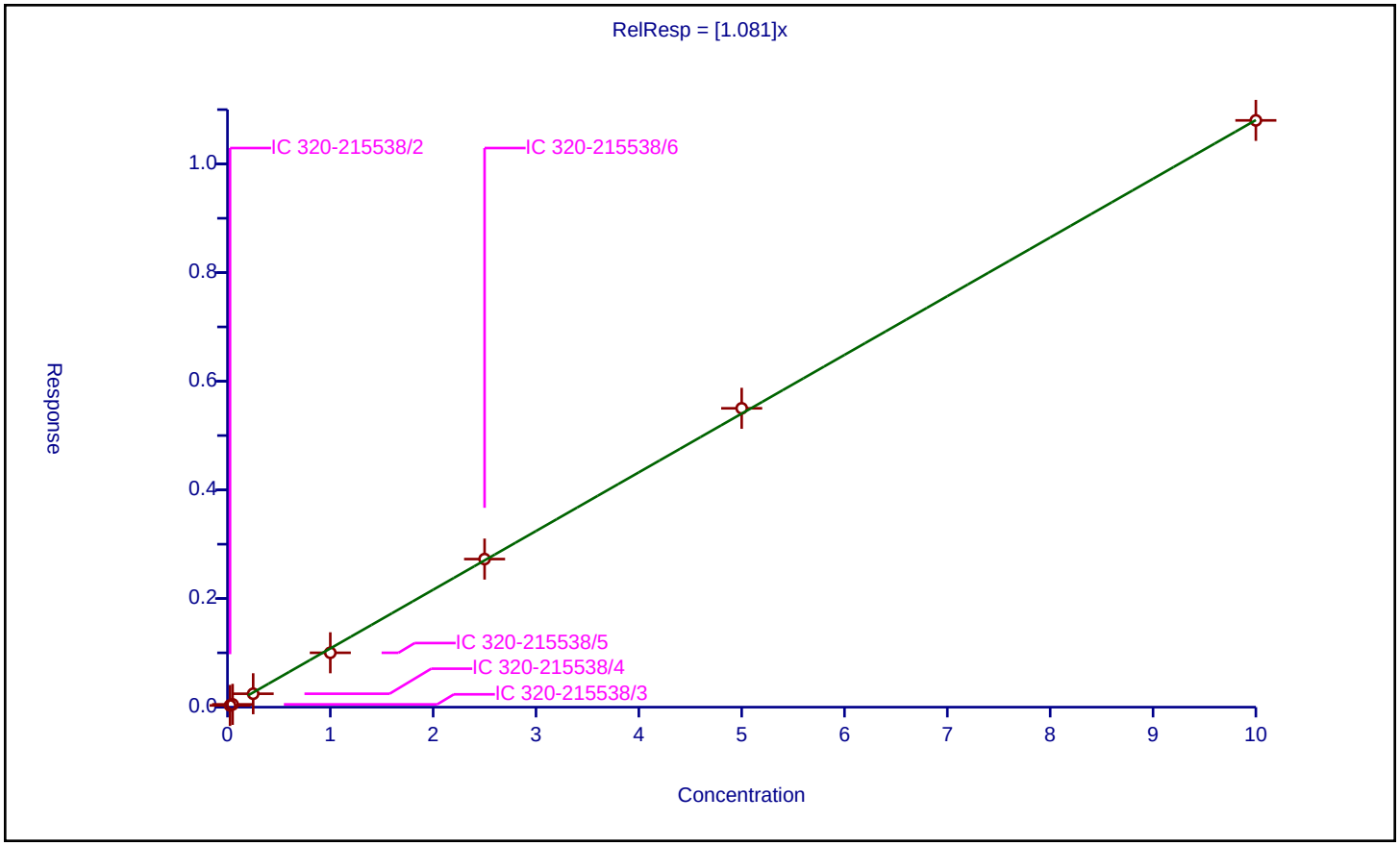
Curve Coefficients

Intercept:	0
Slope:	1.081

Error Coefficients

Standard Error:	5210000
Relative Standard Error:	8.7
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.031715	2.5	2760551.0	1.268587	Y
2	IC 320-215538/3	0.05	0.051851	2.5	2755722.0	1.037024	Y
3	IC 320-215538/4	0.25	0.246932	2.5	2730672.0	0.987728	Y
4	IC 320-215538/5	1.0	1.001281	2.5	2827344.0	1.001281	Y
5	IC 320-215538/6	2.5	2.726071	2.5	2684707.0	1.090428	Y
6	IC 320-215538/7	5.0	5.501449	2.5	2678243.0	1.10029	Y
7	IC 320-215538/8	10.0	10.801633	2.5	2518124.0	1.080163	Y



Calibration / Perfluorotridecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

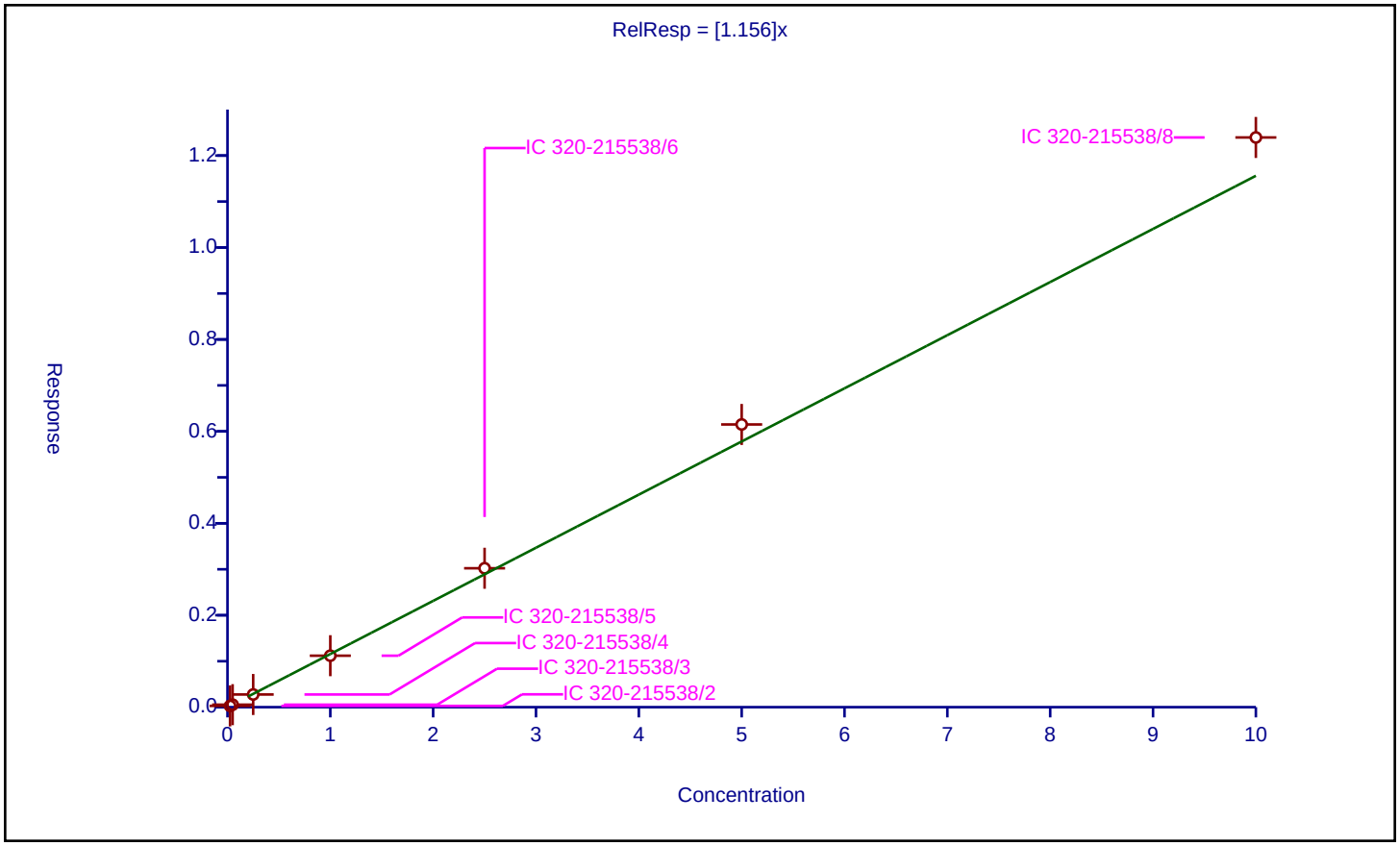
Curve Coefficients

Intercept:	0
Slope:	1.156

Error Coefficients

Standard Error:	5940000
Relative Standard Error:	5.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.027704	2.5	2760551.0	1.108148	Y
2	IC 320-215538/3	0.05	0.054106	2.5	2755722.0	1.082112	Y
3	IC 320-215538/4	0.25	0.275958	2.5	2730672.0	1.103831	Y
4	IC 320-215538/5	1.0	1.119649	2.5	2827344.0	1.119649	Y
5	IC 320-215538/6	2.5	3.02207	2.5	2684707.0	1.208828	Y
6	IC 320-215538/7	5.0	6.150388	2.5	2678243.0	1.230078	Y
7	IC 320-215538/8	10.0	12.394105	2.5	2518124.0	1.23941	Y



Calibration / Perfluorotetradecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

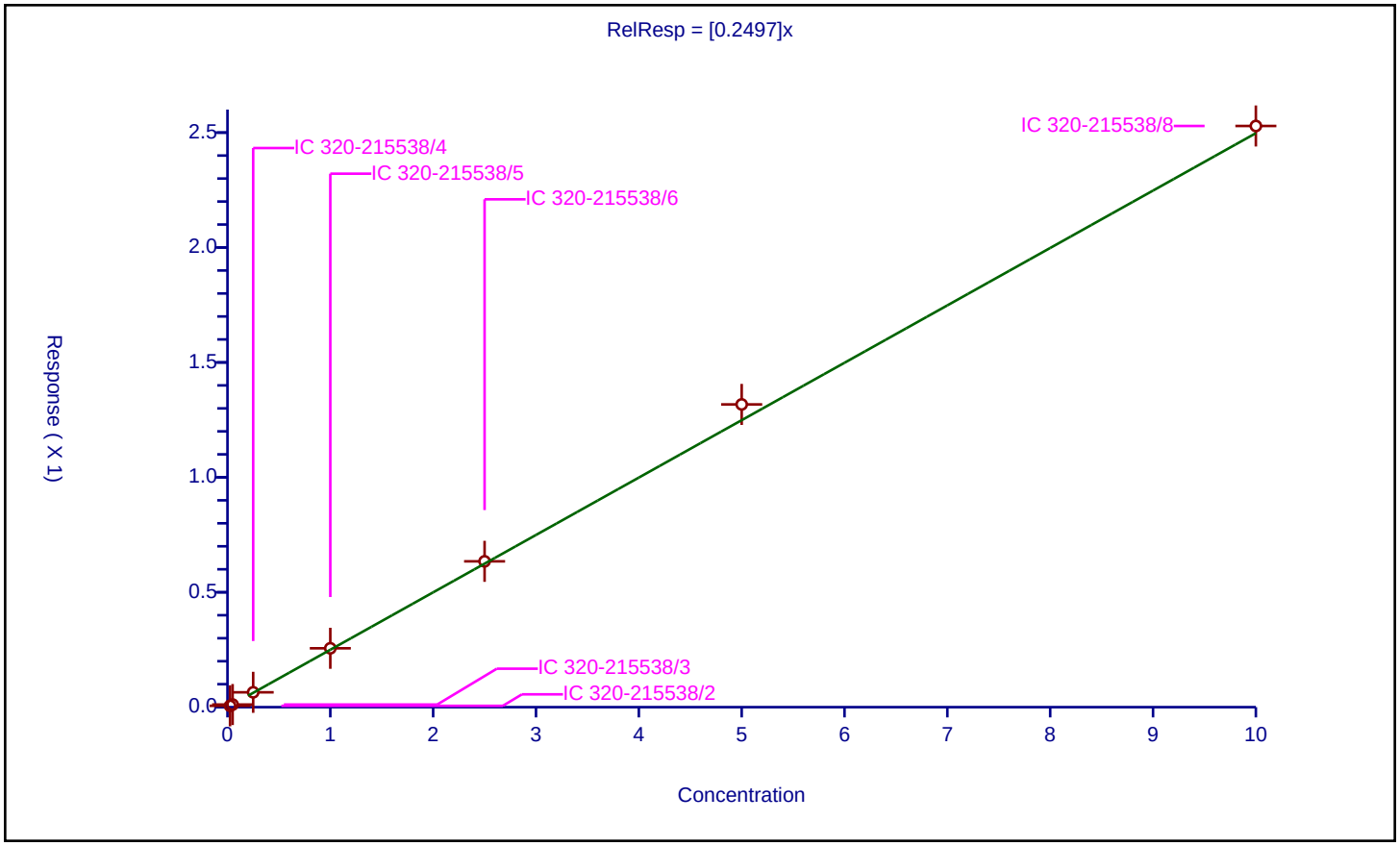
Curve Coefficients

Intercept:	0
Slope:	0.2497

Error Coefficients

Standard Error:	1580000
Relative Standard Error:	5.2
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-215538/2	0.025	0.005876	2.5	3287077.0	0.235042	Y
2	IC 320-215538/3	0.05	0.011422	2.5	3538364.0	0.228439	Y
3	IC 320-215538/4	0.25	0.064621	2.5	3442831.0	0.258482	Y
4	IC 320-215538/5	1.0	0.256116	2.5	3577558.0	0.256116	Y
5	IC 320-215538/6	2.5	0.634567	2.5	3484985.0	0.253827	Y
6	IC 320-215538/7	5.0	1.317291	2.5	3502295.0	0.263458	Y
7	IC 320-215538/8	10.0	2.528775	2.5	3237082.0	0.252878	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 320-213555/10 Calibration Date: 03/17/2018 00:12

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9442		2.55	2.50	1.8	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.141		2.44	2.50	-2.3	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	80.09		2.29	2.21	3.5	30.0
4:2 FTS	AveID	16.07	16.34		2.38	2.34	1.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9865		2.44	2.50	-2.2	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.084		2.61	2.50	4.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.081		2.21	2.28	-3.1	30.0
6:2FTS	AveID	1.665	1.612		2.30	2.38	-3.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.132		2.53	2.50	1.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.364		2.46	2.38	3.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	1.055		2.59	2.50	3.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.106		2.36	2.31	2.2	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	1.048		2.70	2.50	7.9	30.0
8:2FTS	AveID	1.257	1.264		2.41	2.40	0.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	1.023		2.69	2.50	7.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.082		2.60	2.50	3.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6837		2.58	2.41	7.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	1.001		2.56	2.50	2.2	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7586		2.26	2.50	-9.5	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.089		2.66	2.50	6.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.066		2.59	2.50	3.6	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2637		2.39	2.50	-4.4	30.0
Perfluorononanesulfonic acid	None				10.0	2.40	-100.0*	30.0
Perfluoropentanesulfonic acid	None				10.0	2.35	-100.0*	30.0
13C4 PFBA	Ave	1.277	1.322		2.59	2.50	3.5	30.0
13C5-PFPeA	Ave	0.9006	0.9221		2.56	2.50	2.4	30.0
13C3-PFBS	Ave	0.0222	0.0230		2.40	2.33	3.3	30.0
13C2 PFHxA	Ave	1.004	1.051		2.62	2.50	4.7	30.0
13C4-PFHpA	Ave	0.9767	0.9820		2.51	2.50	0.5	30.0
18O2 PFHxS	Ave	1.303	1.344		2.44	2.37	3.2	30.0
M2-6:2FTS	Ave	0.2501	0.2591		2.46	2.38	3.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 320-213555/10 Calibration Date: 03/17/2018 00:12

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9431	0.9566		2.54	2.50	1.4	30.0
13C4 PFOS	Ave	0.9113	0.9222		2.42	2.39	1.2	30.0
13C5 PFNA	Ave	0.7545	0.7649		2.53	2.50	1.4	30.0
13C8 FOSA	Ave	1.319	1.362		2.58	2.50	3.2	30.0
M2-8:2FTS	Ave	0.2350	0.2426		2.47	2.40	3.3	30.0
13C2 PFDA	Ave	0.6303	0.6356		2.52	2.50	0.8	30.0
d3-NMeFOSAA	Ave	0.2081	0.2105		2.53	2.50	1.1	30.0
13C2 PFUnA	Ave	0.4935	0.4851		2.46	2.50	-1.7	30.0
d5-NEtFOSAA	Ave	0.1990	0.2082		2.62	2.50	4.6	30.0
13C2 PFDoA	Ave	0.4680	0.4577		2.45	2.50	-2.2	30.0
13C2-PFTeDA	Ave	0.4272	0.4340		2.54	2.50	1.6	30.0
13C2-PFHxDA	Ave	0.6248	0.6152		2.46	2.50	-1.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_011.d
Lims ID: ICV Full
Client ID:
Sample Type: ICV
Inject. Date: 17-Mar-2018 00:12:15 ALS Bottle#: 18 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:48:58 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:44:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.440	-0.006	1.000	5401885	2.55			3628	
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.537	5721403	2.59		104	100585	
D 3 13C5-PFPeA										
267.90 > 223.00	1.691	1.696	-0.005	0.633	3991424	2.56		102	129117	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.691	1.698	-0.007	1.000	4556129	2.44			1758	
D 47 13C3-PFBS										
301.90 > 83.00	1.726	1.730	-0.004	0.646	92394	2.40		103	522	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.726	1.733	-0.007	1.000	7041872	2.29			3158	
298.90 > 99.00	1.726	1.733	-0.007	1.000	2973557		2.37(1.25-3.74)		3032	
D 60 M2-4:2FTS										
329.00 > 81.00	1.935	1.942	-0.007	0.724	647518	NC			7120	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.935	1.944	-0.009	1.000	1517989	2.38			70600	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.740	4550837	2.62		105	138888	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.976	1.982	-0.006	1.000	4489252	2.44			14788	
313.00 > 119.00	1.976	1.982	-0.006	1.000	404861		11.09(5.03-15.10)		9174	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.311	0.004	1.000	4606134	2.61			9749	
363.00 > 169.00	2.315	2.311	0.004	1.000	1700073		2.71(1.13-3.40)		31377	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.867	4250721	2.51		101	79088	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	5734629	2.21			691	
399.00 > 99.00	2.328	2.326	0.002	1.000	1813461		3.16(1.50-4.49)		679	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.871	5505090	2.44		103	71055	
D 12 M2-6:2FTS										
429.00 > 81.00	2.647	2.651	-0.004	0.991	1065489	2.46		104	27640	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.647	2.652	-0.005	1.000	1717537	2.30			57256	
* 62 13C2-PFOA										
415.00 > 370.00	2.671	2.678	-0.007		4328656	2.50			72093	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.671	2.678	-0.007	1.000	4685701	2.53			2031	
413.00 > 169.00	2.671	2.678	-0.007	1.000	2533012		1.85(0.84-2.52)		9849	
D 14 13C4 PFOA										
417.00 > 372.00	2.671	2.678	-0.007	1.000	4140983	2.54		101	80592	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.679	2.684	-0.005	1.000	5171675	2.46			58106	
449.00 > 99.00	2.679	2.684	-0.005	1.000	1381220		3.74(1.94-5.82)		27188	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.044	3.050	-0.006	1.000	4087568	2.36			13209	
499.00 > 99.00	3.044	3.050	-0.006	1.000	930895		4.39(2.31-6.93)		7381	
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.050	-0.006	1.140	3816155	2.42		101	27105	
20 Perfluorononanoic acid										
463.00 > 419.00	3.044	3.052	-0.008	1.000	3491934	2.59			8077	
463.00 > 169.00	3.044	3.052	-0.008	1.000	854685		4.09(1.90-5.69)		23856	
D 19 13C5 PFNA										
468.00 > 423.00	3.044	3.052	-0.008	1.140	3310919	2.53		101	82406	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.379	3.388	-0.009	1.000	6180644	2.70			60921	
D 21 13C8 FOSA										
506.00 > 78.00	3.379	3.388	-0.009	1.265	5896208	2.58		103	64390	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.397	3.406	-0.009	1.000	1274172	2.41			47471	
D 26 M2-8:2FTS										
529.00 > 81.00	3.397	3.406	-0.009	1.272	1006077	2.47		103	28136	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.415	3.416	-0.001	1.003	2813387	2.69			14655	
513.00 > 169.00	3.406	3.416	-0.010	1.000	488219		5.76(2.36-7.09)		21628	
D 23 13C2 PFDA										
515.00 > 470.00	3.406	3.416	-0.010	1.275	2751448	2.52		101	40710	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.560	3.570	-0.010	1.333	911160	2.53		101	24502	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.569	3.571	-0.002	1.002	986114	2.60			9760	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.727	3.729	-0.002	1.000	2633762	2.58			55447	
599.00 > 99.00	3.727	3.729	-0.002	1.000	848075		3.11(1.39-4.16)		17795	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.399	901386	2.62		105	1738	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.738	3.746	-0.008	1.000	902302	2.56			18632	
D 30 13C2 PFUnA										
565.00 > 520.00	3.738	3.747	-0.009	1.399	2099983	2.46		98.3	54166	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.738	3.750	-0.012	1.000	1592969	2.26			4442	
563.00 > 169.00	3.748	3.750	-0.002	1.003	444020		3.59(2.12-6.36)		52364	
D 36 13C2 PFDoA										
615.00 > 570.00	4.035	4.041	-0.006	1.511	1981289	2.45		97.8	11104	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.035	4.042	-0.007	1.000	2158005	2.66			385	
613.00 > 169.00	4.035	4.042	-0.007	1.000	519175		4.16(2.13-6.40)		15351	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.298	4.304	-0.006	1.000	2112495	2.59			427	
663.00 > 169.00	4.298	4.304	-0.006	1.000	714785		2.96(1.25-3.76)		8933	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.701	1878436	2.54		102	15695	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.543	4.545	-0.002	1.000	495306	2.39			6051	
713.00 > 219.00	4.533	4.545	-0.012	0.998	349581		1.42(0.71-2.13)		4317	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.855	2662998	2.46		98.5	9883	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.955	4.960	-0.005	1.000	2429227	NC			209	
813.00 > 169.00	4.955	4.960	-0.005	1.000	445490		5.45(2.86-8.58)		4231	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.315	5.320	-0.005	1.000	2745943	NC			471	
913.00 > 169.00	5.315	5.320	-0.005	1.000	337941		8.13(3.83-11.48)		3421	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00011 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:49:00 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_011.d

Injection Date: 17-Mar-2018 00:12:15 Instrument ID: A8_N

Lims ID: ICV Full

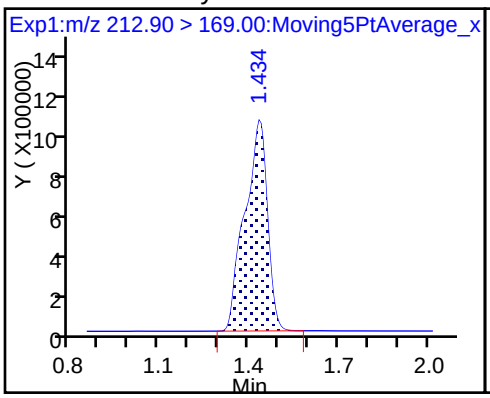
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 10

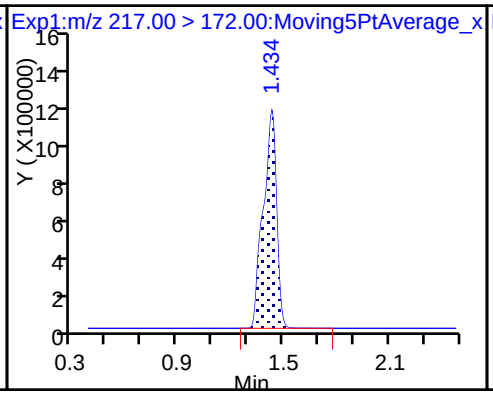
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

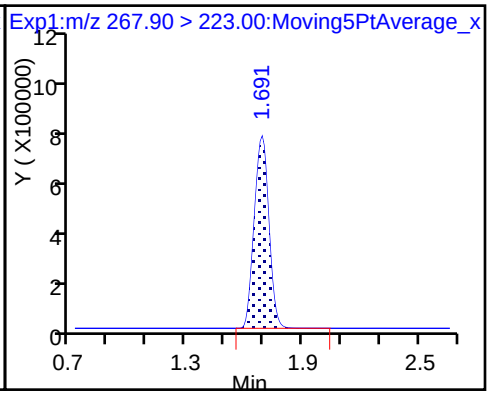
2 Perfluorobutyric acid



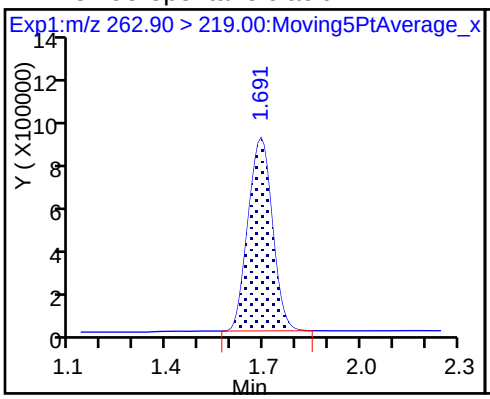
D 1 13C4 PFBA



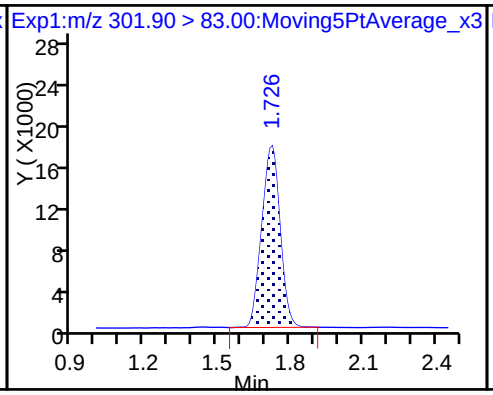
D 3 13C5-PFPeA



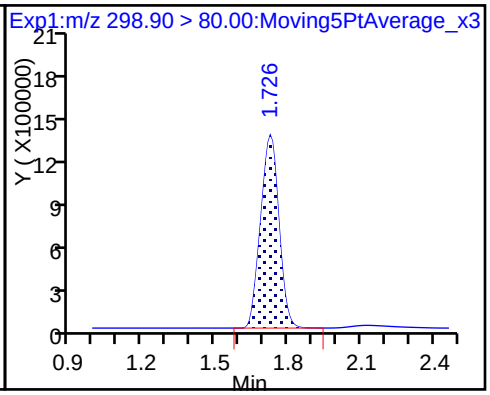
4 Perfluoropentanoic acid



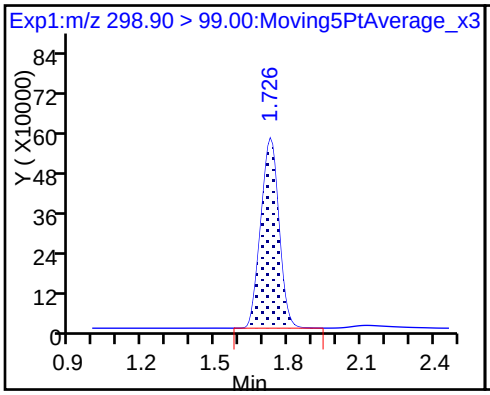
D 47 13C3-PFBS



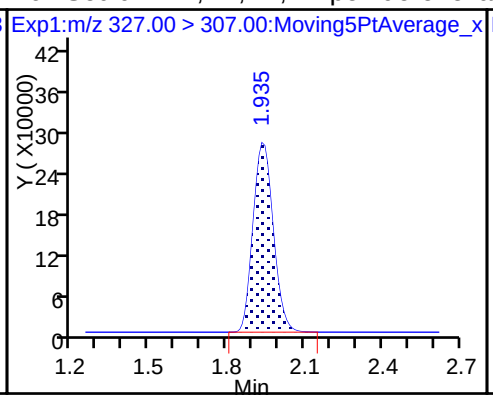
5 Perfluorobutanesulfonic acid



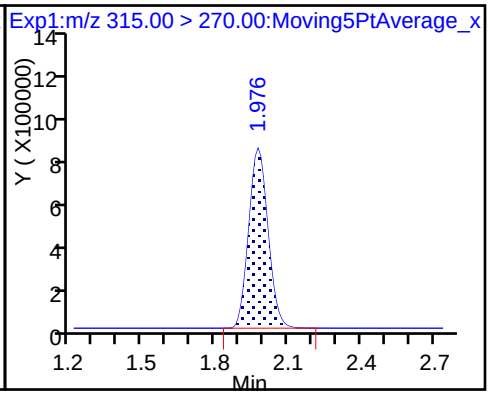
5 Perfluorobutanesulfonic acid



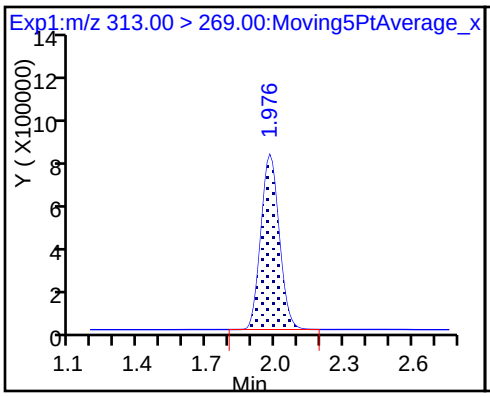
61 Sodium 1H,1H,2H,2H-perfluorohexa



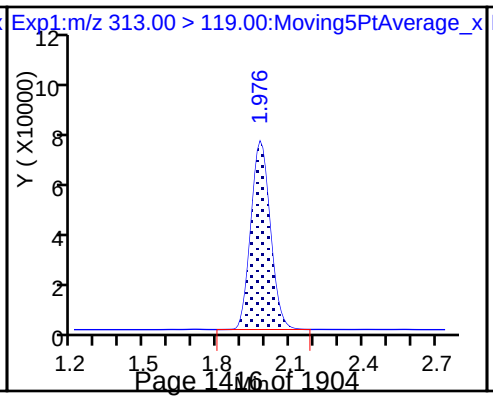
De 7 13C2 PFHxA



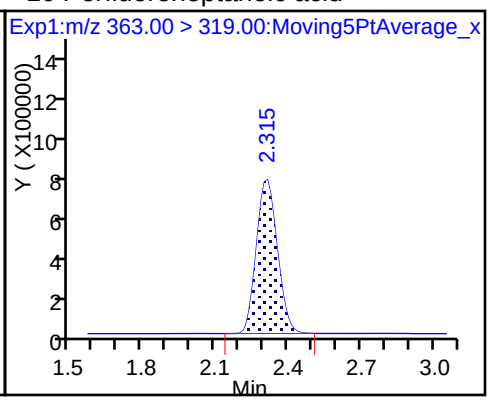
6 Perfluorohexanoic acid



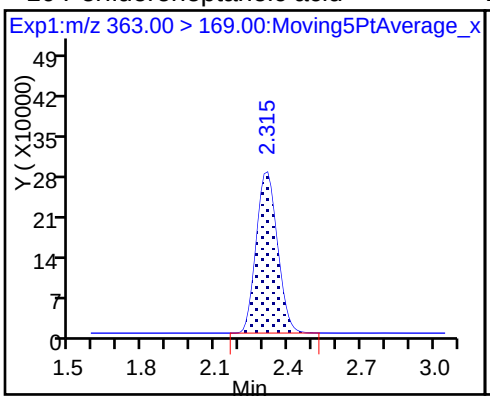
6 Perfluorohexanoic acid



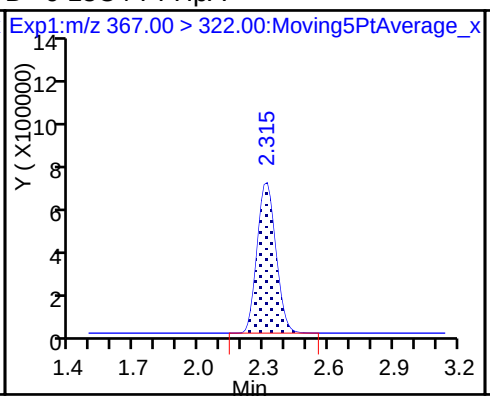
10 Perfluoroheptanoic acid



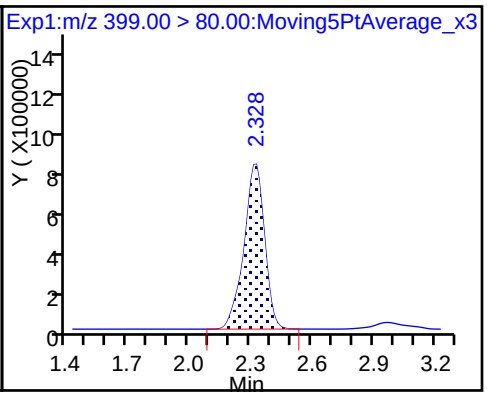
10 Perfluoroheptanoic acid



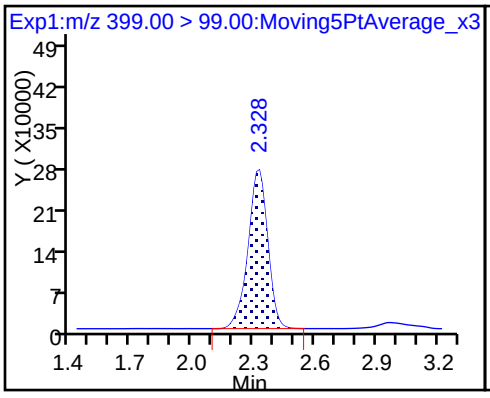
D 9 13C4-PFHpA



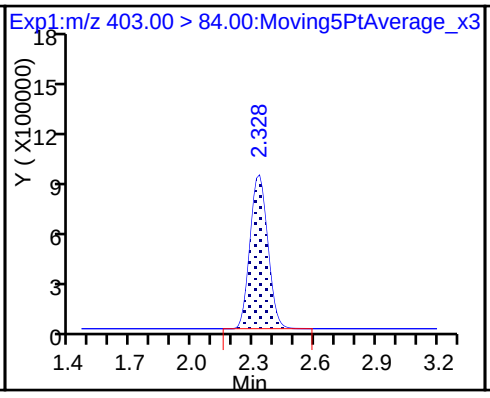
8 Perfluorohexanesulfonic acid



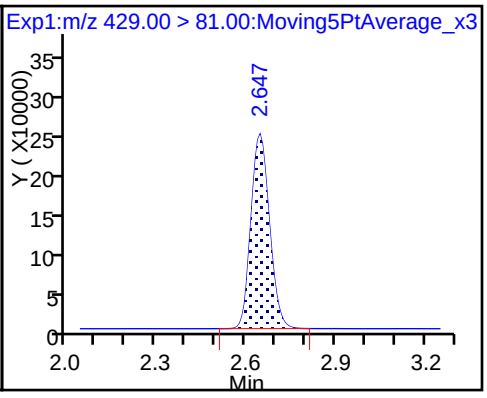
8 Perfluorohexanesulfonic acid



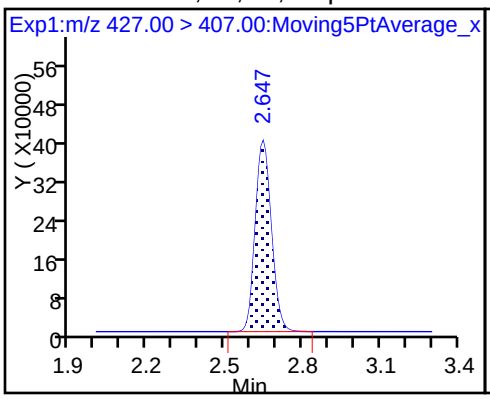
D 11 18O2 PFHxS



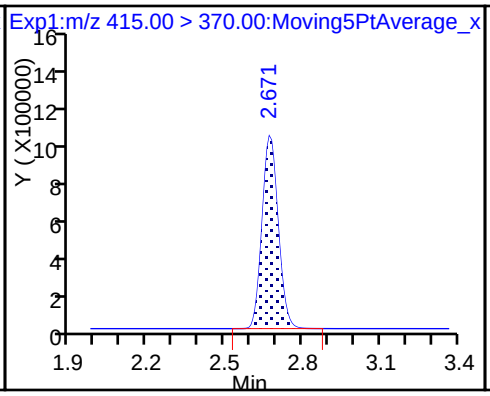
D 12 M2-6:2FTS



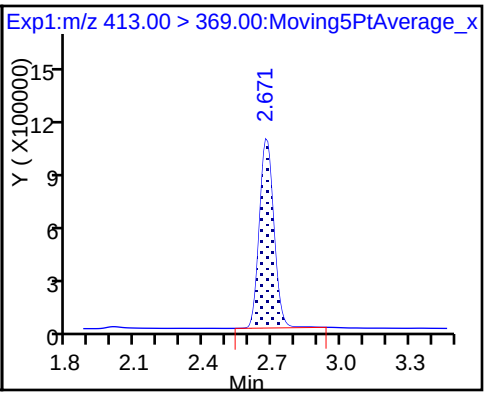
13 Sodium 1H,1H,2H,2H-perfluorooctane



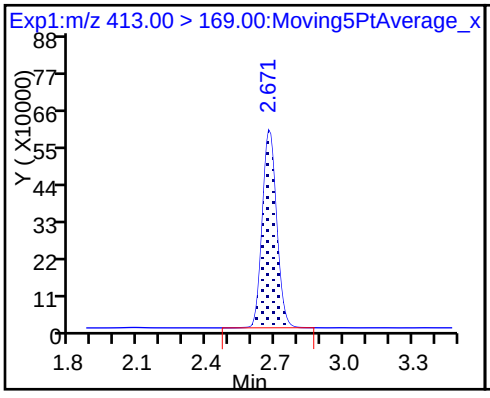
M2 13C2-PFOA



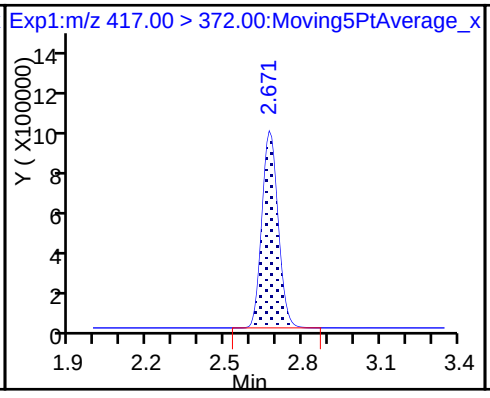
15 Perfluorooctanoic acid



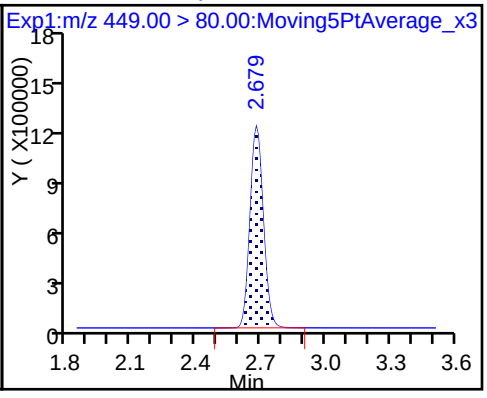
15 Perfluorooctanoic acid



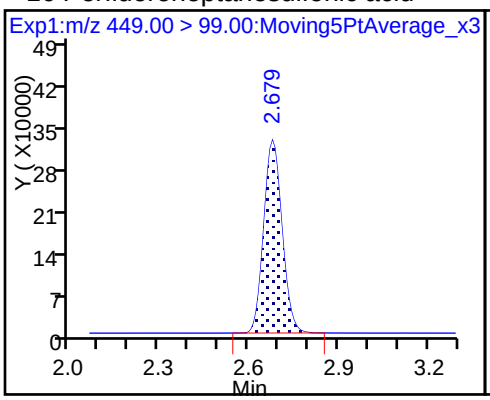
D 14 13C4 PFOA



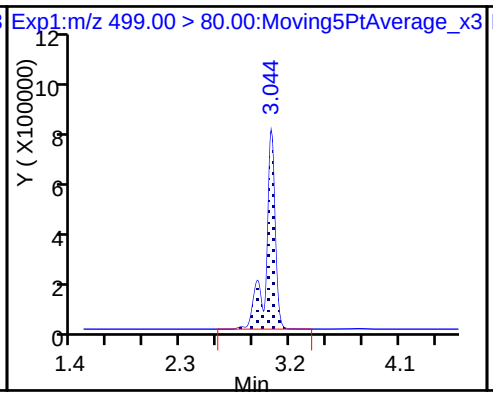
16 Perfluoroheptanesulfonic acid



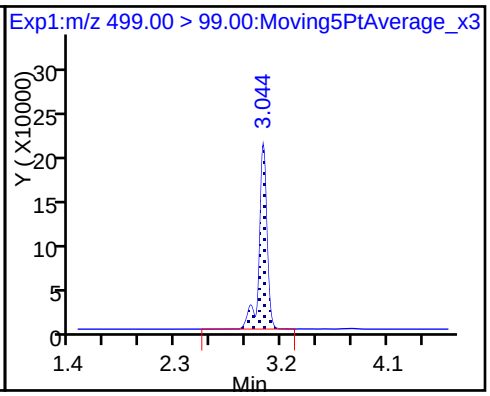
16 Perfluoroheptanesulfonic acid



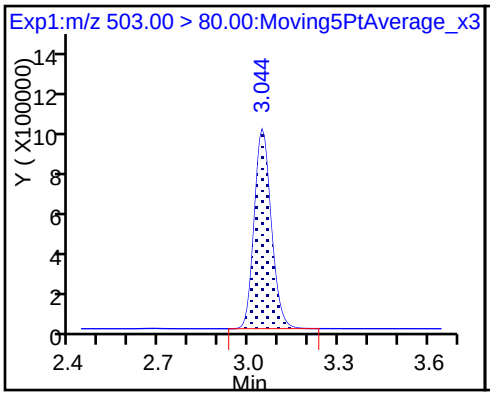
17 Perfluorooctane sulfonic acid



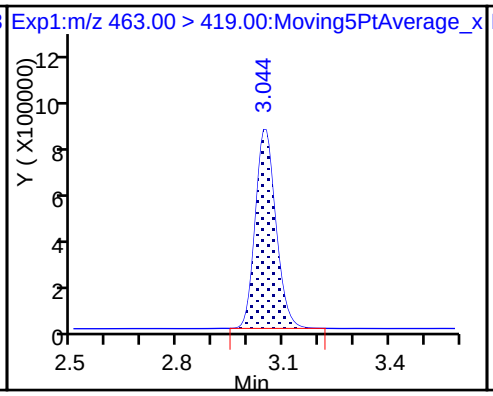
17 Perfluorooctane sulfonic acid



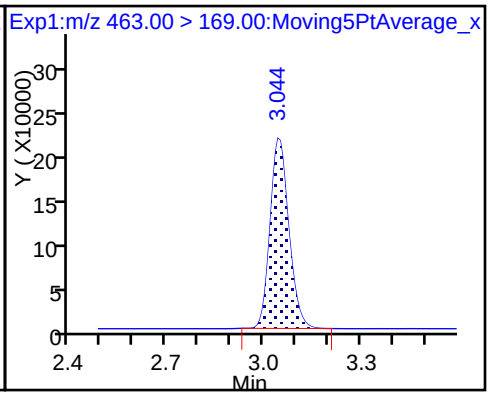
D 18 13C4 PFOS



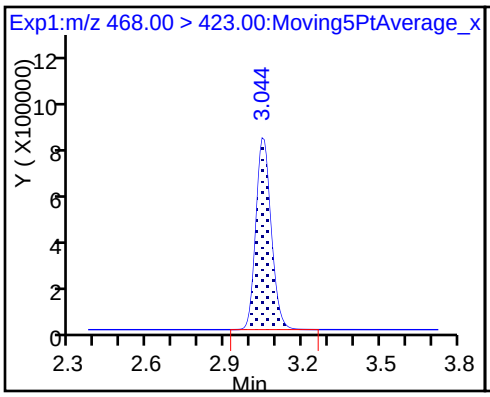
20 Perfluorononanoic acid



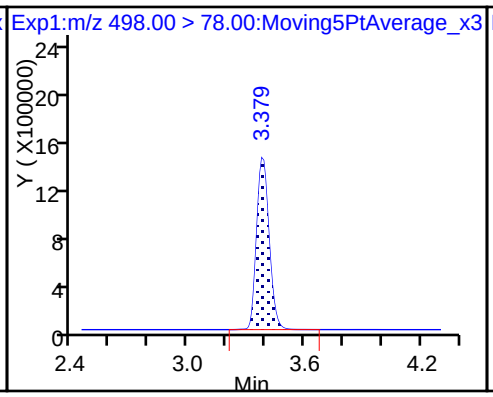
20 Perfluorononanoic acid



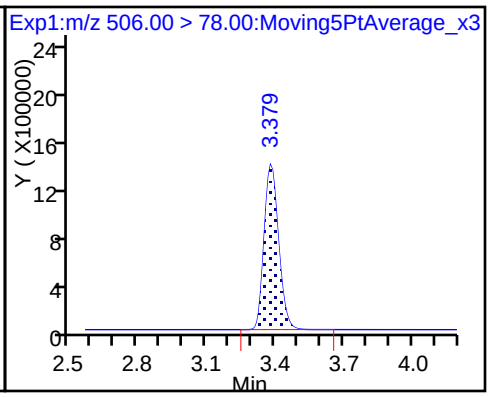
D 19 13C5 PFNA



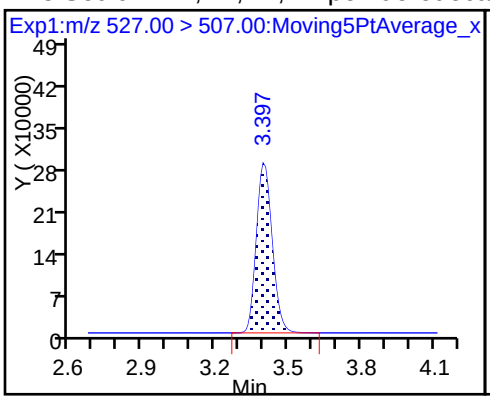
22 Perfluorooctane Sulfonamide



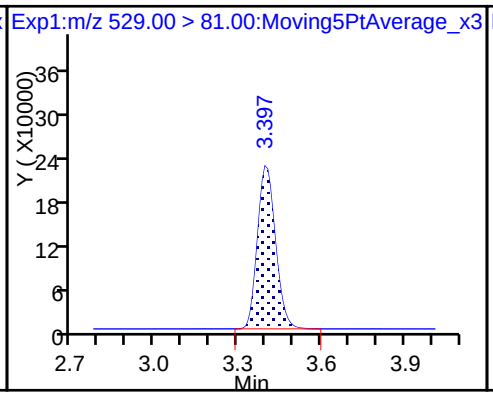
D 21 13C8 FOSA



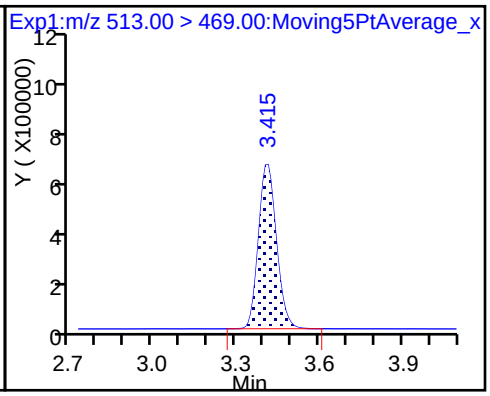
25 Sodium 1H,1H,2H,2H-perfluorodecane



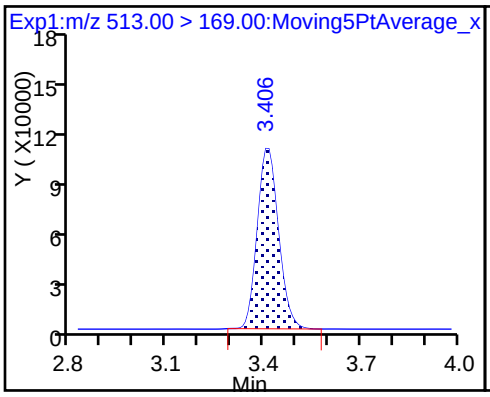
D 26 M2-8:2FTS



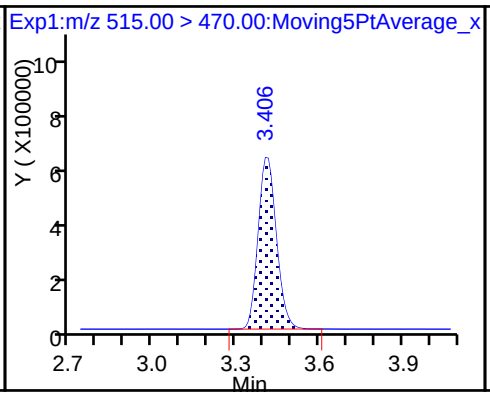
24 Perfluorodecanoic acid



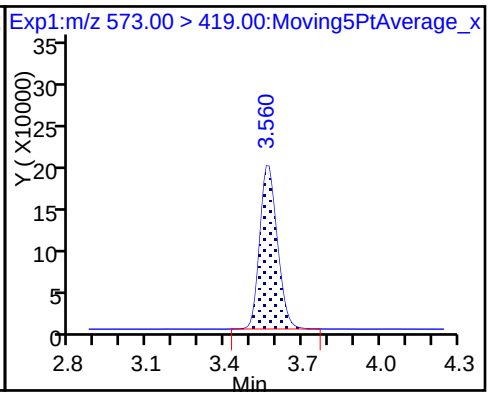
24 Perfluorodecanoic acid



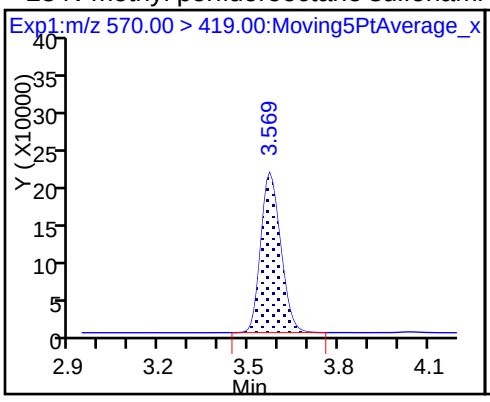
D 23 13C2 PFDA



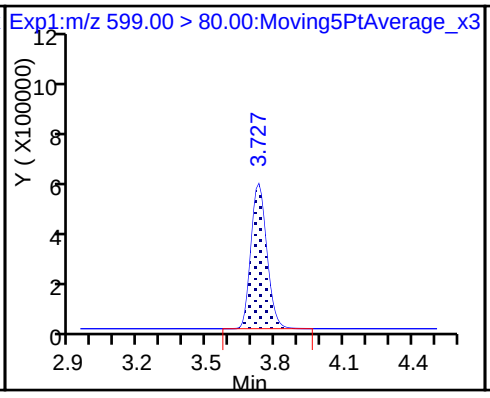
D 27 d3-NMeFOSAA



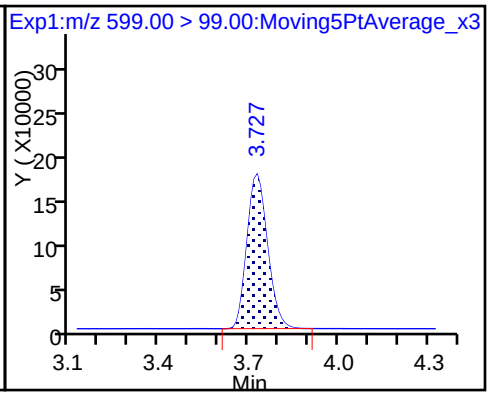
28 N-methyl perfluorooctane sulfonami



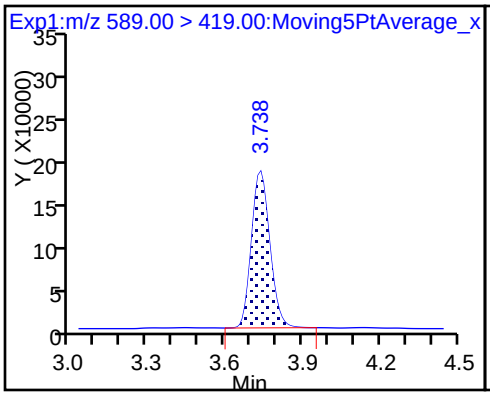
29 Perfluorodecane Sulfonic acid



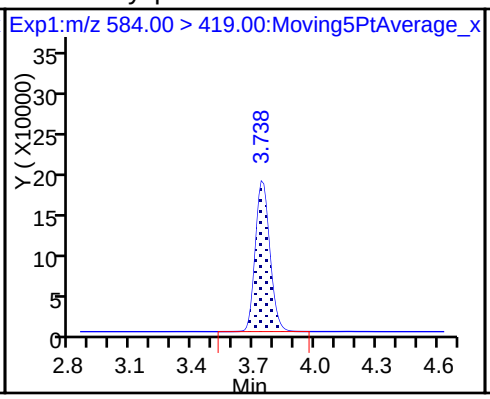
29 Perfluorodecane Sulfonic acid



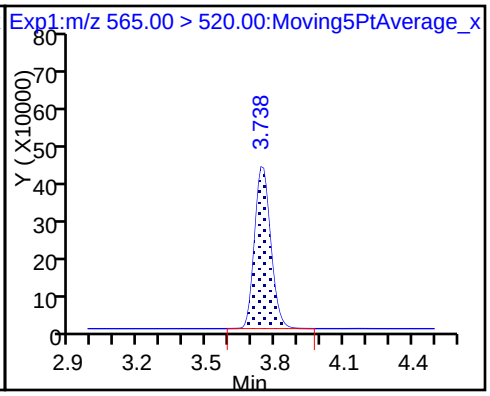
D 32 d5-NEtFOSAA



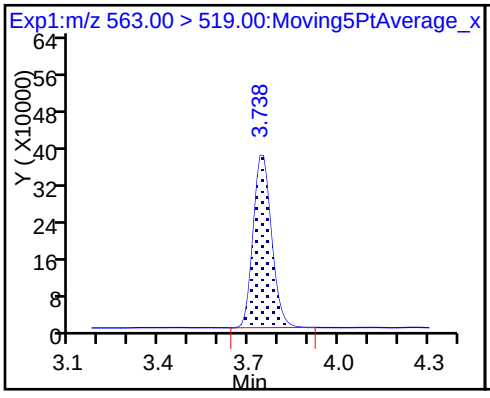
33 N-ethyl perfluorooctane sulfonamid



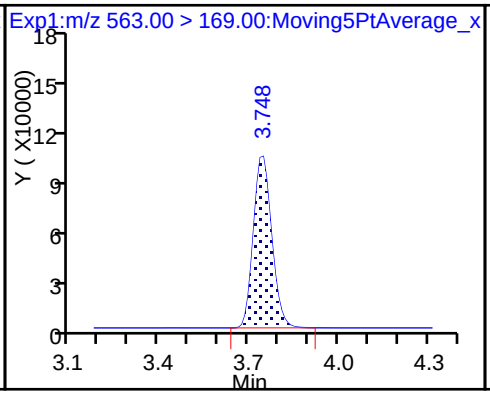
D 30 13C2 PFUnA



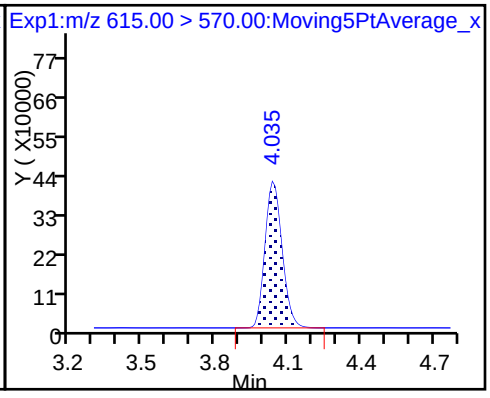
31 Perfluoroundecanoic acid



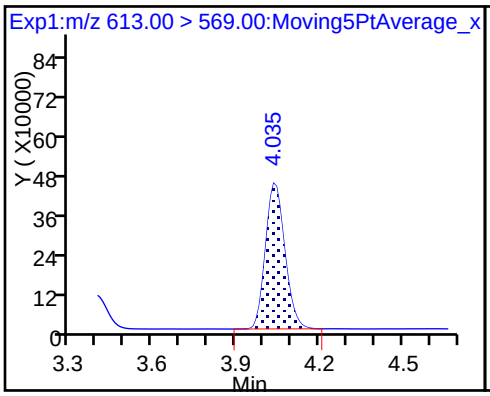
31 Perfluoroundecanoic acid



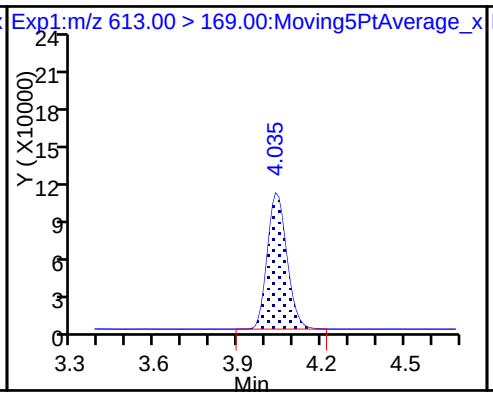
D 36 13C2 PFDoA



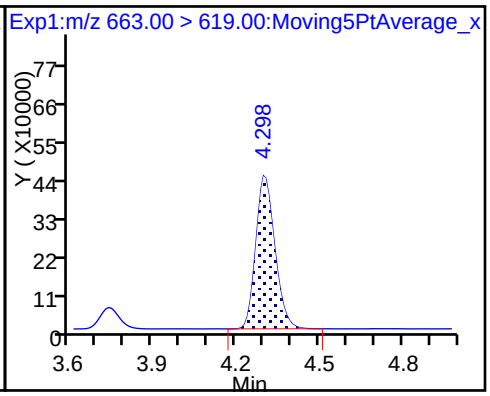
37 Perfluorododecanoic acid



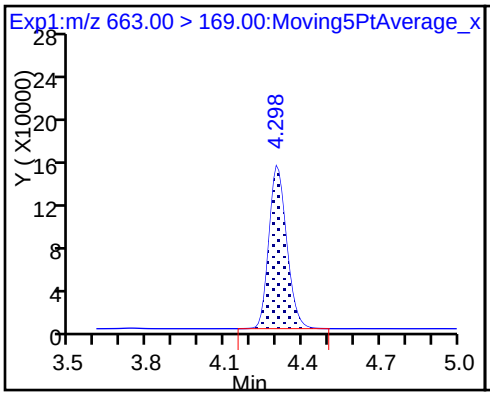
37 Perfluorododecanoic acid



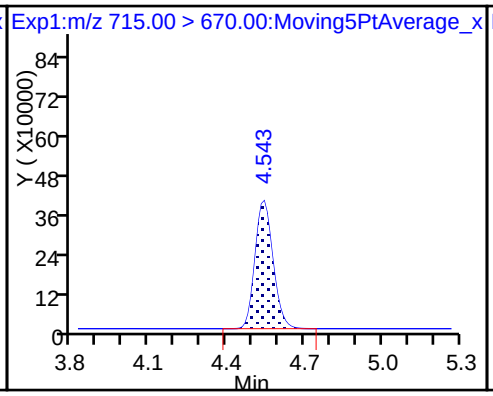
41 Perfluorotridecanoic acid



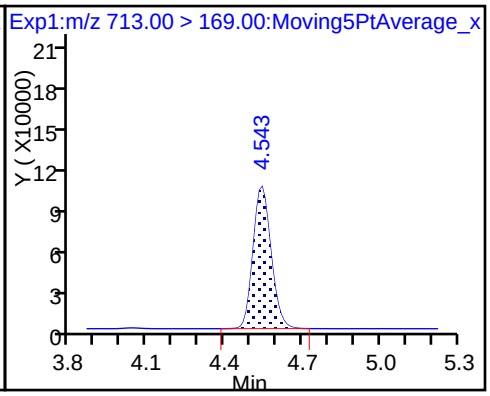
41 Perfluorotridecanoic acid



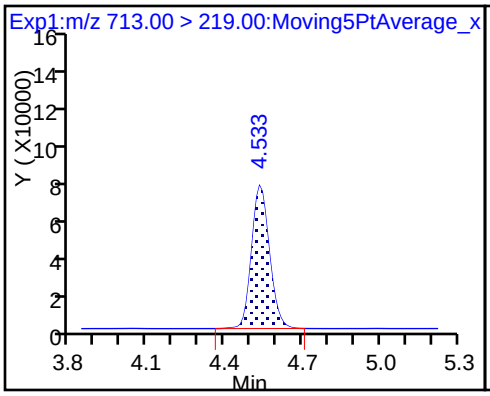
D 43 13C2-PFTeDA



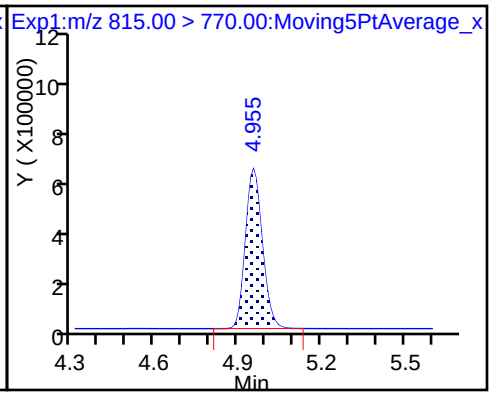
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVL 320-213658/2 Calibration Date: 03/19/2018 10:18

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9378		0.0506	0.0500	1.1	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.115		0.0477	0.0500	-4.5	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	76.95		0.0440	0.0442	-0.6	30.0
4:2 FTS	AveID	16.07	11.46		0.400	0.0467	-28.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.057		0.0524	0.0500	4.7	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.056		0.0509	0.0500	1.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.221		0.0498	0.0455	9.5	30.0
6:2FTS	AveID	1.665	1.659		0.400	0.0474	-0.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.404		0.0509	0.0476	6.9	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.106		0.0495	0.0500	-0.9	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.9655		0.0473	0.0500	-5.3	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.098		0.0470	0.0464	1.4	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	1.020		0.0525	0.0500	5.0	30.0
8:2FTS	AveID	1.257	1.252		0.400	0.0479	-0.4	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	1.068		0.0563	0.0500	12.6	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.297		0.400	0.0500	24.5	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6771		0.0511	0.0482	6.0	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.6906		0.0412	0.0500	-17.6	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.8817		0.400	0.0500	-9.9	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.163		0.0568	0.0500	13.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.205		0.0586	0.0500	17.1	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2681		0.0486	0.0500	-2.8	30.0
13C4 PFBA	Ave	1.277	1.198		2.35	2.50	-6.2	30.0
13C5-PFPeA	Ave	0.9006	0.7801		2.17	2.50	-13.4	30.0
13C3-PFBS	Ave	0.0222	0.0220		2.30	2.33	-1.2	30.0
13C2 PFHxA	Ave	1.004	0.9144		2.28	2.50	-8.9	30.0
13C4-PFHpA	Ave	0.9767	0.9748		2.50	2.50	-0.2	30.0
18O2 PFHxS	Ave	1.303	1.305		2.37	2.37	0.2	30.0
M2-6:2FTS	Ave	0.2501	0.2121		2.01	2.38	-15.2	30.0
13C4 PFOA	Ave	0.9431	0.9351		2.48	2.50	-0.9	30.0
13C4 PFOS	Ave	0.9113	0.8719		2.29	2.39	-4.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVL 320-213658/2 Calibration Date: 03/19/2018 10:18

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7718		2.56	2.50	2.3	30.0
13C8 FOSA	Ave	1.319	1.336		2.53	2.50	1.2	30.0
M2-8:2FTS	Ave	0.2350	0.2500		2.55	2.40	6.4	30.0
13C2 PFDA	Ave	0.6303	0.6634		2.63	2.50	5.2	30.0
d3-NMeFOSAA	Ave	0.2081	0.2277		2.73	2.50	9.4	30.0
13C2 PFUnA	Ave	0.4935	0.5190		2.63	2.50	5.2	30.0
d5-NEtFOSAA	Ave	0.1990	0.2439		3.06	2.50	22.6	30.0
13C2 PFDoA	Ave	0.4680	0.4703		2.51	2.50	0.5	30.0
13C2-PFTeDA	Ave	0.4272	0.4690		2.74	2.50	9.8	30.0
13C2-PFHxDA	Ave	0.6248	0.6768		2.71	2.50	8.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\2018.03.19LLA_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 19-Mar-2018 10:18:23 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 10:49:52 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK040

First Level Reviewer: hannigana Date: 19-Mar-2018 10:49:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.434	0.012	0.534	5306857	2.35		93.8	94820	
2 Perfluorobutyric acid										
212.90 > 169.00	1.446	1.446	0.0	1.000	99536	0.0506		101	50.0	
D 3 13C5-PFPeA										
267.90 > 223.00	1.708	1.691	0.017	0.630	3456106	2.17		86.6	74851	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.708	1.709	-0.001	1.000	77072	0.0477		95.5	27.9	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.726	0.018	0.643	90439	2.30		98.8	563	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.744	0.0	1.000	132302	0.0440		99.4	58.7	
298.90 > 99.00	1.744	1.744	0.0	1.000	55587		2.38(1.25-3.74)		57.2	
D 60 M2-4:2FTS										
329.00 > 81.00	1.965	1.945	0.020	0.725	488969	NC			4307	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.965	1.966	-0.001	1.000	20813	0.0333		71.3	1311	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.976	0.020	0.737	4050905	2.28		91.1	122605	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.997	-0.001	1.000	85605	0.0524		105	303	
313.00 > 119.00	2.007	1.997	0.010	1.005	6561		13.05(5.03-15.10)		200	
D 9 13C4-PFHpA										
367.00 > 322.00	2.340	2.315	0.025	0.863	4318633	2.50		99.8	92758	
D 11 18O2 PFHxS										
403.00 > 84.00	2.353	2.328	0.025	0.868	5470957	2.37		100	72821	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.340	2.341	-0.001	1.000	91167	0.0509		102	184	
363.00 > 169.00	2.340	2.341	-0.001	1.000	38412		2.37(1.13-3.40)		679	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.353	2.354	-0.001	1.000	128558	0.0498		110	18.0	
399.00 > 99.00	2.353	2.354	-0.001	1.000	44225		2.91(1.50-4.49)		18.1	
D 12 M2-6:2FTS										
429.00 > 81.00	2.686	2.647	0.039	0.991	892605	2.01		84.8	18596	
D 14 13C4 PFOA										
417.00 > 372.00	2.710	2.679	0.031	1.000	4142391	2.48		99.1	107975	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.686	2.689	-0.003	1.000	29557	0.0472		99.7	1396	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.718	2.712	0.006	1.003	91652	0.0495		99.1	28.0	
413.00 > 169.00	2.710	2.712	-0.002	1.000	51396		1.78(0.84-2.52)		198	
* 62 13C2-PFOA										
415.00 > 370.00	2.710	2.712	-0.002		4430116	2.50			74389	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.718	2.720	-0.002	1.000	103289	0.0509		107	2754	
449.00 > 99.00	2.718	2.720	-0.002	1.000	26360		3.92(1.94-5.82)		888	
D 18 13C4 PFOS										
503.00 > 80.00	3.087	3.051	0.036	1.139	3692727	2.29		95.7	42895	
D 19 13C5 PFNA										
468.00 > 423.00	3.095	3.051	0.044	1.142	3419035	2.56		102	58798	
20 Perfluorononanoic acid										
463.00 > 419.00	3.095	3.096	-0.001	1.000	66021	0.0473		94.7	137	
463.00 > 169.00	3.095	3.096	-0.001	1.000	15914		4.15(1.90-5.69)		385	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.095	3.096	-0.001	1.003	78699	0.0470		101	292	
499.00 > 99.00	3.095	3.096	-0.001	1.003	21216		3.71(2.31-6.93)		193	
D 21 13C8 FOSA										
506.00 > 78.00	3.406	3.388	0.018	1.257	5916427	2.53		101	83369	
D 26 M2-8:2FTS										
529.00 > 81.00	3.451	3.406	0.045	1.273	1060910	2.55		106	23425	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.406	3.406	0.0	1.000	120741	0.0525		105	4525	
D 23 13C2 PFDA										
515.00 > 470.00	3.460	3.415	0.045	1.277	2938904	2.63		105	36866	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.451	3.452	-0.001	1.000	26566	0.0477		99.6	851	
24 Perfluorodecanoic acid										R
513.00 > 469.00	3.460	3.461	-0.001	1.000	62778	0.0563		113	308	R
513.00 > 169.00	3.460	3.461	-0.001	1.000	7580		8.28(2.36-7.09)		335	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.620	3.569	0.051	1.336	1008690	2.73		109	30452	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.620	3.620	0.0	1.000	26156	0.0622		124	373	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.789	3.738	0.051	1.398	1080568	3.06		123	2095	
D 30 13C2 PFUnA										
565.00 > 520.00	3.789	3.748	0.041	1.398	2299129	2.63		105	68220	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.778	3.779	-0.001	1.000	50427	0.0511		106	3509	
599.00 > 99.00	3.778	3.779	-0.001	1.000	17478		2.89(1.39-4.16)		402	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.799	3.800	-0.001	1.003	19055	0.0450		90.1	385	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.789	3.800	-0.011	1.000	31755	0.0412		82.4	105	
563.00 > 169.00	3.789	3.800	-0.011	1.000	10254		3.10(2.12-6.36)		650	
D 36 13C2 PFDoA										
615.00 > 570.00	4.088	4.036	0.052	1.508	2083262	2.51		100	12647	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.088	4.099	-0.011	1.000	48437	0.0568		114	8.3	
613.00 > 169.00	4.088	4.099	-0.011	1.000	10996		4.40(2.13-6.40)		206	
41 Perfluorotridecanoic acid										R
663.00 > 619.00	4.361	4.361	0.0	1.000	50207	0.0586		117	8.9	R
663.00 > 169.00	4.361	4.361	0.0	1.000	11272		4.45(1.25-3.76)		124	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.606	4.544	0.062	1.699	2077648	2.74		110	16057	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.606	4.606	0.0	1.000	11142	0.0486		97.2	145	
713.00 > 219.00	4.595	4.606	-0.011	0.998	8067		1.38(0.71-2.13)		107	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.025	4.955	0.070	1.854	2998377	2.71		108	9442	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.025	5.026	-0.001	1.000	80864	NC			8.0	
813.00 > 169.00	5.025	5.026	-0.001	1.000	14622		5.53(2.86-8.58)		188	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.407	5.407	0.0	1.000	63486	NC			11.8	
913.00 > 169.00	5.401	5.407	-0.006	0.999	8244		7.70(3.83-11.48)		147	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Reagents:

LCPFC_LL2_00004 Amount Added: 1.00 Units: mL

Report Date: 19-Mar-2018 10:49:54 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\2018.03.19LLA_004.d

Injection Date: 19-Mar-2018 10:18:23 Instrument ID: A8_N

Lims ID: CCVL

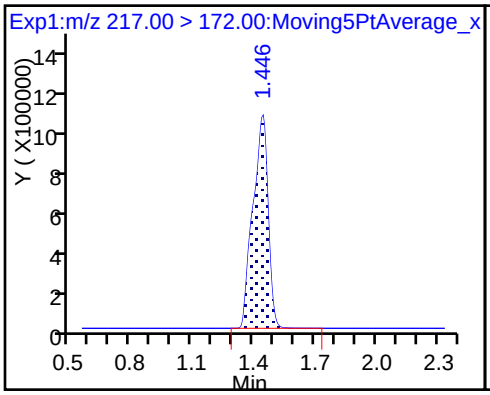
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2

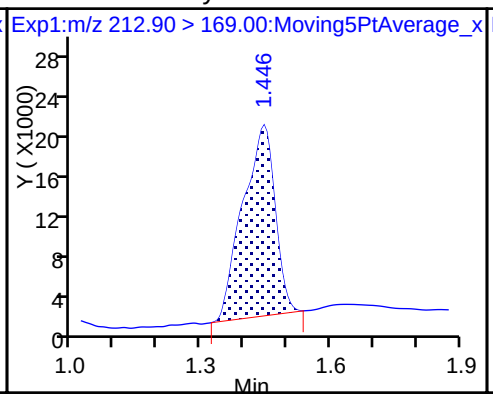
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

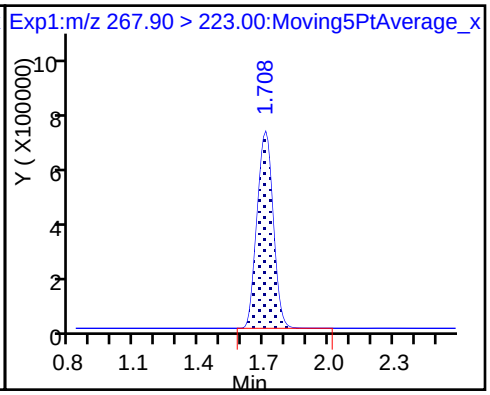
D 1 13C4 PFBA



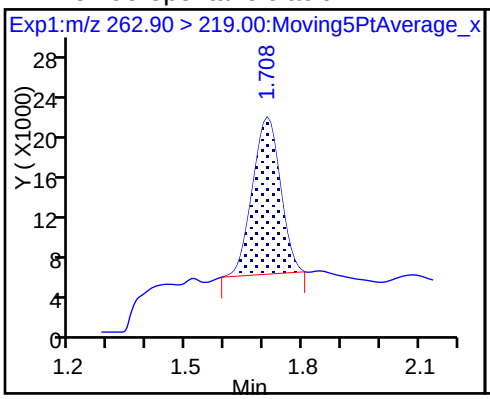
2 Perfluorobutyric acid



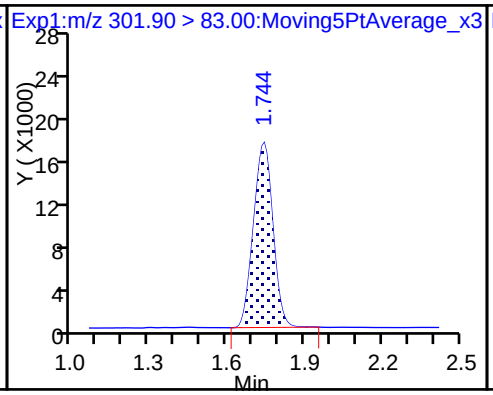
D 3 13C5-PFPeA



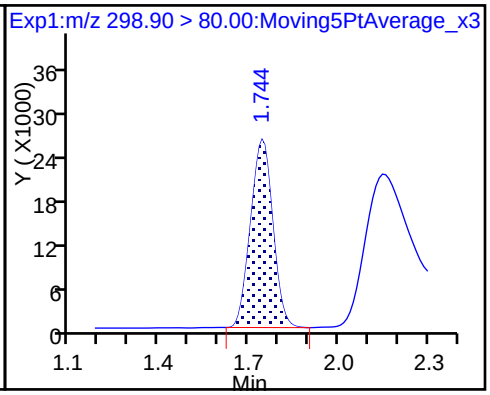
4 Perfluoropentanoic acid



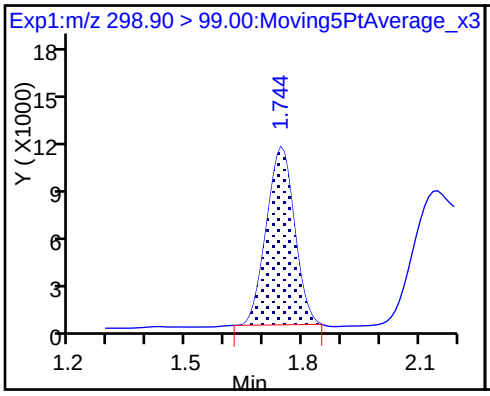
D 47 13C3-PFBS



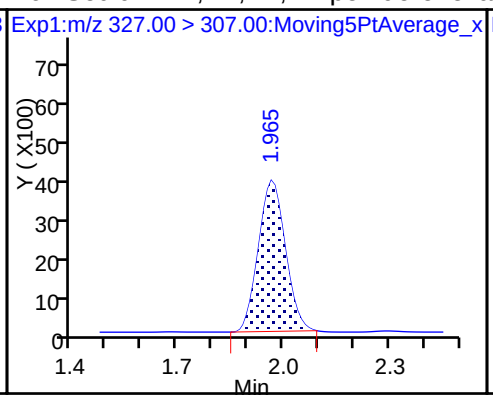
5 Perfluorobutanesulfonic acid



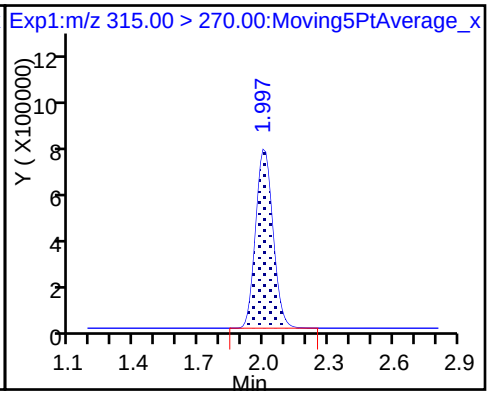
5 Perfluorobutanesulfonic acid



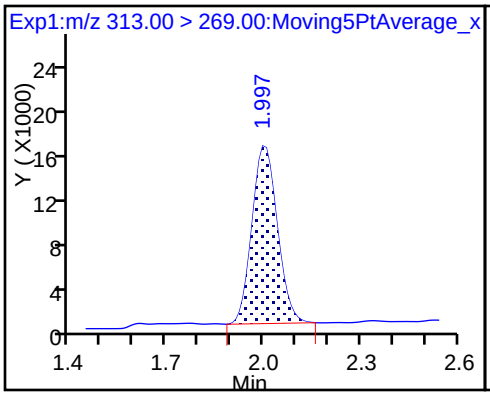
61 Sodium 1H,1H,2H,2H-perfluorohexa



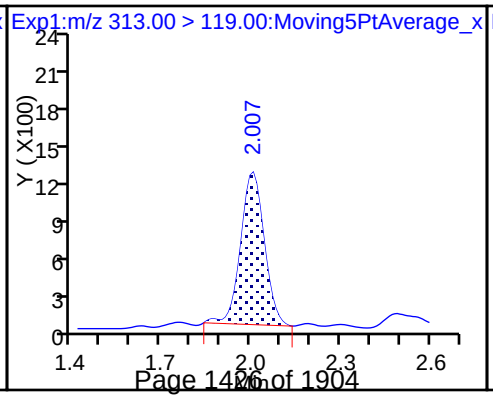
D 7 13C2 PFHxA



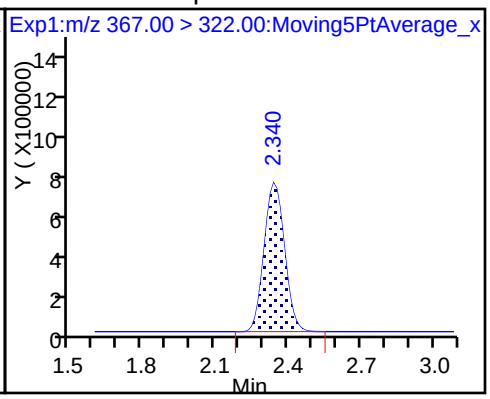
6 Perfluorohexanoic acid



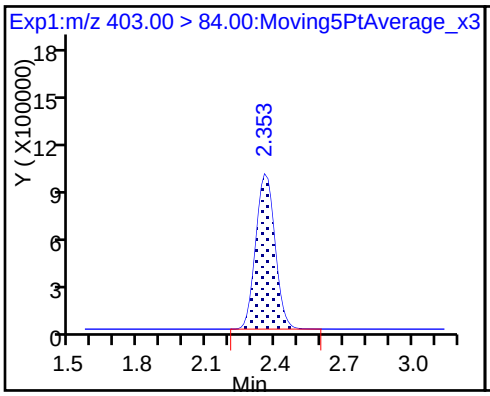
6 Perfluorohexanoic acid



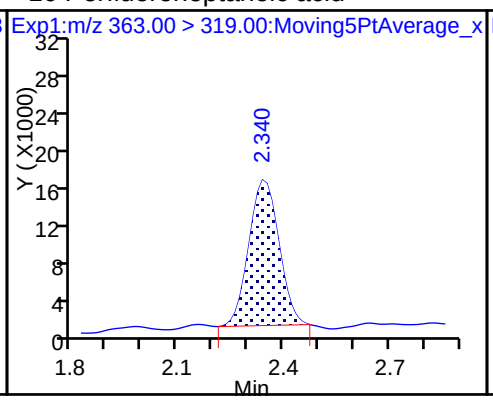
D 9 13C4-PFHpA



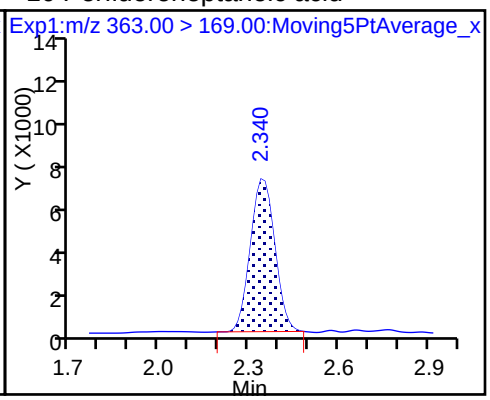
D 11 18O2 PFHxS



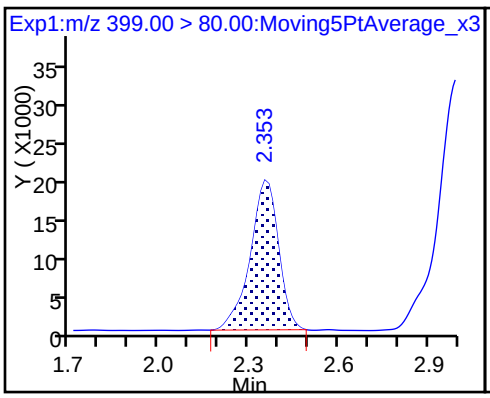
10 Perfluoroheptanoic acid



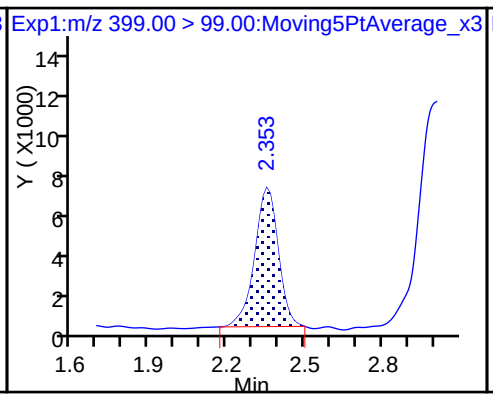
10 Perfluoroheptanoic acid



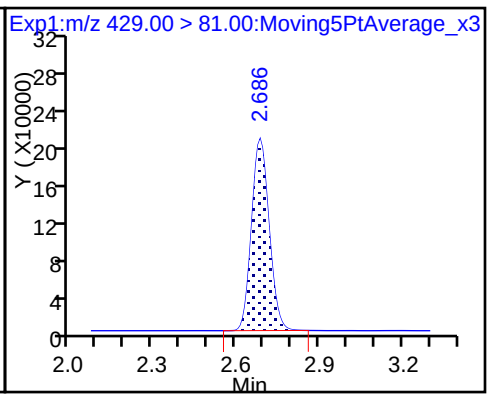
8 Perfluorohexanesulfonic acid



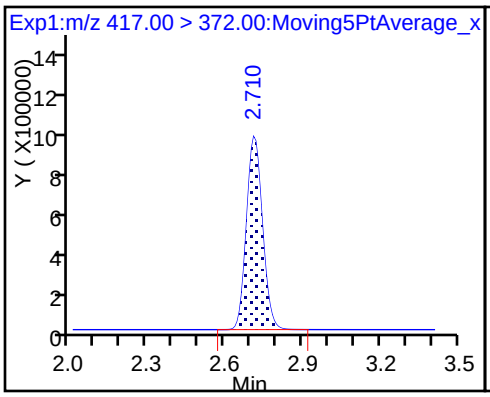
8 Perfluorohexanesulfonic acid



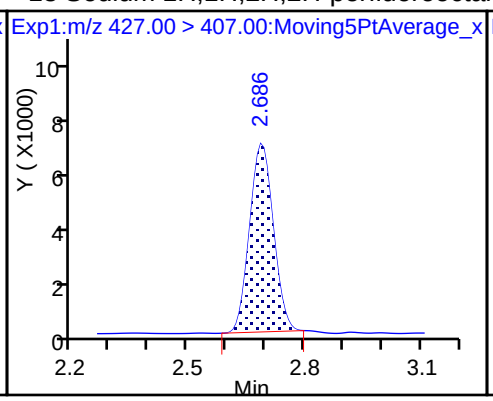
D 12 M2-6:2FTS



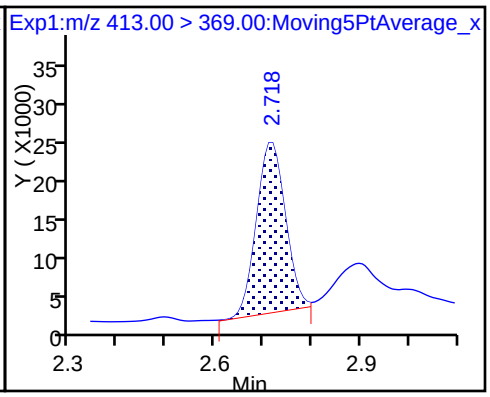
D 14 13C4 PFOA



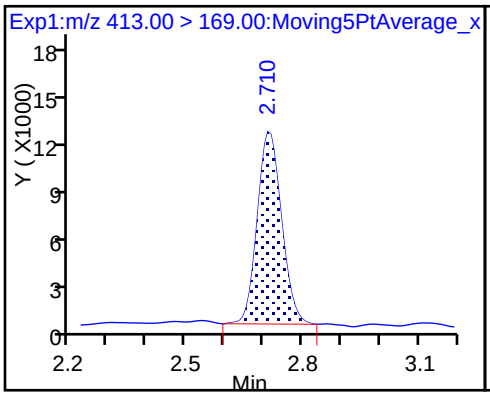
13 Sodium 1H,1H,2H,2H-perfluorooctane



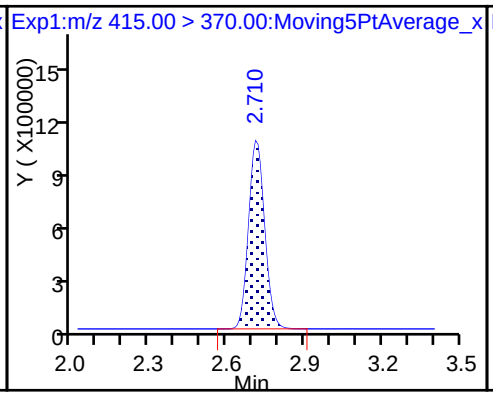
15 Perfluorooctanoic acid



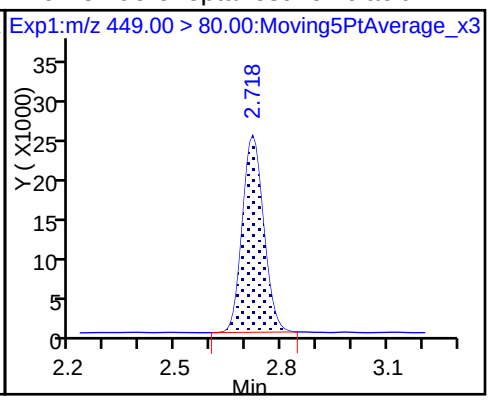
15 Perfluorooctanoic acid



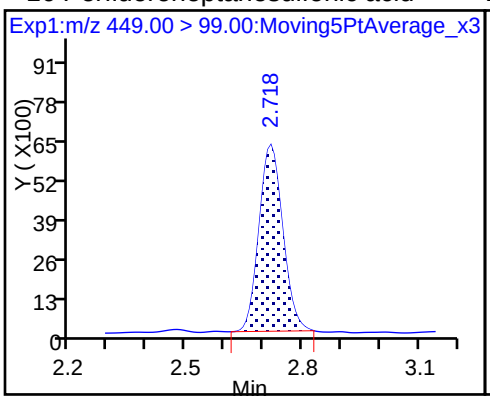
* 62 13C2-PFOA



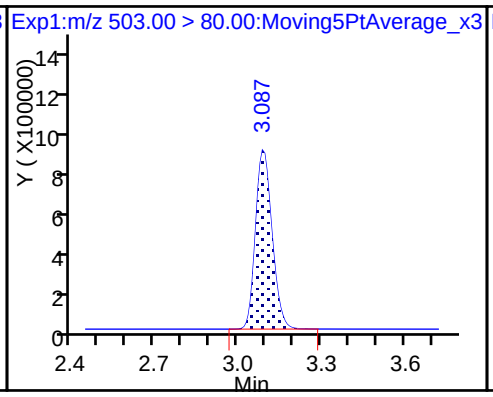
16 Perfluoroheptanesulfonic acid



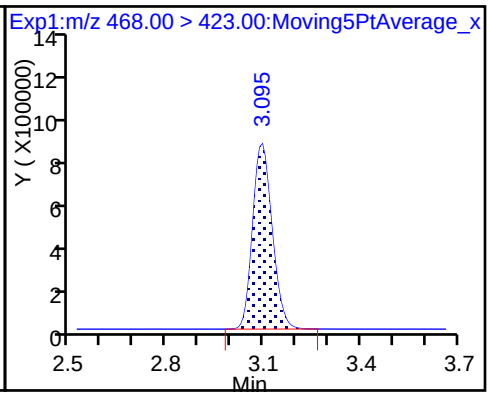
16 Perfluoroheptanesulfonic acid



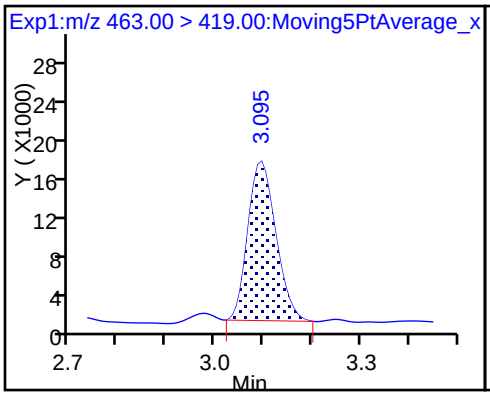
D 18 13C4 PFOS



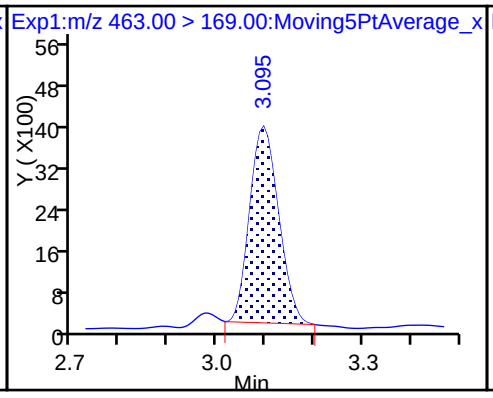
D 19 13C5 PFNA



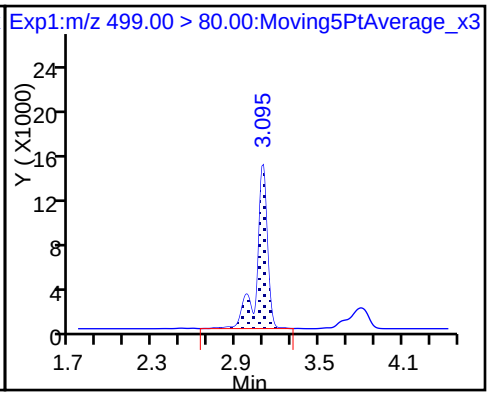
20 Perfluorononanoic acid



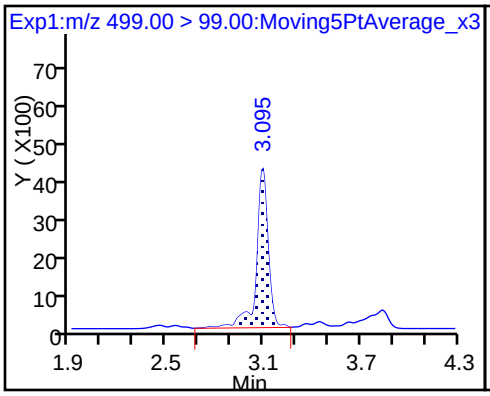
20 Perfluorononanoic acid



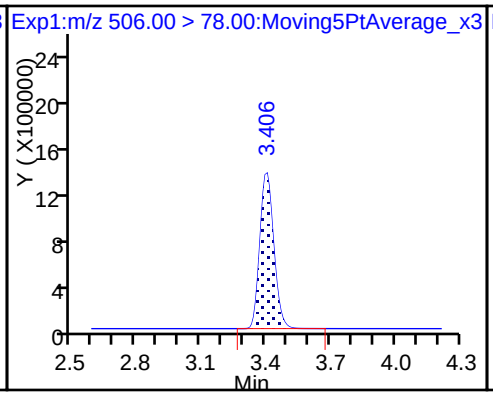
17 Perfluorooctane sulfonic acid



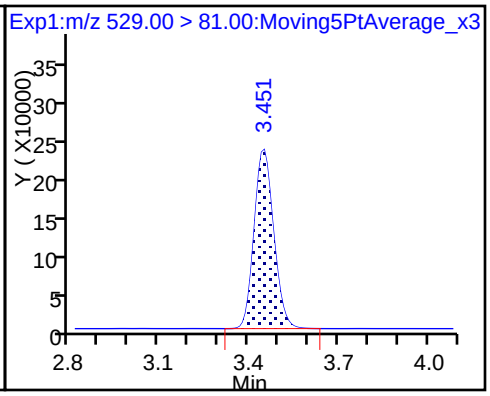
17 Perfluorooctane sulfonic acid



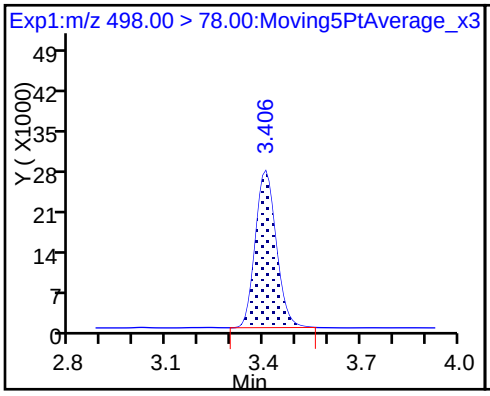
D 21 13C8 FOSA



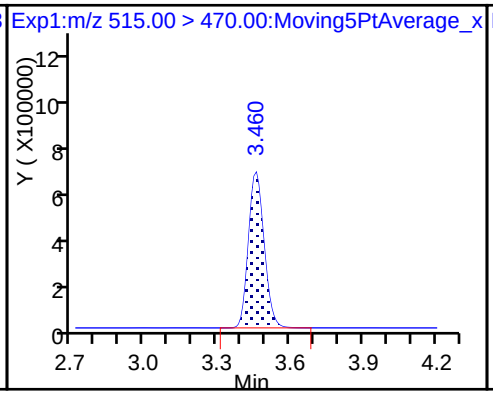
D 26 M2-8:2FTS



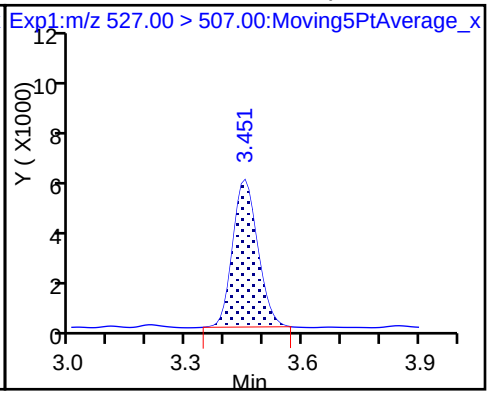
22 Perfluorooctane Sulfonamide



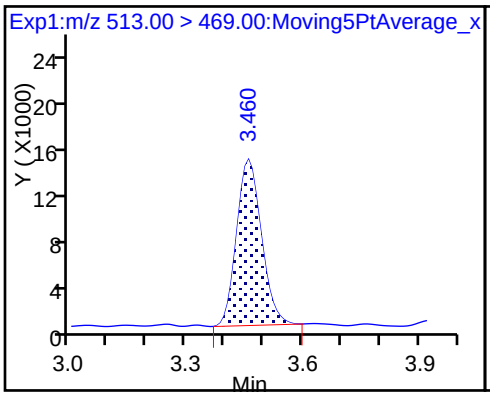
D 23 13C2 PFDA



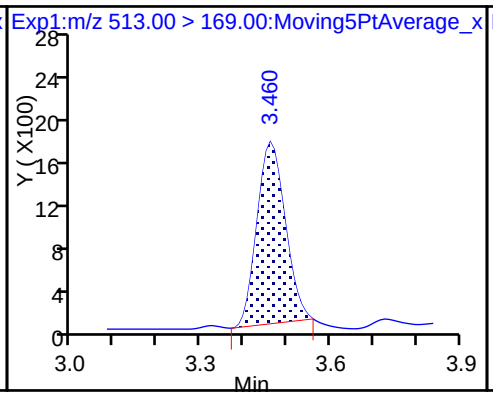
25 Sodium 1H,1H,2H,2H-perfluorodecane



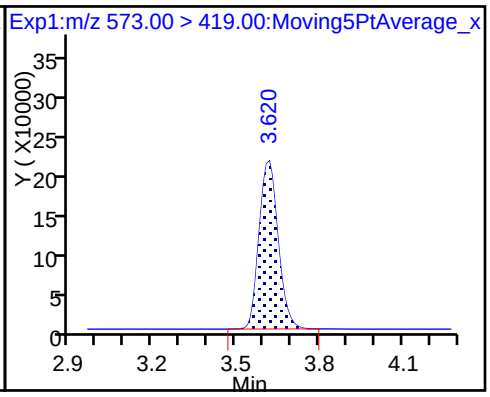
24 Perfluorodecanoic acid



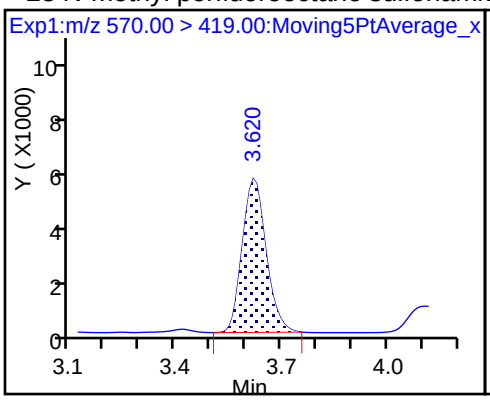
24 Perfluorodecanoic acid



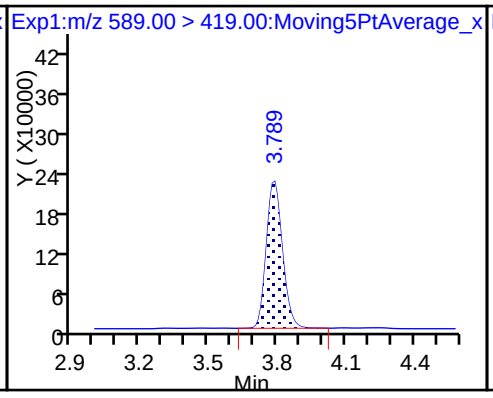
D 27 d3-NMeFOSAA



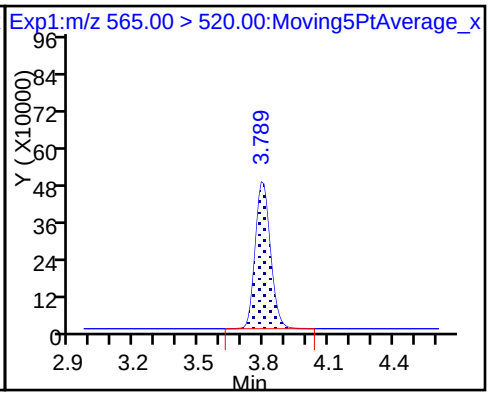
28 N-methyl perfluorooctane sulfonami



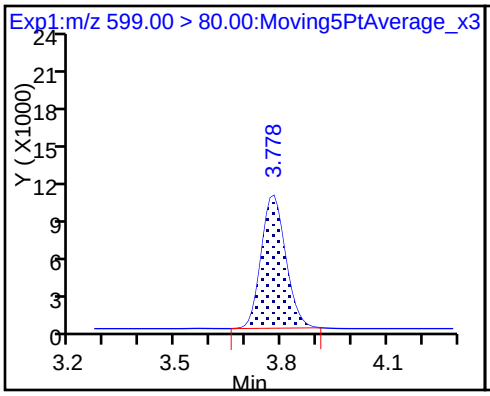
D 32 d5-NEtFOSAA



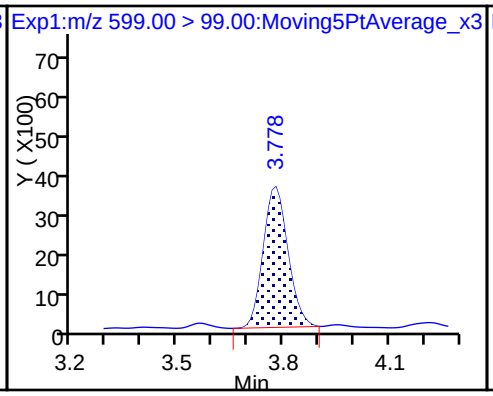
D 30 13C2 PFUnA



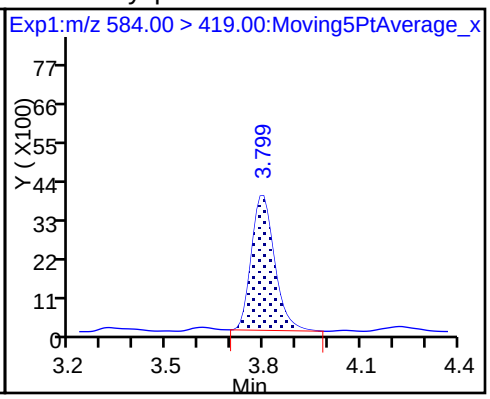
29 Perfluorodecane Sulfonic acid



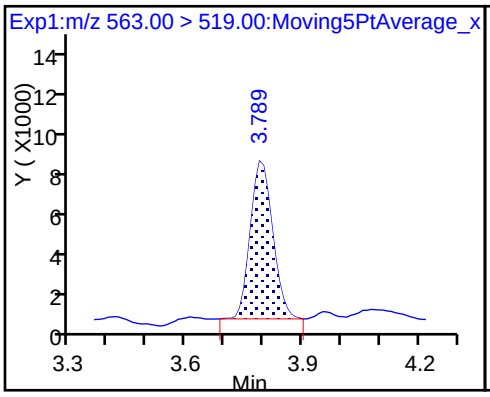
29 Perfluorodecane Sulfonic acid



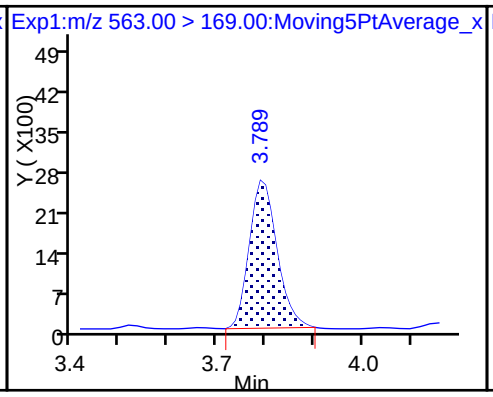
33 N-ethyl perfluorooctane sulfonamid



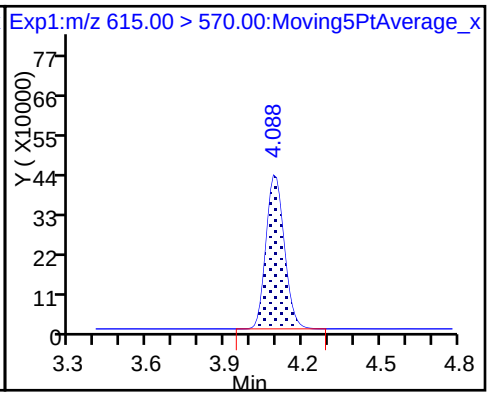
31 Perfluoroundecanoic acid



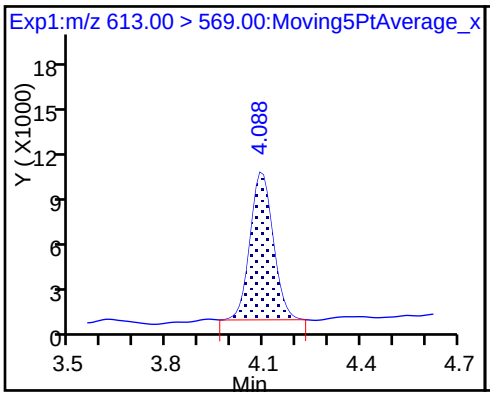
31 Perfluoroundecanoic acid



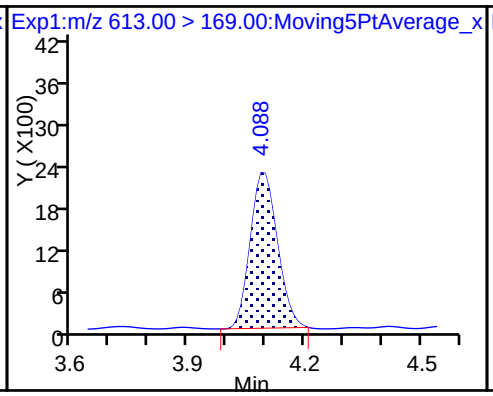
D 36 13C2 PFDoA



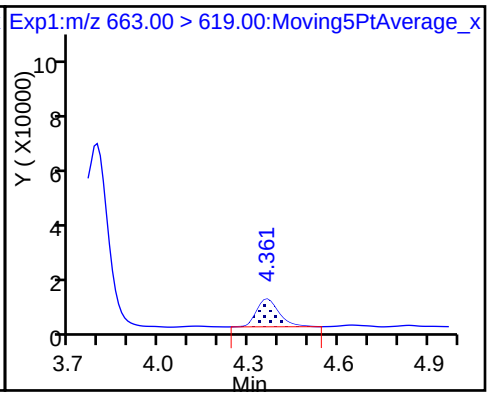
37 Perfluorododecanoic acid



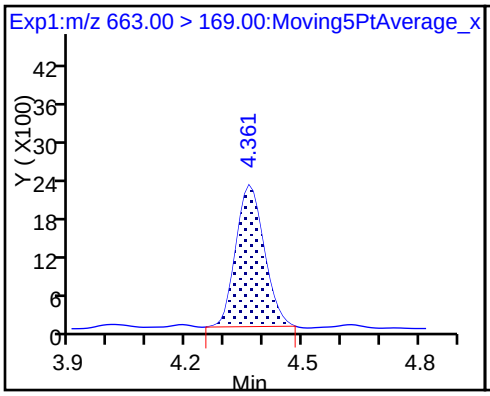
37 Perfluorododecanoic acid



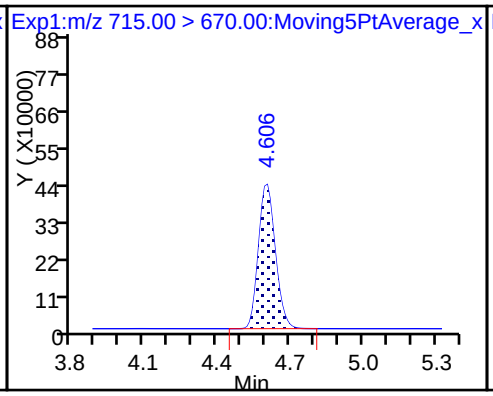
41 Perfluorotridecanoic acid



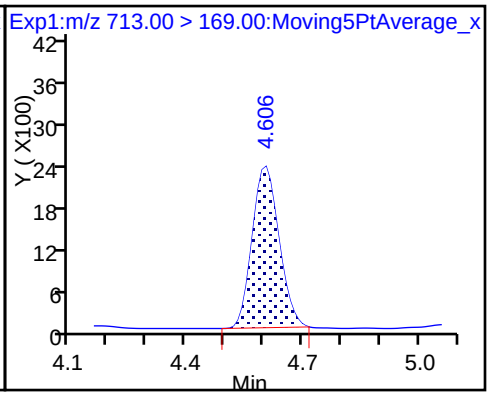
41 Perfluorotridecanoic acid



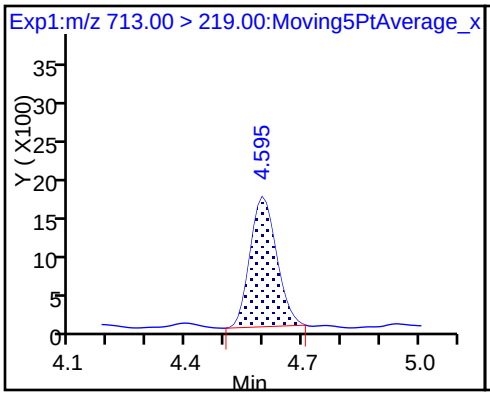
D 43 13C2-PFTeDA



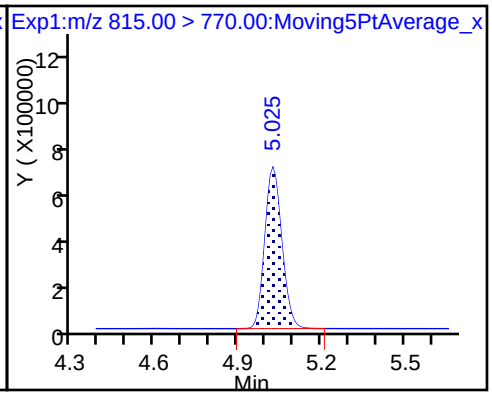
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213658/3 Calibration Date: 03/19/2018 10:26

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9165		0.988	1.00	-1.2	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.075		0.920	1.00	-8.0	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	74.42		0.850	0.884	-3.8	30.0
4:2 FTS	AveID	16.07	10.81		0.628	0.934	-32.8*	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9512		0.943	1.00	-5.7	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.020		0.984	1.00	-1.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.006		0.821	0.910	-9.8	30.0
6:2FTS	AveID	1.665	1.591		0.906	0.948	-4.4	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.118		1.00	1.00	0.1	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.305		0.945	0.952	-0.7	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.9664		0.948	1.00	-5.2	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.037		0.889	0.928	-4.2	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	0.9916		1.02	1.00	2.0	30.0
8:2FTS	AveID	1.257	1.194		0.909	0.958	-5.1	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9577		1.01	1.00	0.9	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	0.9891		0.950	1.00	-5.0	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6594		0.996	0.964	3.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.8987		0.918	1.00	-8.2	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7435		0.887	1.00	-11.3	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.037		1.01	1.00	1.4	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	0.9834		0.956	1.00	-4.4	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2630		0.954	1.00	-4.6	30.0
13C4 PFBA	Ave	1.277	1.249		2.45	2.50	-2.1	30.0
13C5-PFPeA	Ave	0.9006	0.8626		2.39	2.50	-4.2	30.0
13C3-PFBS	Ave	0.0222	0.0232		2.43	2.33	4.4	30.0
13C2 PFHxA	Ave	1.004	0.9768		2.43	2.50	-2.7	30.0
13C4-PFHpA	Ave	0.9767	0.9609		2.46	2.50	-1.6	30.0
18O2 PFHxS	Ave	1.303	1.350		2.45	2.37	3.6	30.0
M2-6:2FTS	Ave	0.2501	0.2284		2.17	2.38	-8.7	30.0
13C4 PFOA	Ave	0.9431	0.9569		2.54	2.50	1.5	30.0
13C4 PFOS	Ave	0.9113	0.9442		2.48	2.39	3.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213658/3 Calibration Date: 03/19/2018 10:26

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7965		2.64	2.50	5.6	30.0
13C8 FOSA	Ave	1.319	1.410		2.67	2.50	6.9	30.0
M2-8:2FTS	Ave	0.2350	0.2777		2.83	2.40	18.2	30.0
13C2 PFDA	Ave	0.6303	0.6757		2.68	2.50	7.2	30.0
d3-NMeFOSAA	Ave	0.2081	0.2418		2.90	2.50	16.2	30.0
d5-NEtFOSAA	Ave	0.1990	0.2565		3.22	2.50	28.9	30.0
13C2 PFUnA	Ave	0.4935	0.5296		2.68	2.50	7.3	30.0
13C2 PFDoA	Ave	0.4680	0.4952		2.65	2.50	5.8	30.0
13C2-PFTeDA	Ave	0.4272	0.4814		2.82	2.50	12.7	30.0
13C2-PFHxDA	Ave	0.6248	0.6770		2.71	2.50	8.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\2018.03.19LLA_005.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 19-Mar-2018 10:26:10 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 10:50:19 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK040

First Level Reviewer: hannigana Date: 19-Mar-2018 10:50:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.434	0.012	0.533	5437147	2.45		97.9	99119	
2 Perfluorobutyric acid										
212.90 > 169.00	1.446	1.446	0.0	1.000	1993178	0.9882		98.8	1038	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.691	0.018	0.630	3753986	2.39		95.8	108895	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.709	0.0	1.000	1613809	0.9200		92.0	635	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.726	0.018	0.643	93946	2.43		104	2062	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.744	0.0	1.000	2658395	0.8503		96.2	1193	
298.90 > 99.00	1.744	1.744	0.0	1.000	1119186		2.38(1.25-3.74)		1207	
D 60 M2-4:2FTS										
329.00 > 81.00	1.966	1.945	0.021	0.725	490507	NC			4875	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.966	1.966	0.0	1.000	407849	0.6279		67.2	19068	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.976	0.021	0.736	4251149	2.43		97.3	111328	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.997	0.0	1.000	1617450	0.9427		94.3	5759	
313.00 > 119.00	1.997	1.997	0.0	1.000	152127		10.63(5.03-15.10)		3964	
D 9 13C4-PFHpA										
367.00 > 322.00	2.341	2.315	0.026	0.863	4181725	2.46		98.4	89951	
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.328	0.026	0.868	5557764	2.45		104	60263	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.341	0.0	1.000	1706455	0.9843		98.4	3517	
363.00 > 169.00	2.341	2.341	0.0	1.000	677139		2.52(1.13-3.40)		9700	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.354	2.354	0.0	1.000	2151233	0.8207		90.2	295	
399.00 > 99.00	2.354	2.354	0.0	1.000	729738		2.95(1.50-4.49)		313	
D 12 M2-6:2FTS										
429.00 > 81.00	2.689	2.647	0.042	0.991	944394	2.17		91.3	18599	
D 14 13C4 PFOA										
417.00 > 372.00	2.712	2.679	0.033	1.000	4164729	2.54		101	109291	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.689	2.689	0.0	1.000	599807	0.9062		95.6	23455	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.712	2.712	0.0	1.000	1862154	1.00		100	793	
413.00 > 169.00	2.712	2.712	0.0	1.000	999168		1.86(0.84-2.52)		3694	
* 62 13C2-PFOA										
415.00 > 370.00	2.712	2.712	0.0		4352112	2.50			67958	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.720	2.720	0.0	1.000	2041266	0.9450		99.3	28759	
449.00 > 99.00	2.720	2.720	0.0	1.000	547952		3.73(1.94-5.82)		10119	
D 18 13C4 PFOS										
503.00 > 80.00	3.088	3.051	0.037	1.138	3928323	2.48		104	36871	
D 19 13C5 PFNA										
468.00 > 423.00	3.096	3.051	0.045	1.141	3466509	2.64		106	75355	
20 Perfluorononanoic acid										
463.00 > 419.00	3.096	3.096	0.0	1.000	1340030	0.9479		94.8	3247	
463.00 > 169.00	3.096	3.096	0.0	1.000	338755		3.96(1.90-5.69)		10251	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.096	3.096	0.0	1.003	1581382	0.8887		95.8	5941	
499.00 > 99.00	3.088	3.096	-0.008	1.000	351584		4.50(2.31-6.93)		3676	
D 21 13C8 FOSA										
506.00 > 78.00	3.406	3.388	0.018	1.256	6136742	2.67		107	66256	
D 26 M2-8:2FTS										
529.00 > 81.00	3.452	3.406	0.046	1.273	1157745	2.83		118	26139	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.406	3.406	0.0	1.000	2434008	1.02		102	55448	
D 23 13C2 PFDA										
515.00 > 470.00	3.461	3.415	0.046	1.276	2940491	2.68		107	35093	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.452	3.452	0.0	1.000	552742	0.9095		94.9	11234	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.461	3.461	0.0	1.000	1126463	1.01		101	6040	
513.00 > 169.00	3.461	3.461	0.0	1.000	202728		5.56(2.36-7.09)		7591	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.620	3.569	0.051	1.335	1052245	2.90		116	55870	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.620	3.620	0.0	1.000	416304	0.9496		95.0	4603	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.789	3.738	0.051	1.397	1116285	3.22		129	2155	
D 30 13C2 PFUnA										
565.00 > 520.00	3.800	3.748	0.052	1.401	2304646	2.68		107	52890	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.779	3.779	0.0	1.000	1044835	1.00		103	36656	
599.00 > 99.00	3.779	3.779	0.0	1.000	340845		3.07(1.39-4.16)		6521	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.800	3.800	0.0	1.003	401260	0.9179		91.8	9072	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.800	3.800	0.0	1.000	685396	0.8872		88.7	2446	
563.00 > 169.00	3.800	3.800	0.0	1.000	191791		3.57(2.12-6.36)		11566	
D 36 13C2 PFDoA										
615.00 > 570.00	4.089	4.036	0.053	1.508	2155236	2.65		106	14328	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.099	4.099	0.0	1.003	894158	1.01		101	172	
613.00 > 169.00	4.099	4.099	0.0	1.003	217105		4.12(2.13-6.40)		3731	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.361	4.361	0.0	1.000	847785	0.9559		95.6	144	
663.00 > 169.00	4.361	4.361	0.0	1.000	274339		3.09(1.25-3.76)		3738	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.606	4.544	0.062	1.698	2095015	2.82		113	16225	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.606	4.606	0.0	1.000	220386	0.9536		95.4	2690	
713.00 > 219.00	4.596	4.606	-0.010	0.998	158541		1.39(0.71-2.13)		1951	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.026	4.955	0.071	1.853	2946556	2.71		108	9203	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.026	5.026	0.0	1.000	1131316	NC			110	
813.00 > 169.00	5.026	5.026	0.0	1.000	194510		5.82(2.86-8.58)		1635	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.407	5.407	0.0	1.000	1227322	NC			220	
913.00 > 169.00	5.407	5.407	0.0	1.000	168376		7.29(3.83-11.48)		2140	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 19-Mar-2018 10:50:20 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\2018.03.19LLA_005.d

Injection Date: 19-Mar-2018 10:26:10 Instrument ID: A8_N

Lims ID: CCV L4

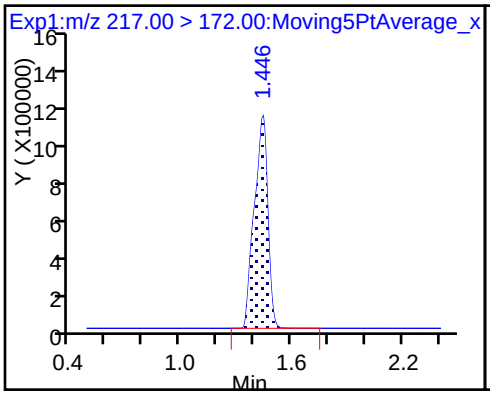
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3

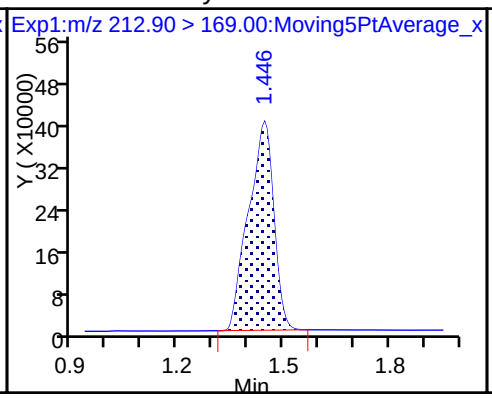
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

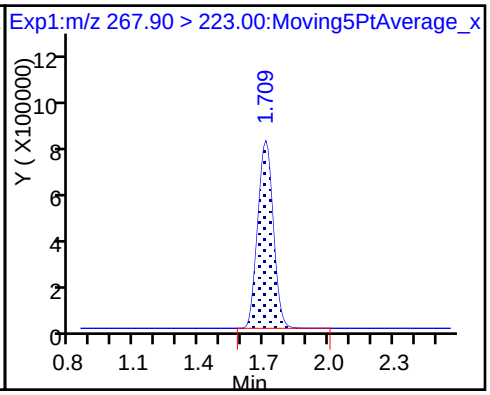
D 1 13C4 PFBA



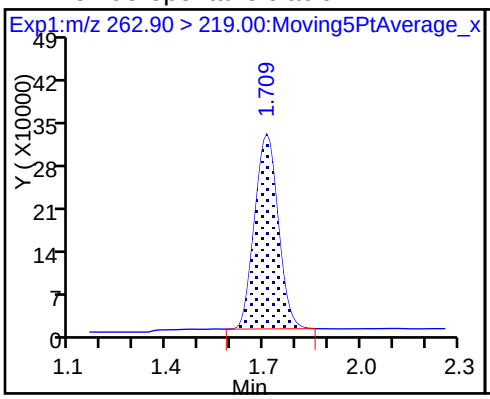
2 Perfluorobutyric acid



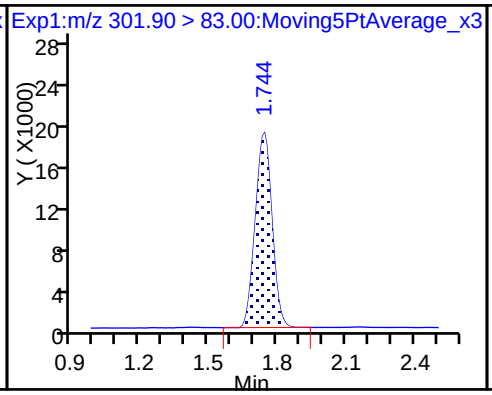
D 3 13C5-PFPeA



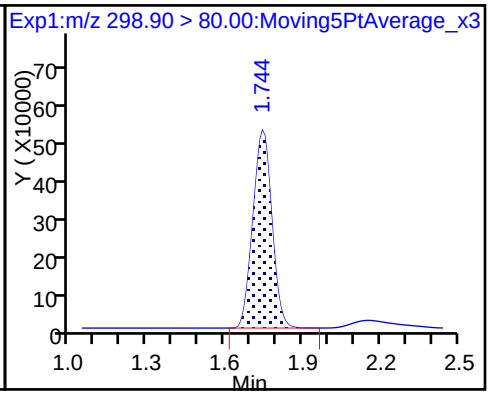
4 Perfluoropentanoic acid



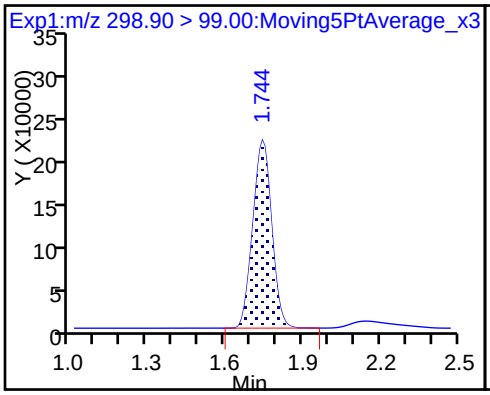
D 47 13C3-PFBS



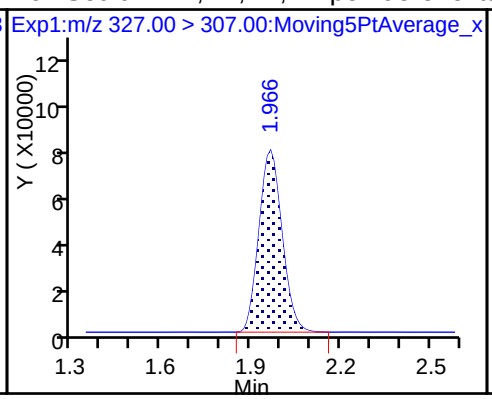
5 Perfluorobutanesulfonic acid



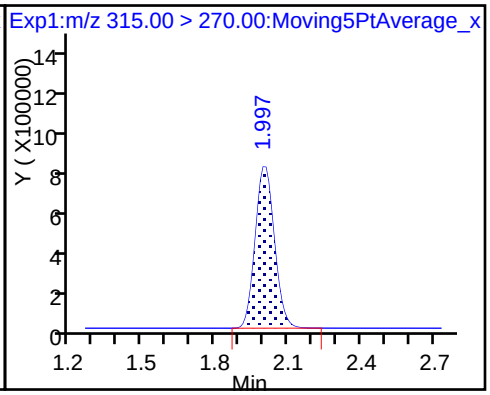
5 Perfluorobutanesulfonic acid



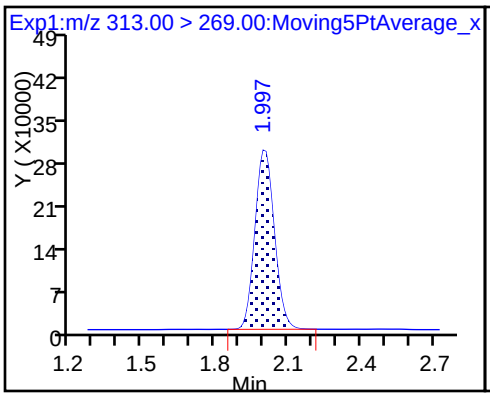
61 Sodium 1H,1H,2H,2H-perfluorohexa



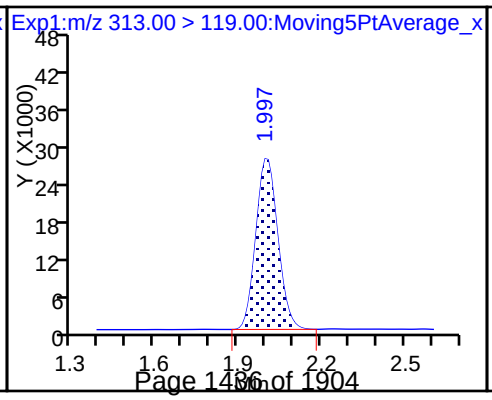
D 7 13C2 PFHxA



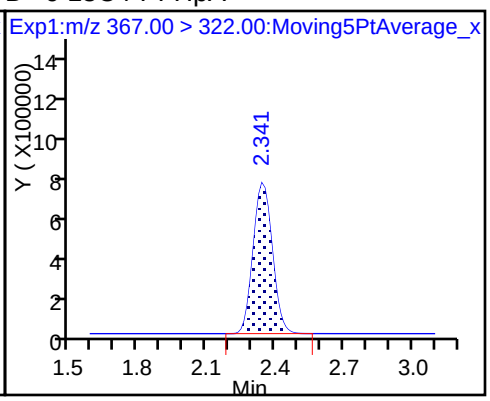
6 Perfluorohexanoic acid



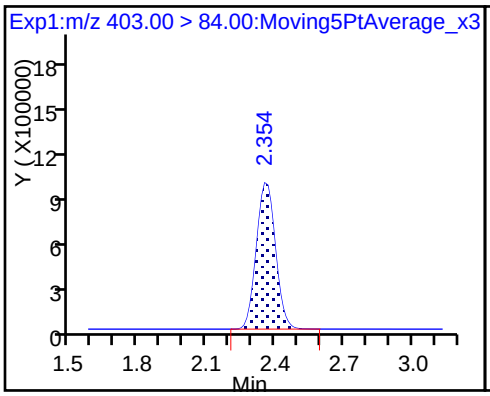
6 Perfluorohexanoic acid



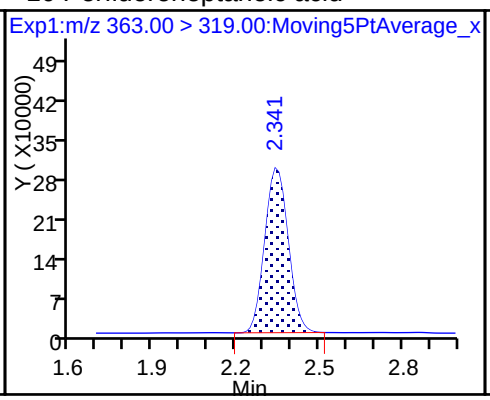
D 9 13C4-PFHpA



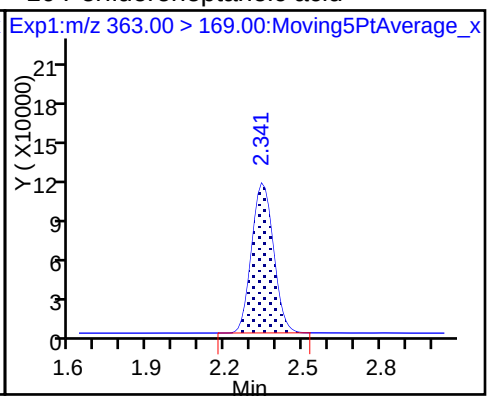
D 11 18O2 PFHxS



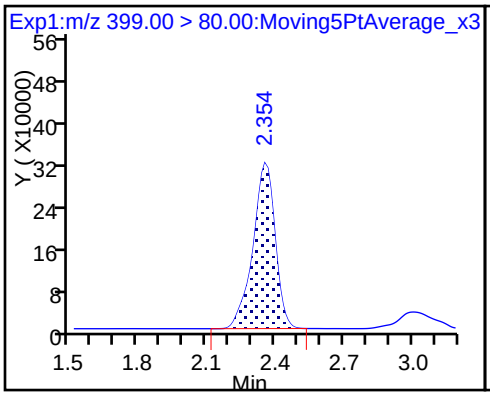
10 Perfluoroheptanoic acid



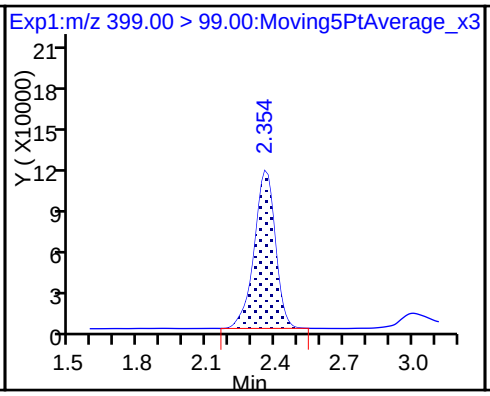
10 Perfluoroheptanoic acid



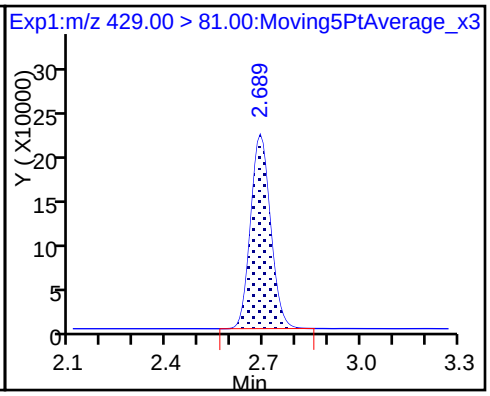
8 Perfluorohexanesulfonic acid



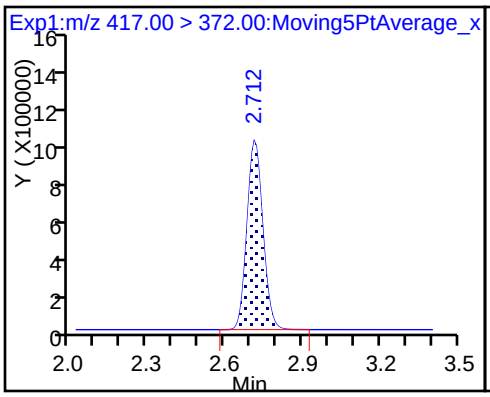
8 Perfluorohexanesulfonic acid



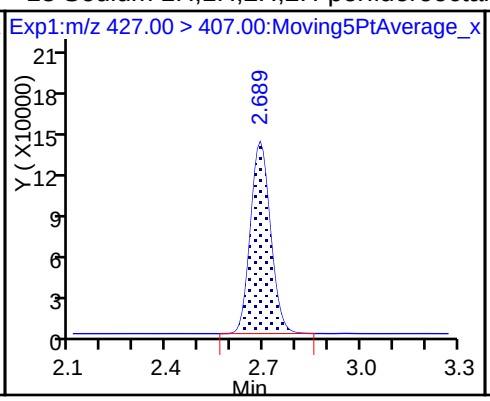
D 12 M2-6:2FTS



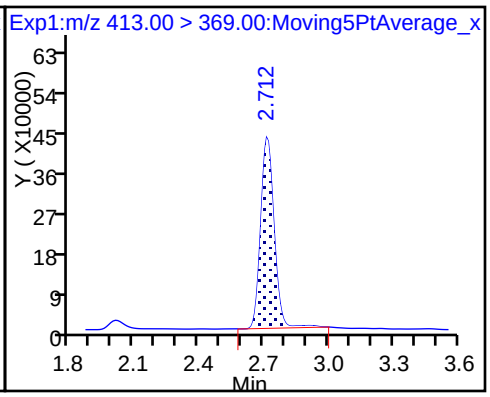
D 14 13C4 PFOA



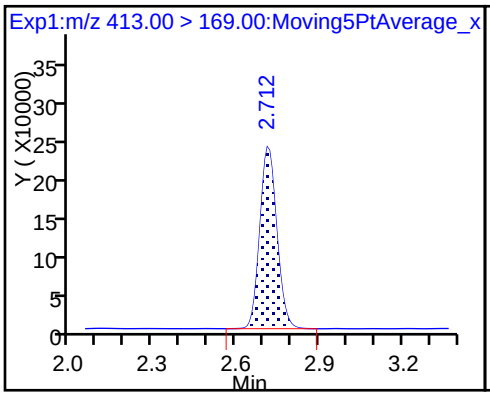
13 Sodium 1H,1H,2H,2H-perfluorooctane



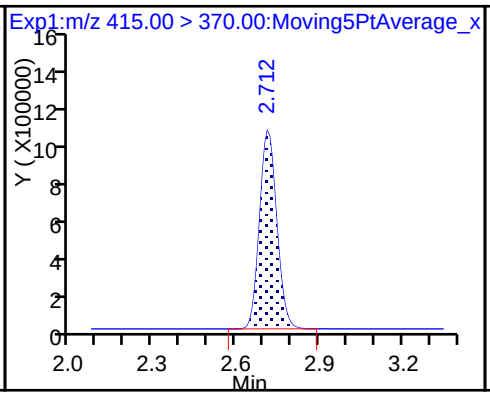
15 Perfluorooctanoic acid



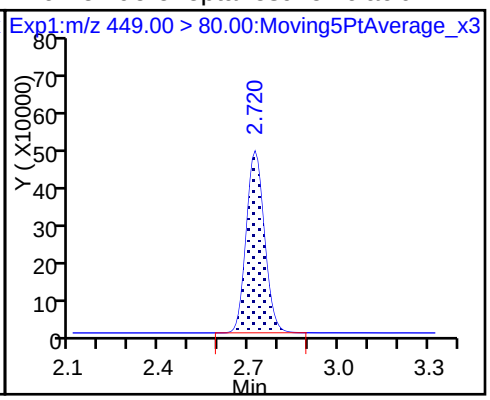
15 Perfluorooctanoic acid



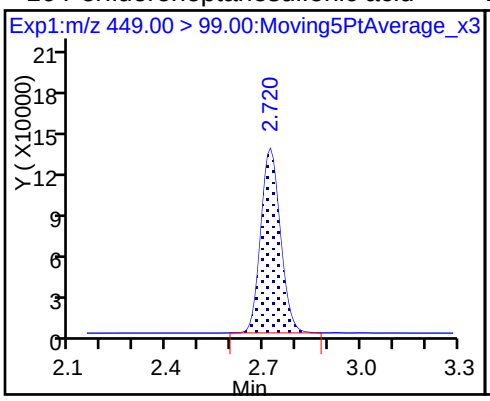
* 62 13C2-PFOA



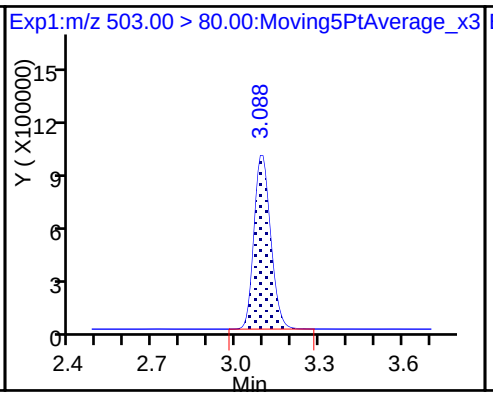
16 Perfluoroheptanesulfonic acid



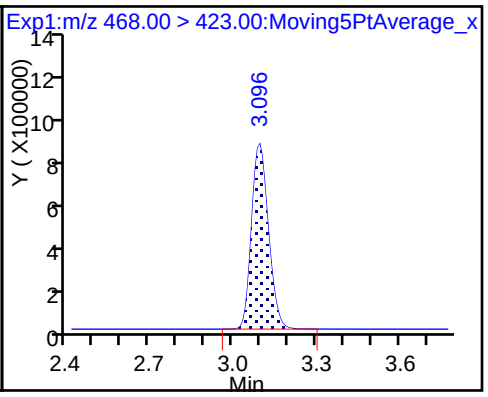
16 Perfluoroheptanesulfonic acid



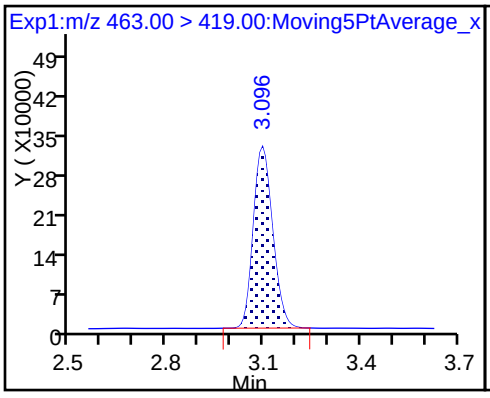
D 18 13C4 PFOS



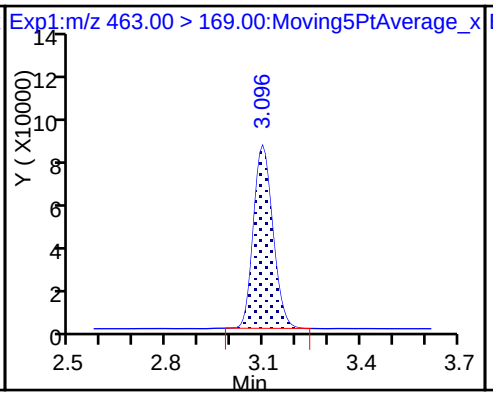
D 19 13C5 PFNA



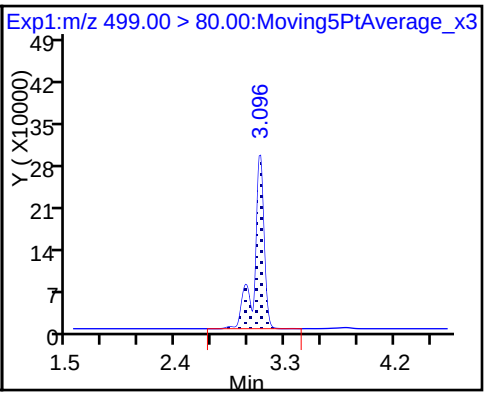
20 Perfluorononanoic acid



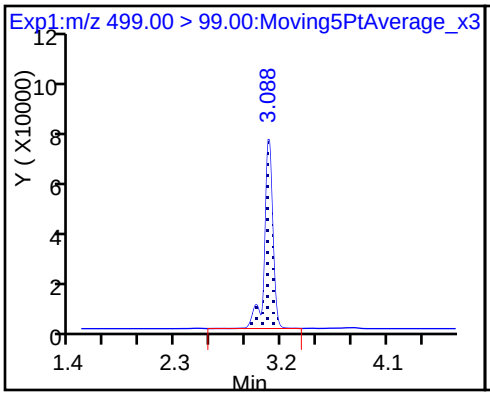
20 Perfluorononanoic acid



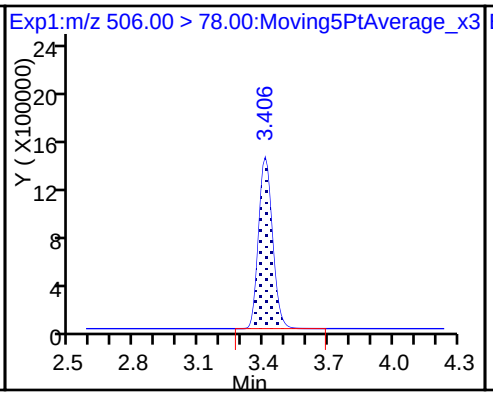
17 Perfluorooctane sulfonic acid



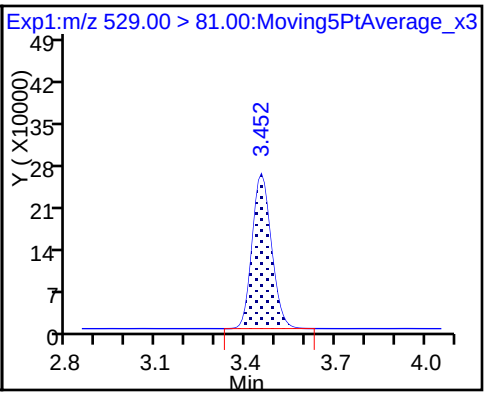
17 Perfluorooctane sulfonic acid



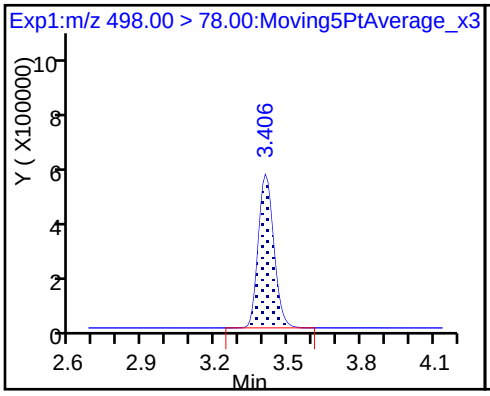
D 21 13C8 FOSA



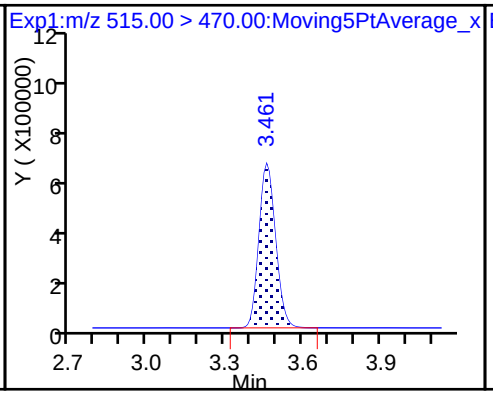
D 26 M2-8:2FTS



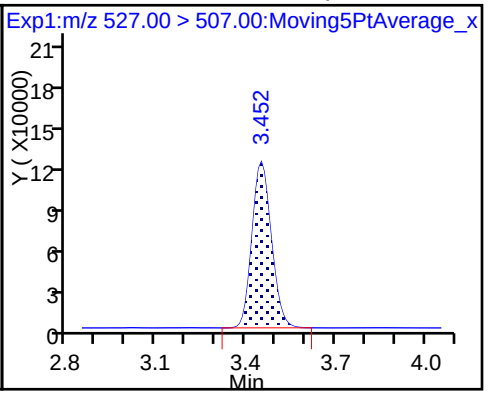
22 Perfluorooctane Sulfonamide



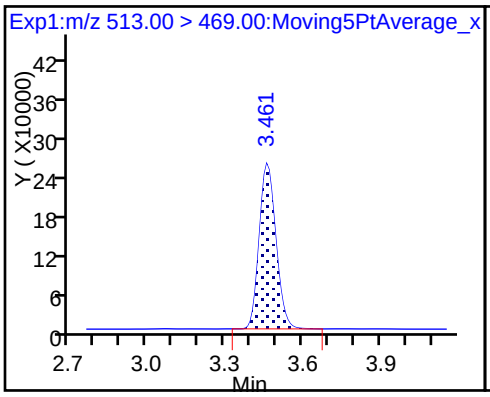
D 23 13C2 PFDA



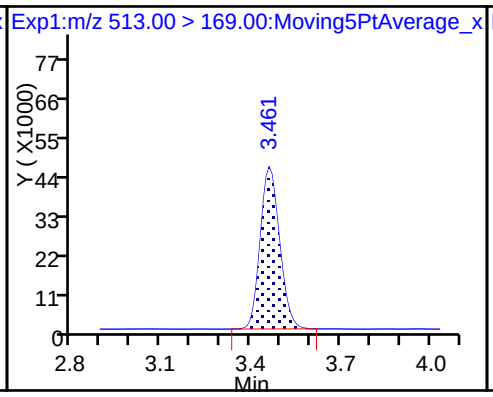
25 Sodium 1H,1H,2H,2H-perfluorodecane



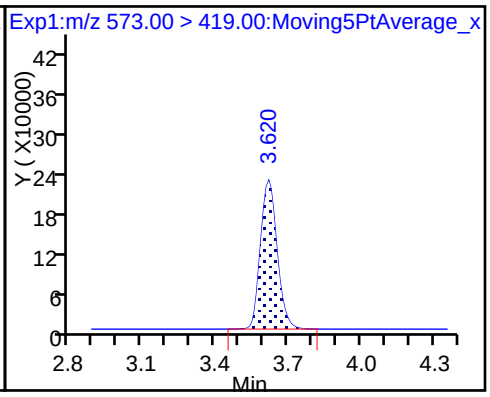
24 Perfluorodecanoic acid



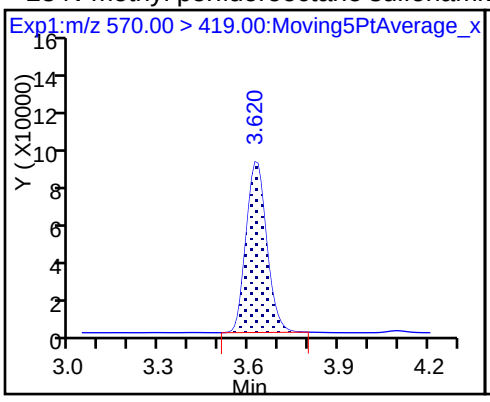
24 Perfluorodecanoic acid



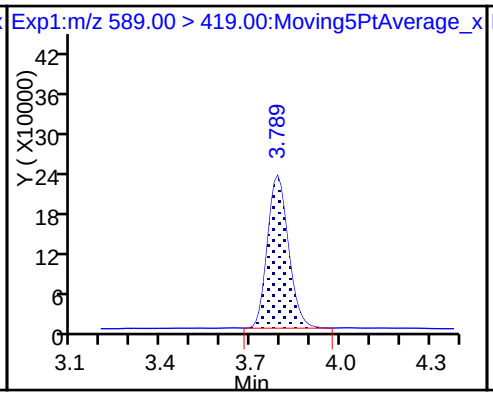
D 27 d3-NMeFOSAA



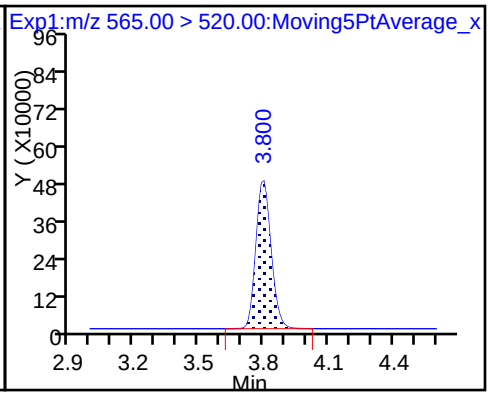
28 N-methyl perfluorooctane sulfonami



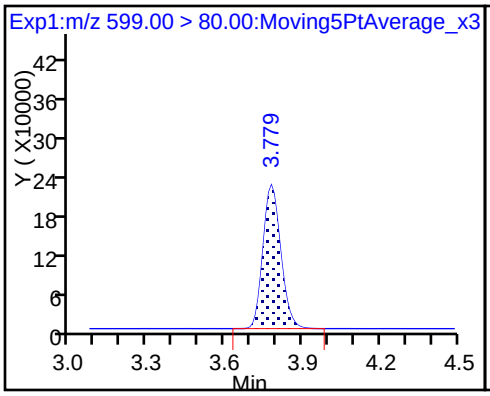
D 32 d5-NEtFOSAA



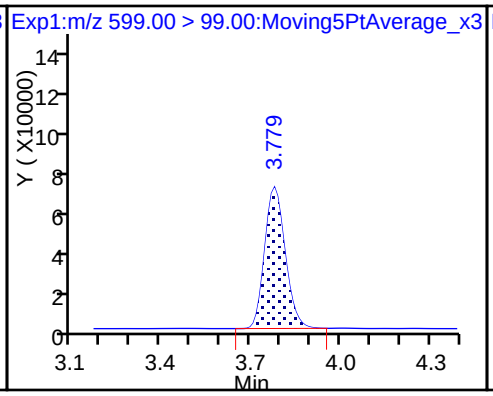
D 30 13C2 PFUnA



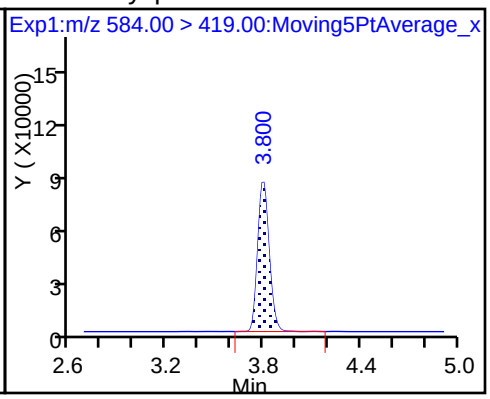
29 Perfluorodecane Sulfonic acid



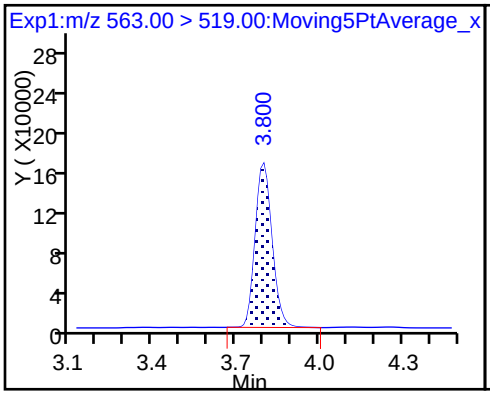
29 Perfluorodecane Sulfonic acid



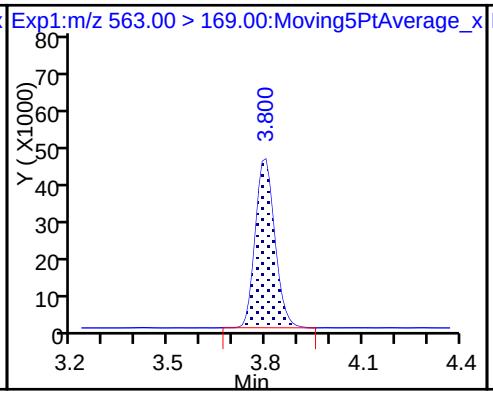
33 N-ethyl perfluorooctane sulfonamid



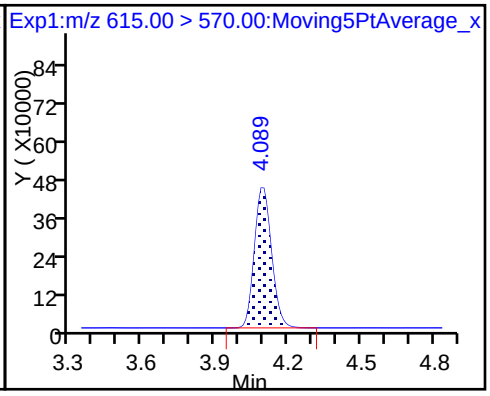
31 Perfluoroundecanoic acid



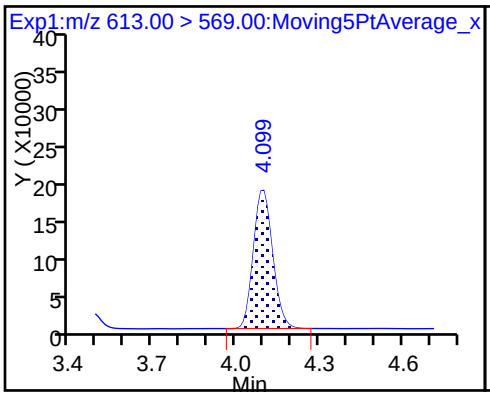
31 Perfluoroundecanoic acid



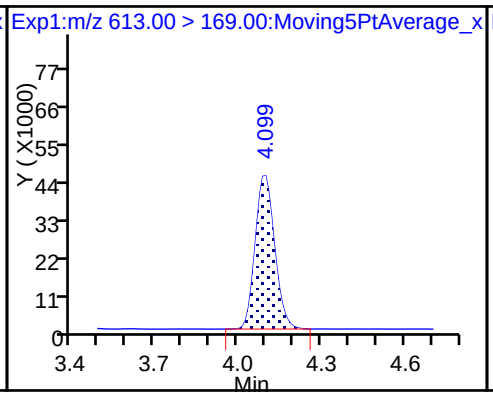
D 36 13C2 PFDoA



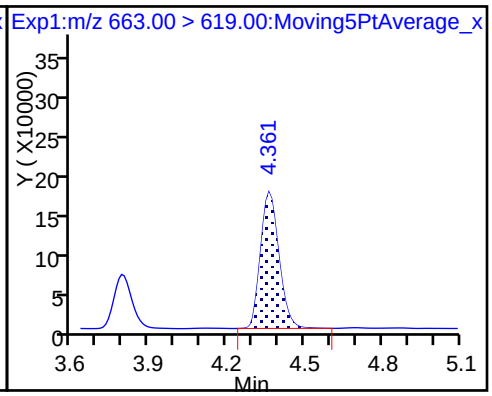
37 Perfluorododecanoic acid



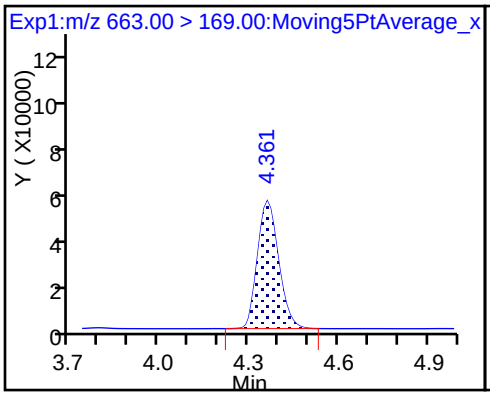
37 Perfluorododecanoic acid



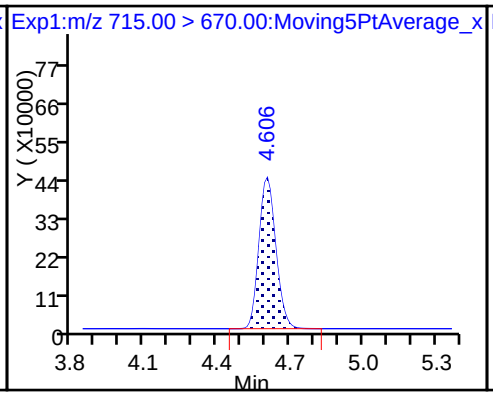
41 Perfluorotridecanoic acid



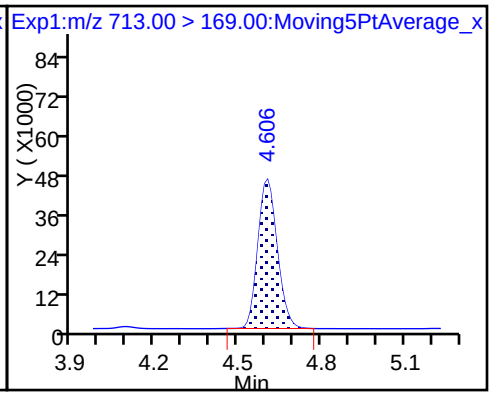
41 Perfluorotridecanoic acid



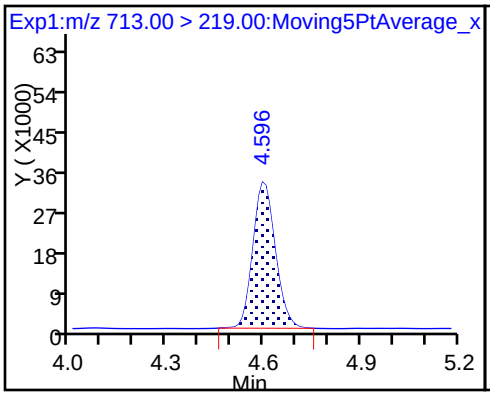
D 43 13C2-PFTeDA



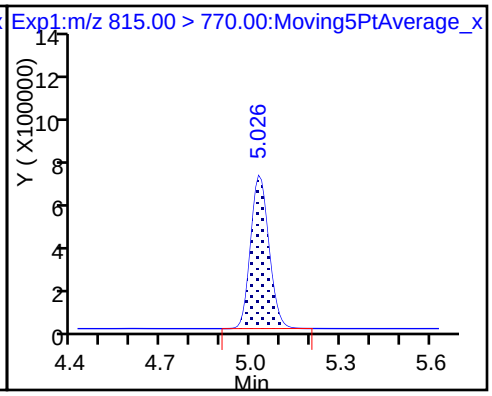
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213672/4 Calibration Date: 03/19/2018 11:13

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9425		2.54	2.50	1.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.180		2.52	2.50	1.0	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	80.21		2.29	2.21	3.7	30.0
4:2 FTS	AveID	16.07	11.43		1.66	2.34	-28.9	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.001		2.48	2.50	-0.8	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.067		2.57	2.50	2.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.077		2.20	2.28	-3.5	30.0
6:2FTS	AveID	1.665	1.610		2.29	2.37	-3.3	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.143		2.56	2.50	2.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.380		2.50	2.38	5.0	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.998		2.45	2.50	-2.2	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.113		2.39	2.32	2.8	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	1.026		2.64	2.50	5.6	30.0
8:2FTS	AveID	1.257	1.281		2.44	2.40	1.9	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9726		2.56	2.50	2.5	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.019		2.45	2.50	-2.1	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6970		2.63	2.41	9.2	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.9002		2.30	2.50	-8.1	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.8317		2.48	2.50	-0.8	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.054		2.57	2.50	3.0	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	0.9889		2.40	2.50	-3.9	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2643		2.40	2.50	-4.2	30.0
13C4 PFBA	Ave	1.277	1.219		2.39	2.50	-4.5	30.0
13C5-PFPeA	Ave	0.9006	0.7969		2.21	2.50	-11.5	30.0
13C3-PFBS	Ave	0.0222	0.0222		2.32	2.33	-0.0	30.0
13C2 PFHxA	Ave	1.004	0.9260		2.31	2.50	-7.8	30.0
13C4-PFHpA	Ave	0.9767	0.9160		2.34	2.50	-6.2	30.0
18O2 PFHxS	Ave	1.303	1.313		2.38	2.37	0.8	30.0
M2-6:2FTS	Ave	0.2501	0.2276		2.16	2.38	-9.0	30.0
13C4 PFOA	Ave	0.9431	0.9223		2.44	2.50	-2.2	30.0
13C4 PFOS	Ave	0.9113	0.9182		2.41	2.39	0.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213672/4 Calibration Date: 03/19/2018 11:13

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7785		2.58	2.50	3.2	30.0
13C8 FOSA	Ave	1.319	1.344		2.55	2.50	1.9	30.0
M2-8:2FTS	Ave	0.2350	0.2560		2.61	2.40	9.0	30.0
13C2 PFDA	Ave	0.6303	0.6493		2.58	2.50	3.0	30.0
d3-NMeFOSAA	Ave	0.2081	0.2334		2.80	2.50	12.2	30.0
13C2 PFUnA	Ave	0.4935	0.4753		2.41	2.50	-3.7	30.0
d5-NEtFOSAA	Ave	0.1990	0.2407		3.02	2.50	21.0	30.0
13C2 PFDoA	Ave	0.4680	0.4789		2.56	2.50	2.3	30.0
13C2-PFTeDA	Ave	0.4272	0.4864		2.85	2.50	13.9	30.0
13C2-PFHxDA	Ave	0.6248	0.6442		2.58	2.50	3.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\2018.03.19LLA_026.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 19-Mar-2018 11:13:00 ALS Bottle#: 14 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 13:50:06 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK009

First Level Reviewer: barnettj Date: 19-Mar-2018 13:34:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.446	-0.006	1.000	5134159	2.54		102	2972	
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.446	-0.006	0.533	5447134	2.39		95.5	86157	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.708	0.001	1.000	4198960	2.52		101	1519	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.709	0.0	0.632	3559898	2.21		88.5	85423	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.744	0.0	1.005	7034422	2.29		104	2961	
298.90 > 99.00	1.744	1.744	0.0	1.005	2816005		2.50(1.25-3.74)		2680	
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.744	-0.009	0.642	92267	2.32		99.9	531	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.956	1.965	-0.009	1.000	1059200	1.66		71.1	48690	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.966	-0.010	0.723	454789	NC			5623	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.997	0.0	1.000	4139109	2.48		99.2	14553	
313.00 > 119.00	1.997	1.997	0.0	1.000	378600		10.93(5.03-15.10)		9691	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.997	0.0	0.739	4136658	2.31		92.2	106296	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.340	0.001	1.000	4365226	2.57		103	9655	
363.00 > 169.00	2.341	2.340	0.001	1.000	1774056		2.46(1.13-3.40)		29952	
D 9 13C4-PFHpA										
367.00 > 322.00	2.341	2.341	0.0	0.866	4092226	2.34		93.8	97283	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.353	-0.012	0.995	5747774	2.20		96.5	730	
399.00 > 99.00	2.354	2.353	0.001	1.000	1931106		2.98(1.50-4.49)		696	
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.354	0.0	0.870	5548876	2.38		101	58928	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.681	2.679	0.002	1.003	1551575	2.29		96.7	39495	
D 12 M2-6:2FTS										
429.00 > 81.00	2.673	2.689	-0.016	0.988	965744	2.16		91.0	20354	
* 62 13C2-PFOA										
415.00 > 370.00	2.704	2.702	0.002		4467295	2.50			87223	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.704	2.710	-0.006	1.000	4708023	2.56		102	1447	
413.00 > 169.00	2.704	2.710	-0.006	1.000	2540247		1.85(0.84-2.52)		8669	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.712	2.710	0.002	1.000	5388399	2.50		105	43333	
449.00 > 99.00	2.704	2.710	-0.006	0.997	1434258		3.76(1.94-5.82)		17531	
D 14 13C4 PFOA										
417.00 > 372.00	2.704	2.712	-0.008	1.000	4120105	2.44		97.8	95233	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.080	3.080	0.0	1.000	4237354	2.39		103	12096	M
499.00 > 99.00	3.080	3.080	0.0	1.000	955950		4.43(2.31-6.93)		7120	
20 Perfluorononanoic acid										
463.00 > 419.00	3.080	3.088	-0.008	1.000	3469097	2.45		97.8	8250	
463.00 > 169.00	3.080	3.088	-0.008	1.000	868984		3.99(1.90-5.69)		20985	
D 18 13C4 PFOS										
503.00 > 80.00	3.080	3.088	-0.008	1.139	3921544	2.41		101	21473	
D 19 13C5 PFNA										
468.00 > 423.00	3.080	3.096	-0.016	1.139	3477650	2.58		103	64838	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.398	3.406	-0.008	1.000	6160530	2.64		106	70077	
D 21 13C8 FOSA										
506.00 > 78.00	3.398	3.406	-0.008	1.257	6003826	2.55		102	50420	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.435	3.442	-0.007	1.000	1403345	2.44		102	44134	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.444	3.451	-0.007	1.000	2821158	2.56		103	19622	
513.00 > 169.00	3.444	3.451	-0.007	1.000	520196		5.42(2.36-7.09)		23253	
D 26 M2-8:2FTS										
529.00 > 81.00	3.435	3.452	-0.017	1.270	1095736	2.61		109	17472	
D 23 13C2 PFDA										
515.00 > 470.00	3.444	3.461	-0.017	1.273	2900511	2.58		103	32520	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.611	3.609	0.002	1.003	1062883	2.45		97.9	11414	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.600	3.620	-0.020	1.331	1042772	2.80		112	31673	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.769	3.770	-0.001	1.000	2756185	2.63		109	71625	
599.00 > 99.00	3.758	3.770	-0.012	0.997	909931		3.03(1.39-4.16)		15775	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.779	3.780	-0.001	1.000	1765892	2.48		99.2	6735	
563.00 > 169.00	3.779	3.780	-0.001	1.000	469157		3.76(2.12-6.36)		37261	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.779	3.780	-0.001	1.000	967997	2.30		91.9	25032	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.779	3.789	-0.010	1.397	1075351	3.02		121	1994	
D 30 13C2 PFUnA										
565.00 > 520.00	3.779	3.800	-0.021	1.397	2123259	2.41		96.3	73500	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.078	4.079	-0.001	1.000	2254272	2.57		103	425	
613.00 > 169.00	4.078	4.079	-0.001	1.000	597343		3.77(2.13-6.40)		11346	
D 36 13C2 PFDoA										
615.00 > 570.00	4.078	4.089	-0.011	1.508	2139583	2.56		102	15402	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.350	4.350	0.0	1.000	2115824	2.40		96.1	367	
663.00 > 169.00	4.350	4.350	0.0	1.000	692860		3.05(1.25-3.76)		7484	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.585	4.585	0.0	1.000	574346	2.40		95.8	7032	
713.00 > 219.00	4.585	4.585	0.0	1.000	402498		1.43(0.71-2.13)		4222	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.585	4.606	-0.021	1.695	2173056	2.85		114	13774	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.016	5.008	0.008	1.002	2846739	NC			248	
813.00 > 169.00	5.008	5.008	0.0	1.000	495135		5.75(2.86-8.58)		2838	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.008	5.026	-0.018	1.852	2877802	2.58		103	8387	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.389	5.383	0.006	1.000	4456933	NC			821	
913.00 > 169.00	5.389	5.383	0.006	1.000	588693		7.57(3.83-11.48)		5933	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL5_00004 Amount Added: 1.00 Units: mL

Report Date: 19-Mar-2018 13:50:07 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\2018.03.19LLA_026.d

Injection Date: 19-Mar-2018 11:13:00 Instrument ID: A8_N

Lims ID: CCV L5

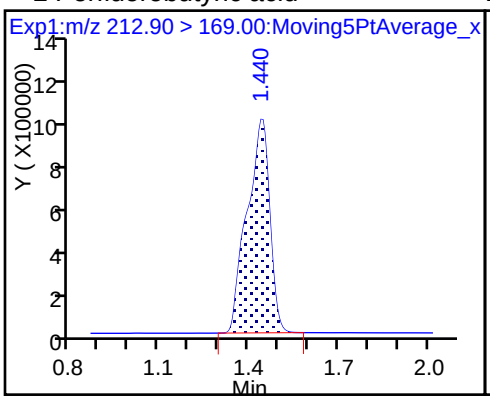
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 4

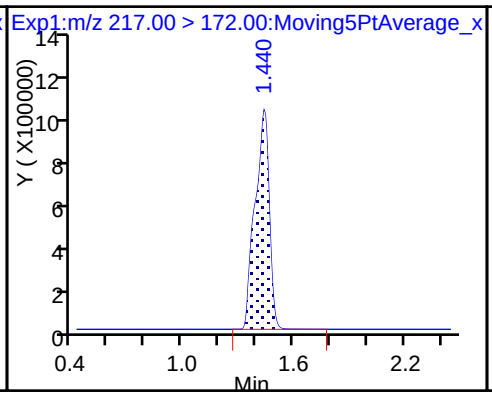
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

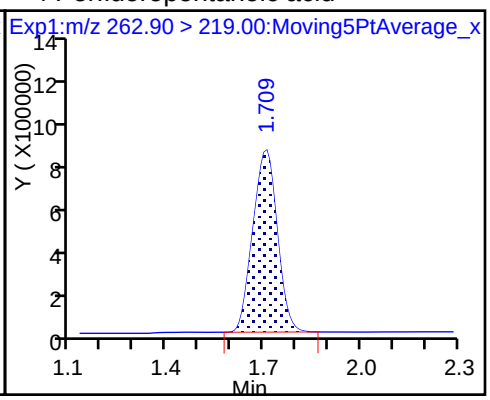
2 Perfluorobutyric acid



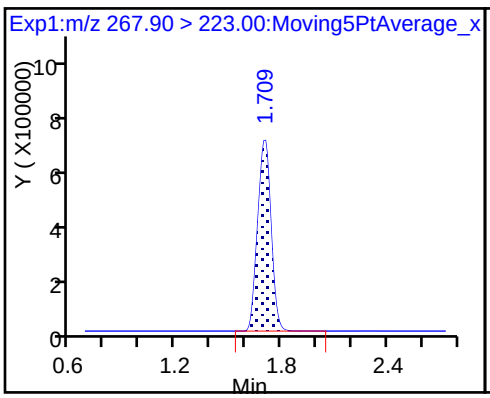
D 1 13C4 PFBA



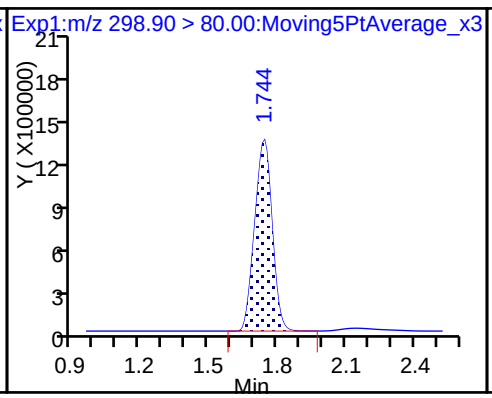
4 Perfluoropentanoic acid



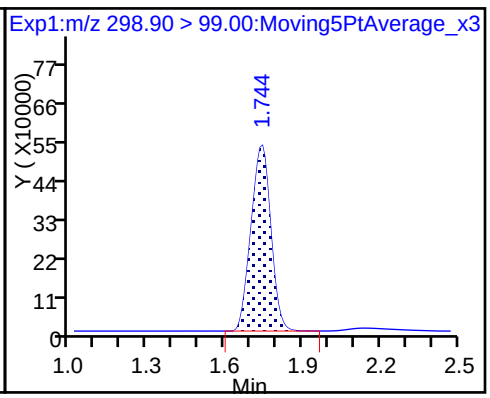
D 3 13C5-PFPeA



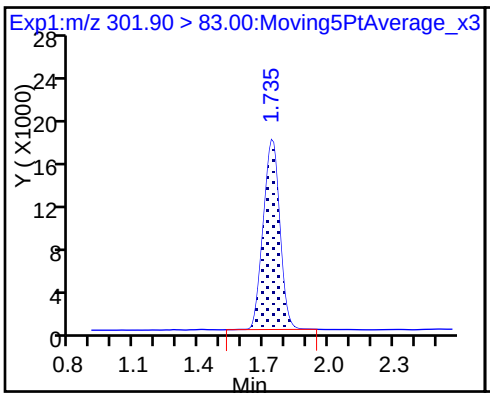
5 Perfluorobutanesulfonic acid



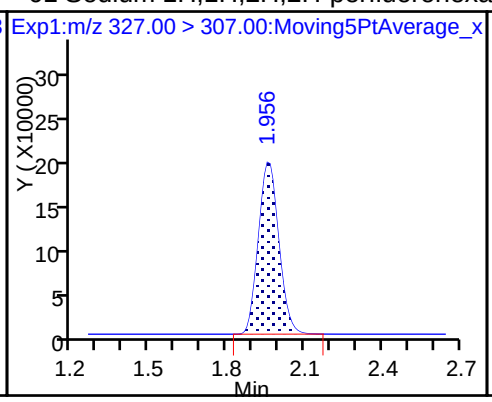
5 Perfluorobutanesulfonic acid



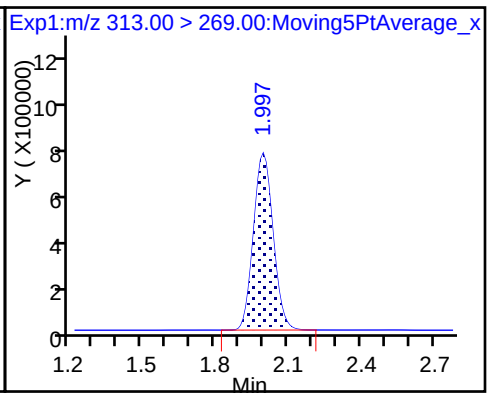
D 47 13C3-PFBS



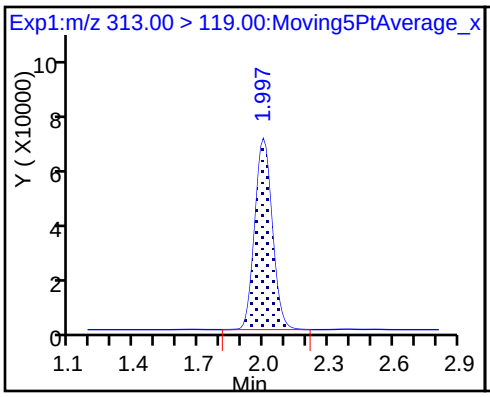
61 Sodium 1H,1H,2H,2H-perfluorohexane



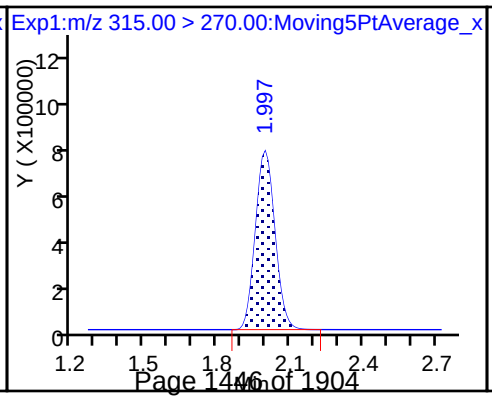
6 Perfluorohexanoic acid



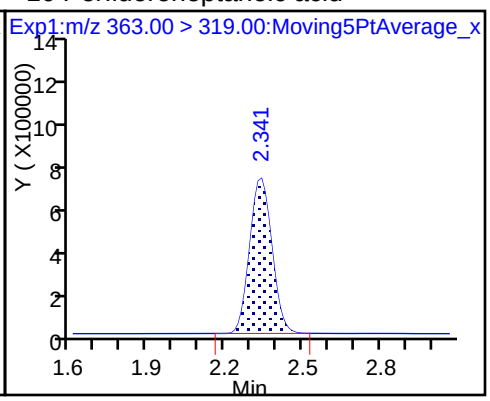
6 Perfluorohexanoic acid



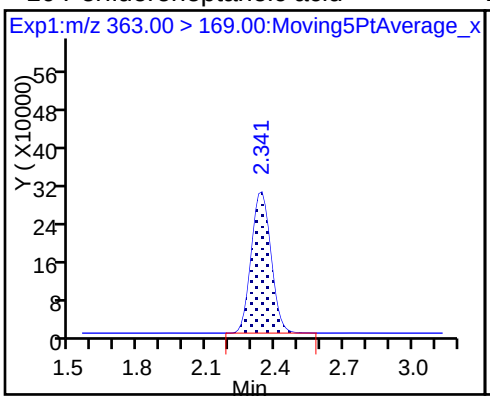
D 7 13C2 PFHxA



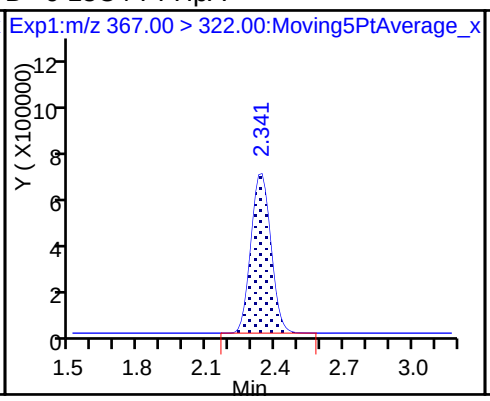
10 Perfluoroheptanoic acid



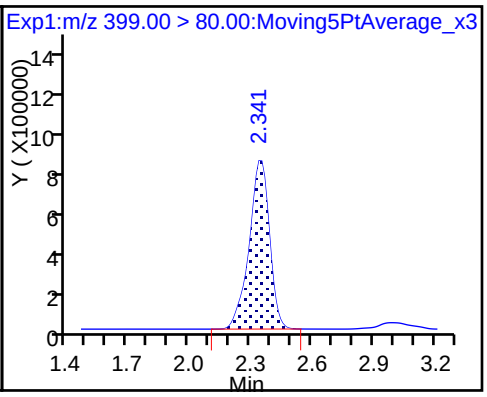
10 Perfluoroheptanoic acid



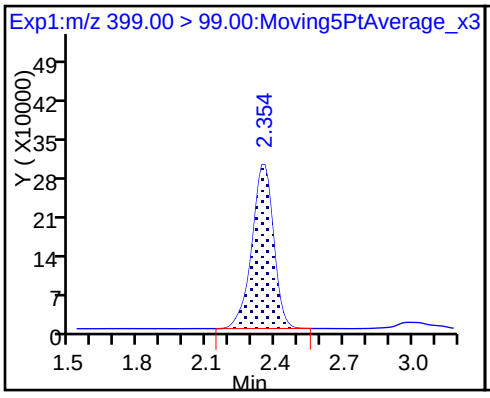
D 9 13C4-PFHpA



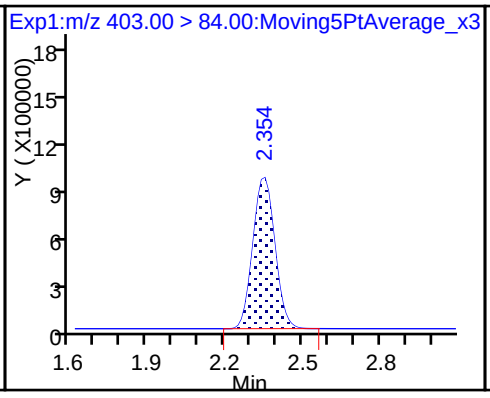
8 Perfluorohexanesulfonic acid



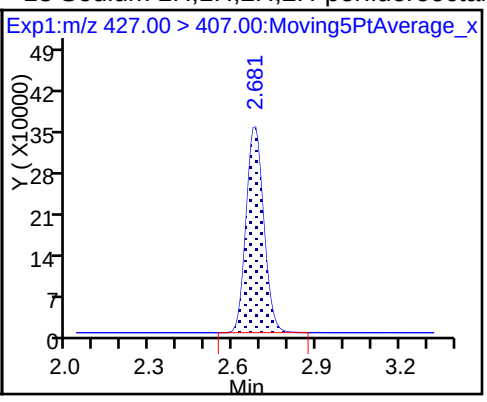
8 Perfluorohexanesulfonic acid



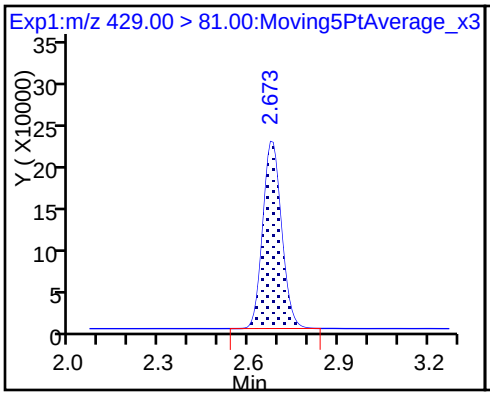
D 11 18O2 PFHxS



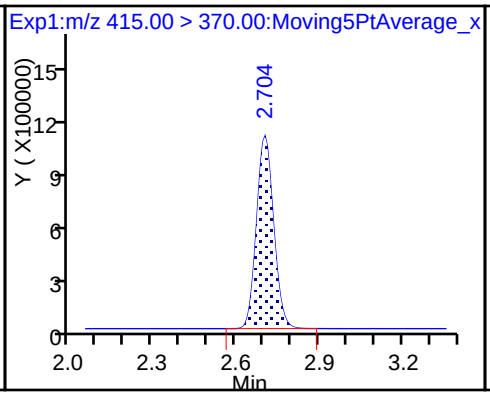
13 Sodium 1H,1H,2H,2H-perfluorooctane



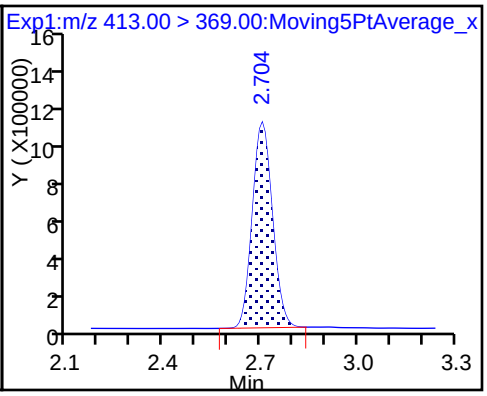
D 12 M2-6:2FTS



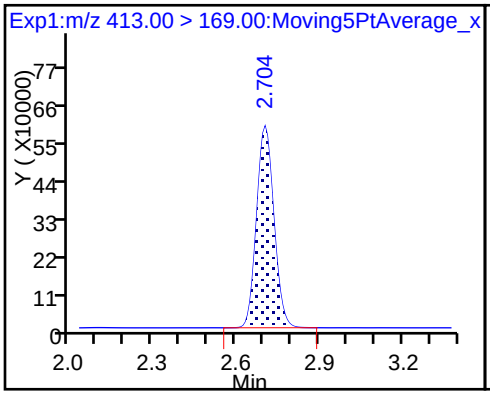
* 62 13C2-PFOA



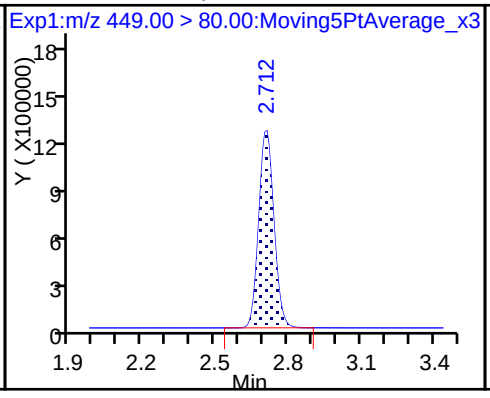
15 Perfluorooctanoic acid



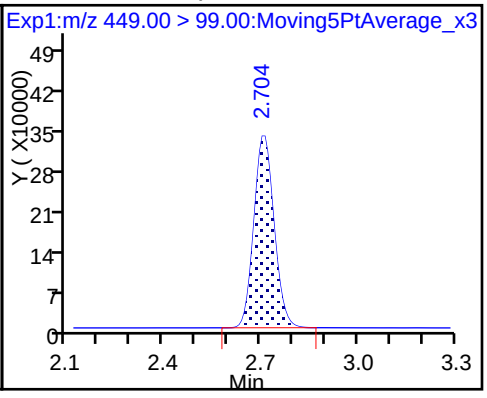
15 Perfluorooctanoic acid



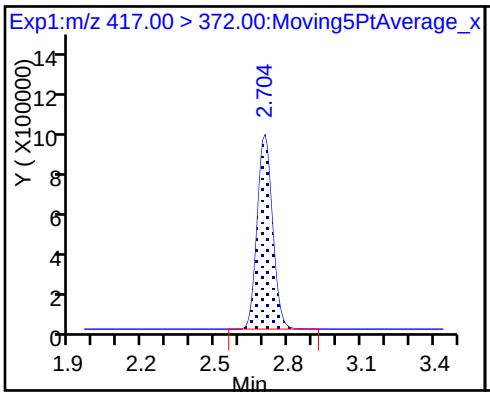
16 Perfluoroheptanesulfonic acid



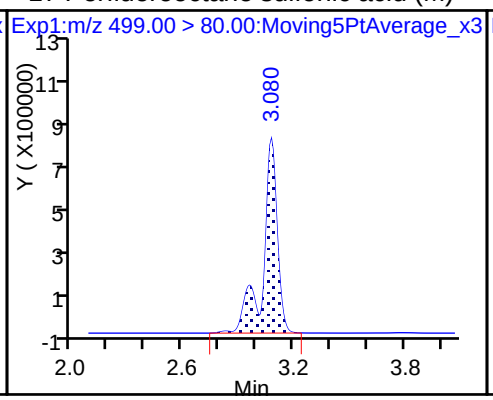
16 Perfluoroheptanesulfonic acid



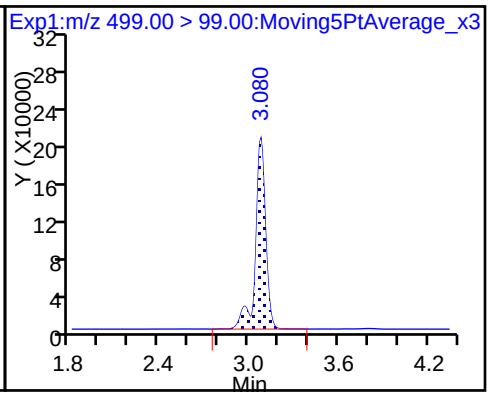
D 14 13C4 PFOA



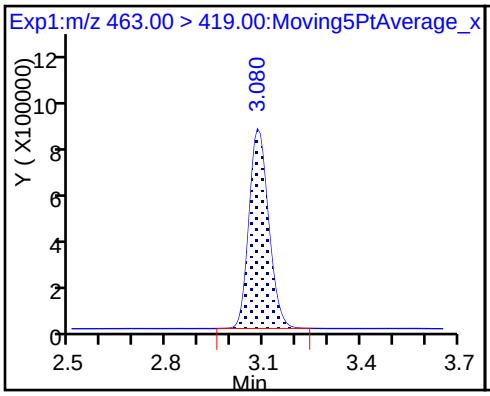
17 Perfluorooctane sulfonic acid (M)



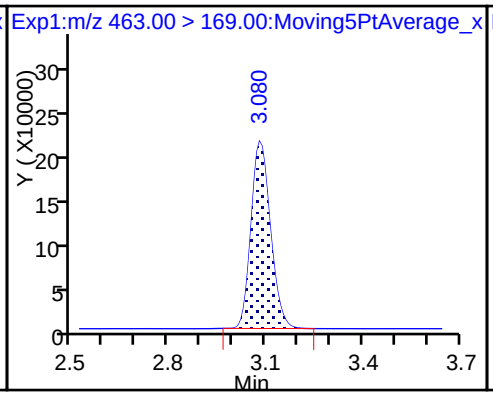
17 Perfluorooctane sulfonic acid



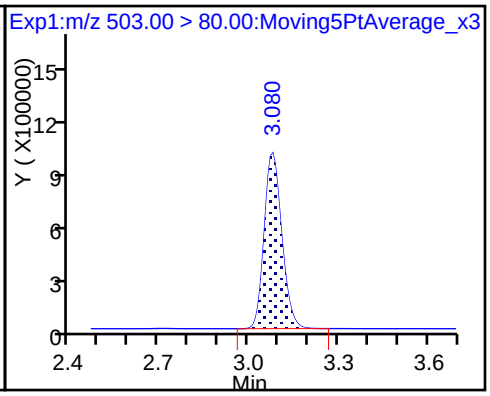
20 Perfluorononanoic acid



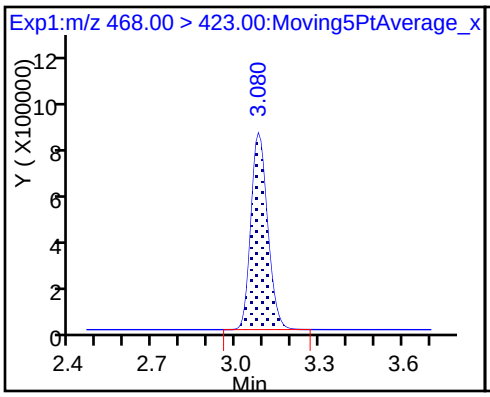
20 Perfluorononanoic acid



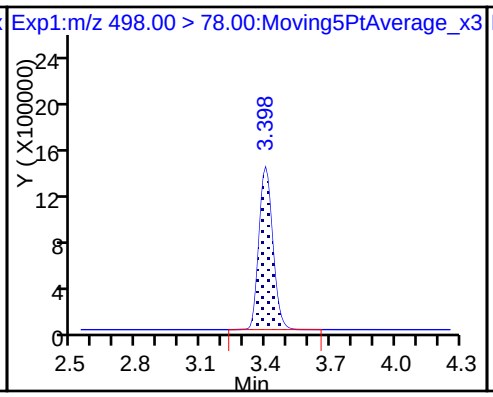
D 18 13C4 PFOS



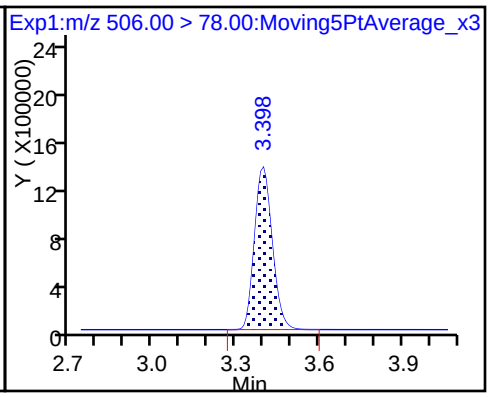
D 19 13C5 PFNA



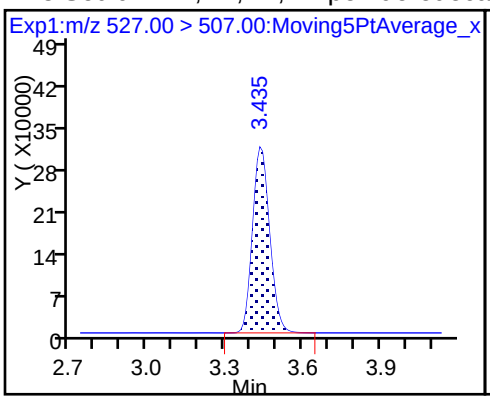
22 Perfluorooctane Sulfonamide



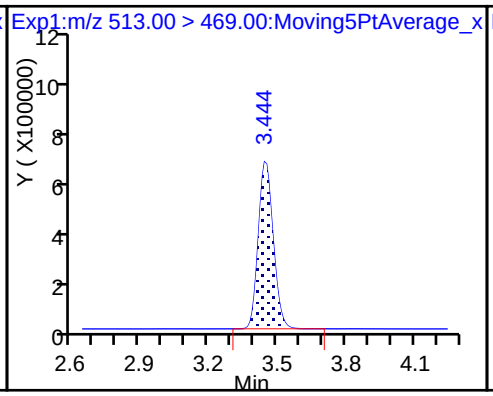
D 21 13C8 FOSA



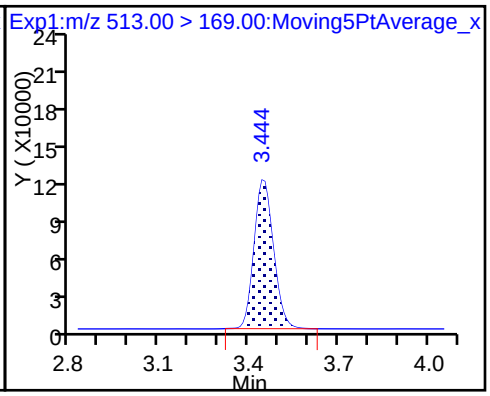
25 Sodium 1H,1H,2H,2H-perfluorodecane



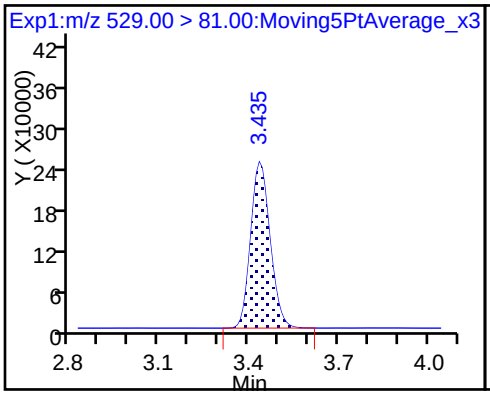
24 Perfluorodecanoic acid



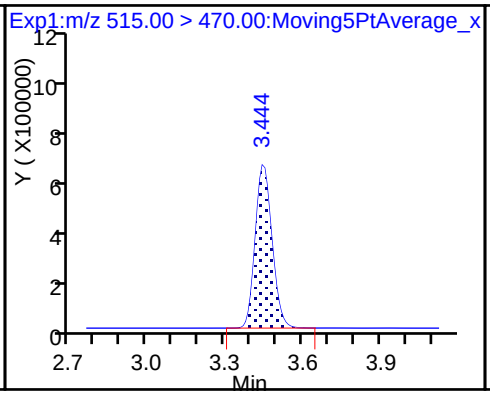
24 Perfluorodecanoic acid



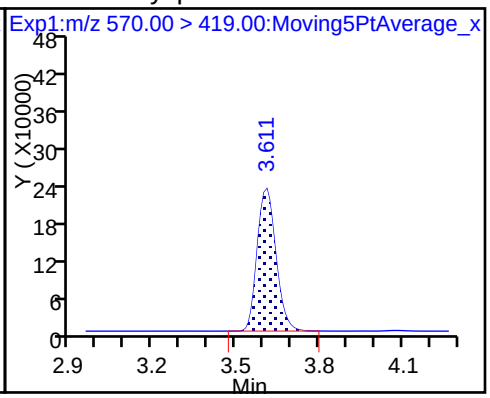
D 26 M2-8:2FTS



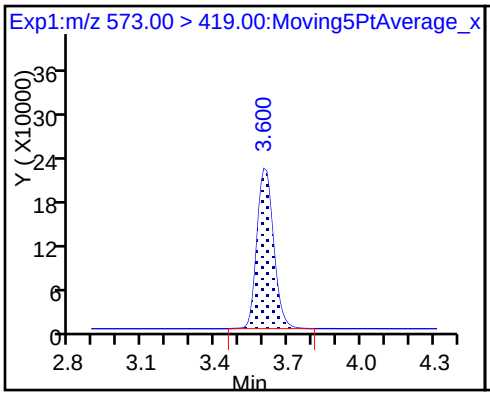
D 23 13C2 PFDA



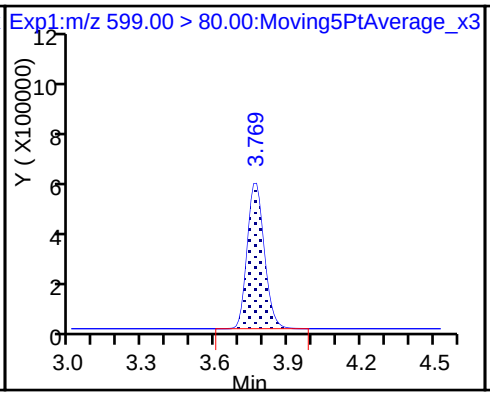
28 N-methyl perfluorooctane sulfonami



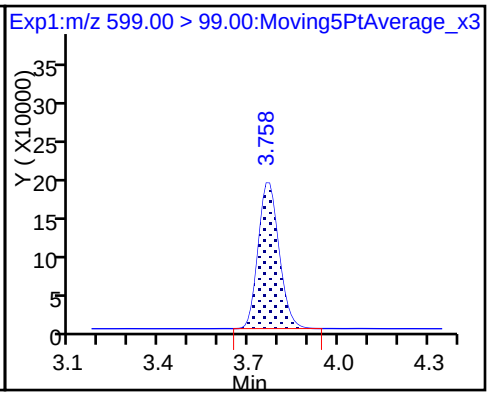
D 27 d3-NMeFOSAA



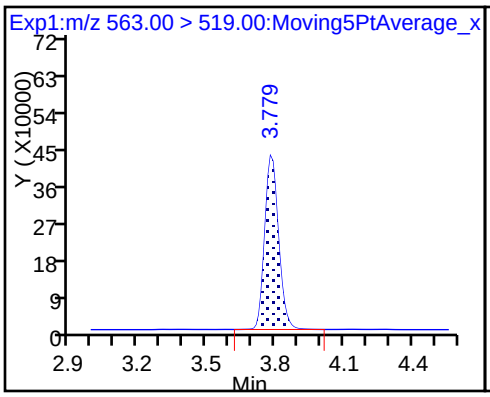
29 Perfluorodecane Sulfonic acid



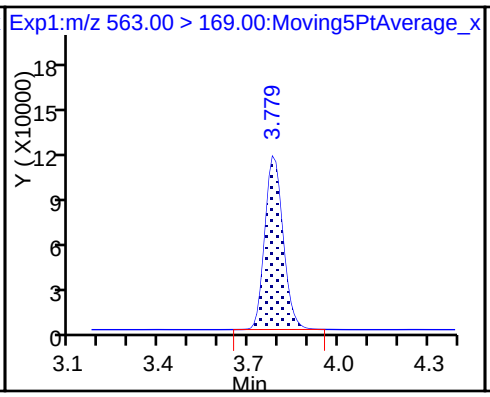
29 Perfluorodecane Sulfonic acid



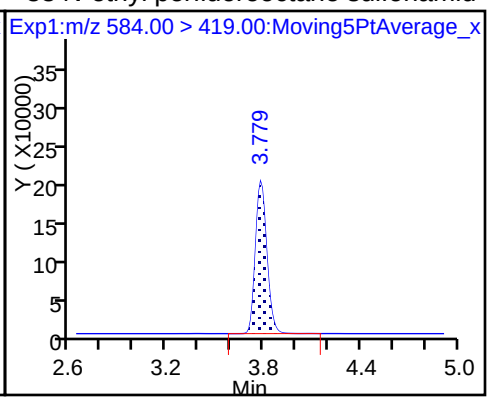
31 Perfluoroundecanoic acid



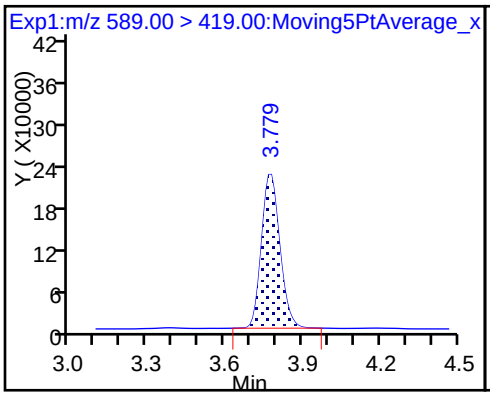
31 Perfluoroundecanoic acid



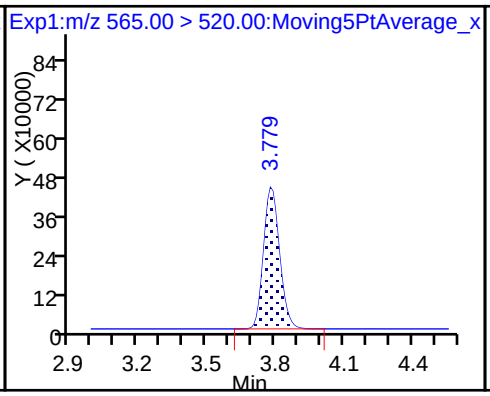
33 N-ethyl perfluorooctane sulfonamid



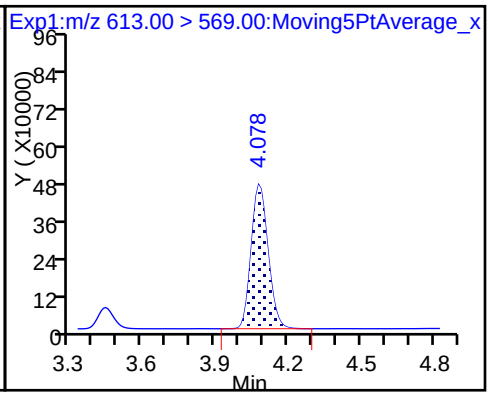
D 32 d5-NEtFOSAA



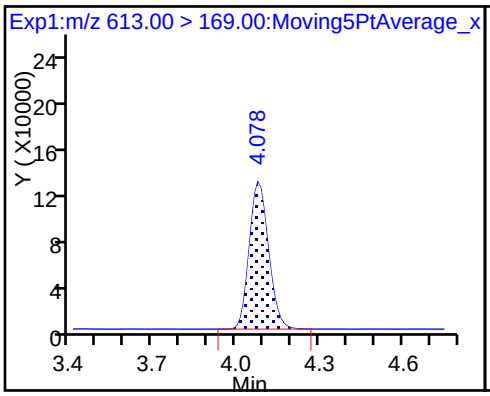
D 30 13C2 PFUnA



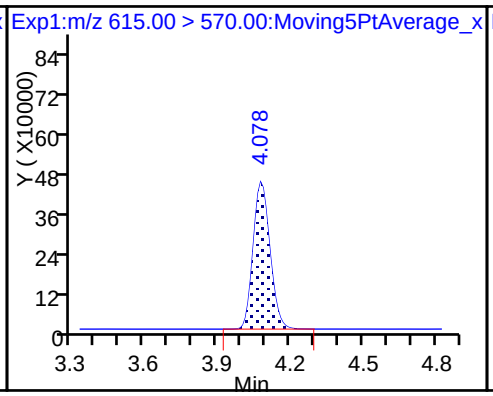
37 Perfluorododecanoic acid



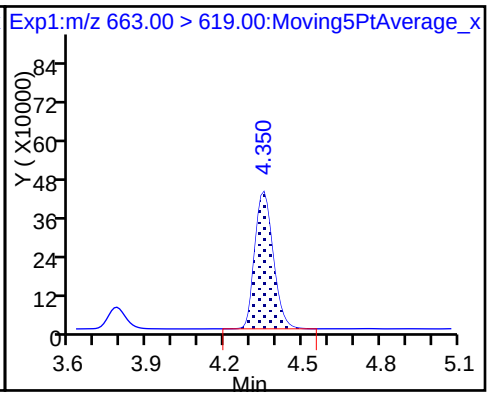
37 Perfluorododecanoic acid



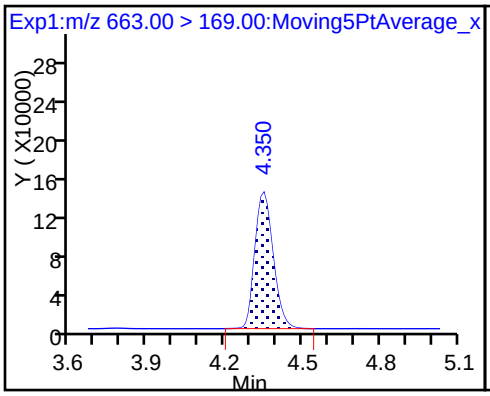
D 36 13C2 PFDoA



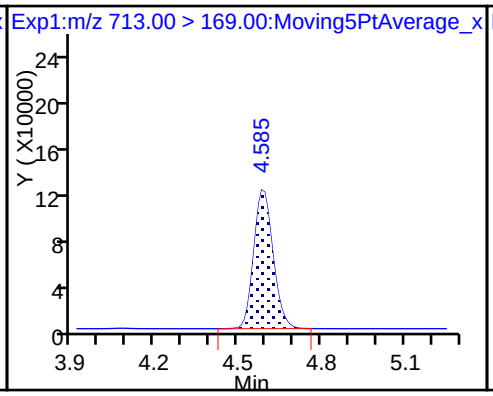
41 Perfluorotridecanoic acid



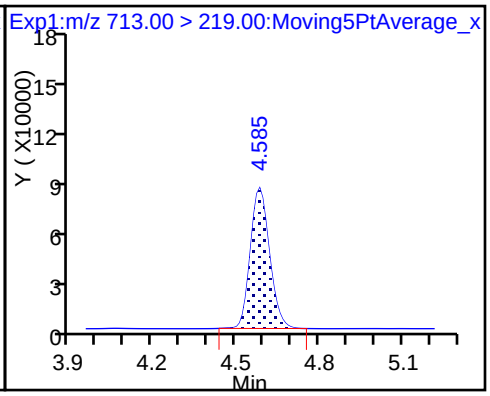
41 Perfluorotridecanoic acid



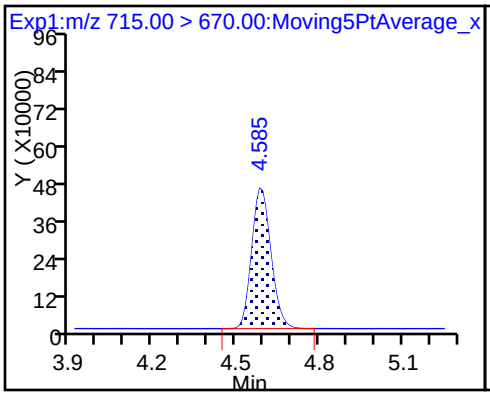
42 Perfluorotetradecanoic acid



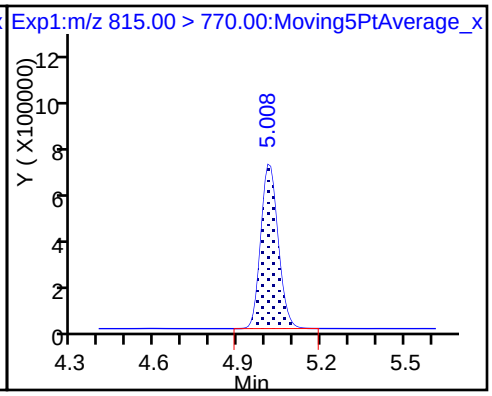
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

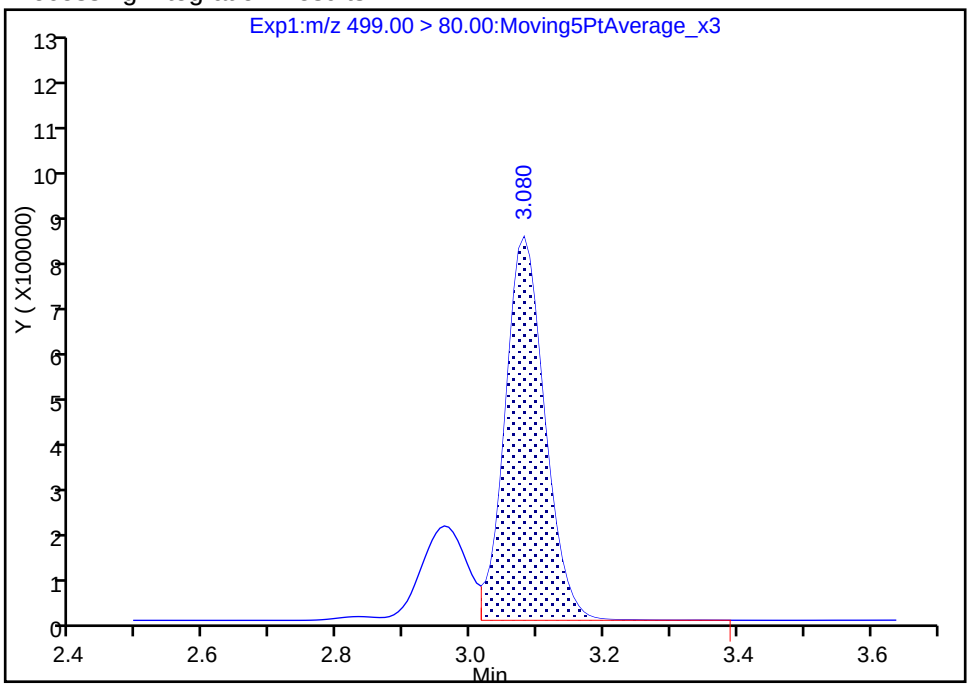
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\2018.03.19LLA_026.d
Injection Date: 19-Mar-2018 11:13:00 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

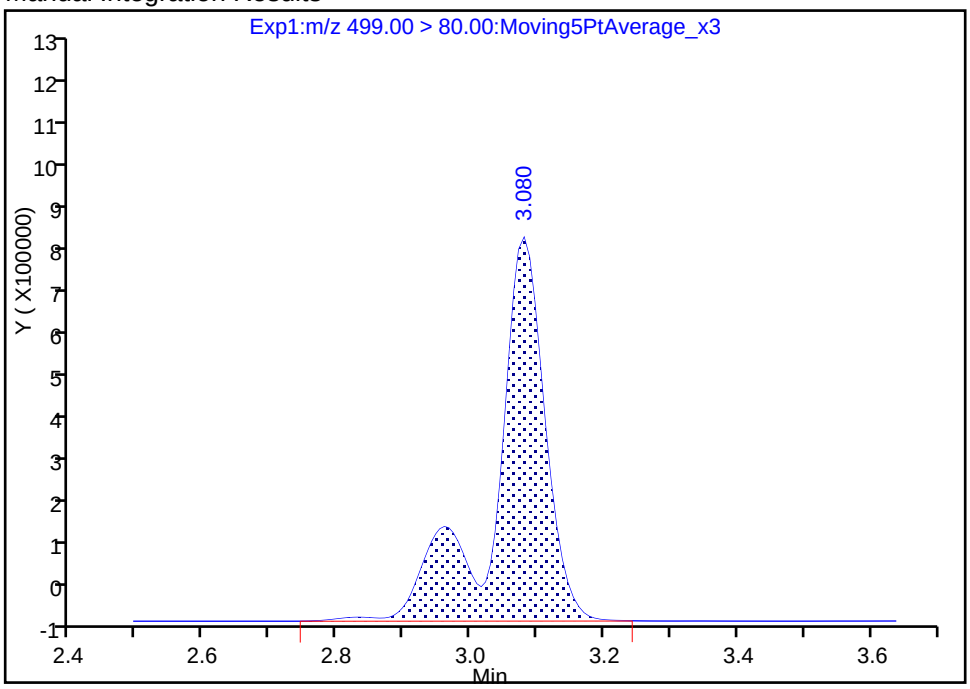
Processing Integration Results

RT: 3.08
Area: 3281076
Amount: 1.847099
Amount Units: ng/ml



Manual Integration Results

RT: 3.08
Area: 4237354
Amount: 2.385441
Amount Units: ng/ml



Reviewer: barnettj, 19-Mar-2018 13:34:31
Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213672/14 Calibration Date: 03/19/2018 12:31

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLA_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.8961		0.966	1.00	-3.4	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.127		0.964	1.00	-3.6	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	75.82		0.866	0.884	-2.0	30.0
4:2 FTS	AveID	16.07	11.10		0.645	0.934	-30.9*	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.006		0.997	1.00	-0.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.030		0.994	1.00	-0.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	0.999		0.815	0.910	-10.4	30.0
6:2FTS	AveID	1.665	1.654		0.942	0.948	-0.6	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.287		0.932	0.952	-2.1	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.119		1.00	1.00	0.3	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.016		0.871	0.928	-6.2	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.9841		0.965	1.00	-3.5	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	1.001		1.03	1.00	3.1	30.0
8:2FTS	AveID	1.257	1.232		0.939	0.958	-2.0	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9410		0.992	1.00	-0.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.013		0.972	1.00	-2.8	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6226		0.940	0.964	-2.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.8986		0.918	1.00	-8.2	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7615		0.909	1.00	-9.1	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	0.9743		0.952	1.00	-4.8	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	0.9771		0.950	1.00	-5.0	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2593		0.940	1.00	-6.0	30.0
13C4 PFBA	Ave	1.277	1.198		2.35	2.50	-6.2	30.0
13C5-PFPeA	Ave	0.9006	0.7881		2.19	2.50	-12.5	30.0
13C3-PFBS	Ave	0.0222	0.0218		2.28	2.33	-1.9	30.0
13C2 PFHxA	Ave	1.004	0.9325		2.32	2.50	-7.1	30.0
13C4-PFHpA	Ave	0.9767	0.9262		2.37	2.50	-5.2	30.0
18O2 PFHxS	Ave	1.303	1.314		2.39	2.37	0.8	30.0
M2-6:2FTS	Ave	0.2501	0.2283		2.17	2.38	-8.7	30.0
13C4 PFOA	Ave	0.9431	0.9103		2.41	2.50	-3.5	30.0
13C4 PFOS	Ave	0.9113	0.8981		2.36	2.39	-1.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213672/14 Calibration Date: 03/19/2018 12:31

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLA_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7592		2.52	2.50	0.6	30.0
13C8 FOSA	Ave	1.319	1.313		2.49	2.50	-0.5	30.0
M2-8:2FTS	Ave	0.2350	0.2600		2.65	2.40	10.7	30.0
13C2 PFDA	Ave	0.6303	0.6607		2.62	2.50	4.8	30.0
d3-NMeFOSAA	Ave	0.2081	0.2120		2.55	2.50	1.9	30.0
13C2 PFUnA	Ave	0.4935	0.4954		2.51	2.50	0.4	30.0
d5-NEtFOSAA	Ave	0.1990	0.2285		2.87	2.50	14.8	30.0
13C2 PFDoA	Ave	0.4680	0.4708		2.52	2.50	0.6	30.0
13C2-PFTeDA	Ave	0.4272	0.4619		2.70	2.50	8.1	30.0
13C2-PFHxDA	Ave	0.6248	0.6619		2.65	2.50	5.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\2018.03.19LLA_036.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 19-Mar-2018 12:31:12 ALS Bottle#: 13 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 13:50:28 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK009

First Level Reviewer: barnettj Date: 19-Mar-2018 13:35:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.446	1.446	0.0	1.000	1959739	0.9663		96.6	1042	
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.446	0.0	0.535	5467158	2.35		93.8	99346	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.708	1.708	0.0	1.000	1620784	0.9644		96.4	625	
D 3 13C5-PFPeA										
267.90 > 223.00	1.708	1.709	-0.001	0.632	3596797	2.19		87.5	118618	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.744	0.0	1.000	2666715	0.8662		98.0	1242	
298.90 > 99.00	1.744	1.744	0.0	1.000	1107837		2.41(1.25-3.74)		1125	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.744	0.0	0.645	92509	2.28		98.1	646	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.965	1.965	0.0	1.000	412487	0.6449		69.1	25583	
D 60 M2-4:2FTS										
329.00 > 81.00	1.965	1.966	-0.001	0.727	489360	NC			4804	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.997	0.0	1.000	1711964	1.00		99.7	6465	
313.00 > 119.00	1.997	1.997	0.0	1.000	150052		11.41(5.03-15.10)		3407	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.997	0.0	0.739	4255863	2.32		92.9	156725	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.340	2.340	0.0	1.000	1741439	0.99		99.4	4110	
363.00 > 169.00	2.340	2.340	0.0	1.000	695155		2.51(1.13-3.40)		10759	
D 9 13C4-PFHpA										
367.00 > 322.00	2.340	2.341	-0.001	0.866	4226790	2.37		94.8	89941	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.353	2.353	0.0	1.000	2180642	0.8150		89.6	286	
399.00 > 99.00	2.353	2.353	0.0	1.000	744305		2.93(1.50-4.49)		306	
D 11 18O2 PFHxS										
403.00 > 84.00	2.353	2.354	-0.001	0.871	5673481	2.39		101	57445	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.679	2.679	0.0	1.000	653502	0.9419		99.4	38834	
D 12 M2-6:2FTS										
429.00 > 81.00	2.679	2.689	-0.010	0.991	989881	2.17		91.3	21103	
* 62 13C2-PFOA										
415.00 > 370.00	2.702	2.702	0.0		4563769	2.50			96770	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.710	2.710	0.0	1.003	1860342	1.00		100	632	
413.00 > 169.00	2.702	2.710	-0.008	1.000	1005095		1.85(0.84-2.52)		3808	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.710	2.710	0.0	1.000	2008273	0.9321		97.9	27932	
449.00 > 99.00	2.710	2.710	0.0	1.000	519811		3.86(1.94-5.82)		11257	
D 14 13C4 PFOA										
417.00 > 372.00	2.702	2.712	-0.010	1.000	4154441	2.41		96.5	107279	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.080	3.080	0.0	1.000	1545605	0.8708		93.8	4809	
499.00 > 99.00	3.080	3.080	0.0	1.000	355514		4.35(2.31-6.93)		3247	
20 Perfluorononanoic acid										
463.00 > 419.00	3.088	3.088	0.0	1.000	1363825	0.9652		96.5	3463	
463.00 > 169.00	3.088	3.088	0.0	1.000	352313		3.87(1.90-5.69)		12189	
D 18 13C4 PFOS										
503.00 > 80.00	3.080	3.088	-0.008	1.140	3918373	2.36		98.5	38581	
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.096	-0.008	1.142	3464666	2.52		101	92664	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.406	3.406	0.0	1.000	2401131	1.03		103	39110	
D 21 13C8 FOSA										
506.00 > 78.00	3.406	3.406	0.0	1.260	5994147	2.49		99.5	59194	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.442	3.442	0.0	1.000	560173	0.9387		98.0	13833	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.451	3.451	0.0	1.000	1134907	0.99		99.2	7535	
513.00 > 169.00	3.451	3.451	0.0	1.000	209845		5.41(2.36-7.09)		11687	
D 26 M2-8:2FTS										
529.00 > 81.00	3.442	3.452	-0.010	1.274	1136823	2.65		111	23034	
D 23 13C2 PFDA										
515.00 > 470.00	3.451	3.461	-0.010	1.277	3015062	2.62		105	56600	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.609	3.609	0.0	1.000	391998	0.9724		97.2	5138	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.609	3.620	-0.011	1.336	967576	2.55		102	41220	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.770	3.770	0.0	1.000	983965	0.9399		97.5	40645	
599.00 > 99.00	3.770	3.770	0.0	1.000	351722		2.80(1.39-4.16)		8113	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.780	3.780	0.0	1.000	688572	0.9086		90.9	2559	
563.00 > 169.00	3.780	3.780	0.0	1.000	188426		3.65(2.12-6.36)		15021	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.780	3.780	0.0	1.000	374784	0.9178		91.8	7674	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.780	3.789	-0.009	1.399	1042669	2.87		115	2118	
D 30 13C2 PFUnA										
565.00 > 520.00	3.780	3.800	-0.020	1.399	2260731	2.51		100	58478	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.079	4.079	0.0	1.000	837387	0.9524		95.2	152	
613.00 > 169.00	4.079	4.079	0.0	1.000	223952		3.74(2.13-6.40)		3913	
D 36 13C2 PFDoA										
615.00 > 570.00	4.079	4.089	-0.010	1.510	2148612	2.52		101	14428	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.350	4.350	0.0	1.000	839769	0.9498		95.0	153	
663.00 > 169.00	4.350	4.350	0.0	1.000	265168		3.17(1.25-3.76)		3887	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.585	4.585	0.0	1.000	218660	0.9403		94.0	2704	
713.00 > 219.00	4.585	4.585	0.0	1.000	155658		1.40(0.71-2.13)		1632	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.585	4.606	-0.021	1.697	2108037	2.70		108	19232	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.008	5.008	0.0	1.000	1107350	NC			106	
813.00 > 169.00	5.008	5.008	0.0	1.000	192226		5.76(2.86-8.58)		1376	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.008	5.026	-0.018	1.853	3020636	2.65		106	9739	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.383	5.383	0.0	1.000	1171594	NC			216	
913.00 > 169.00	5.383	5.383	0.0	1.000	155857		7.52(3.83-11.48)		1848	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 19-Mar-2018 13:50:29 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\2018.03.19LLA_036.d

Injection Date: 19-Mar-2018 12:31:12 Instrument ID: A8_N

Lims ID: CCV L4

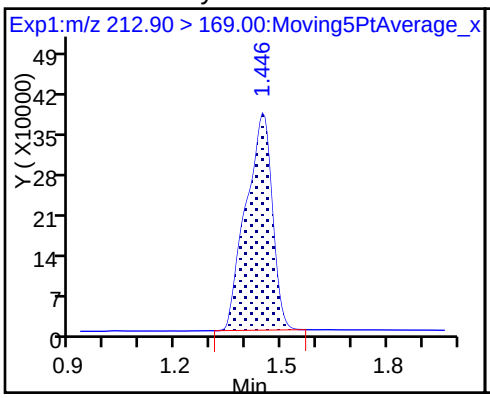
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 14

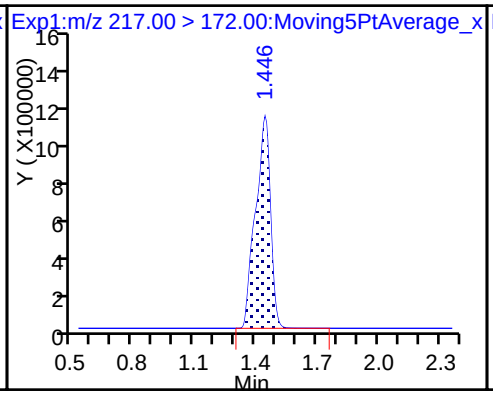
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

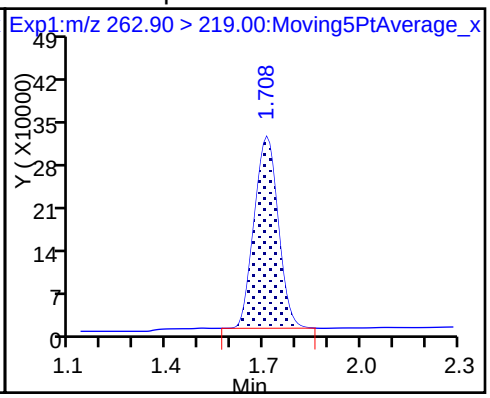
2 Perfluorobutyric acid



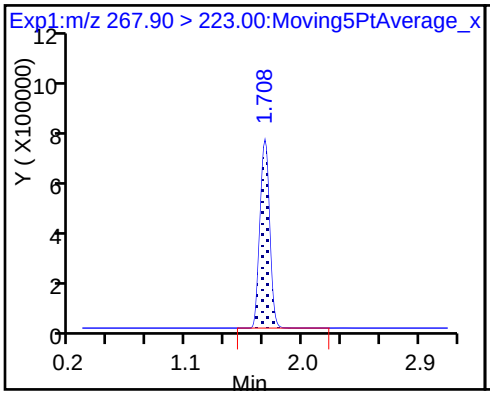
D 1 13C4 PFBA



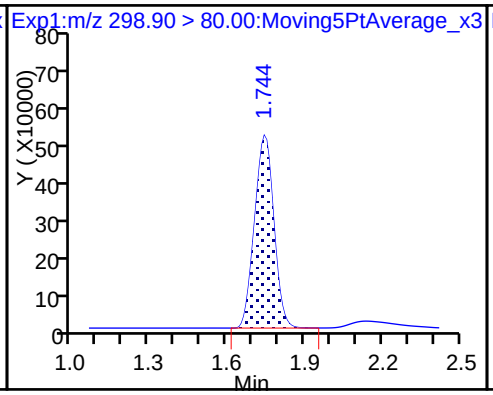
4 Perfluoropentanoic acid



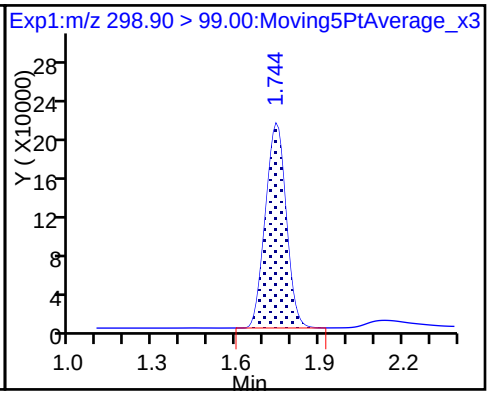
D 3 13C5-PFPeA



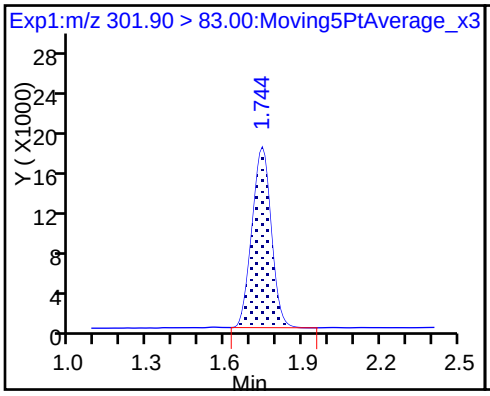
5 Perfluorobutanesulfonic acid



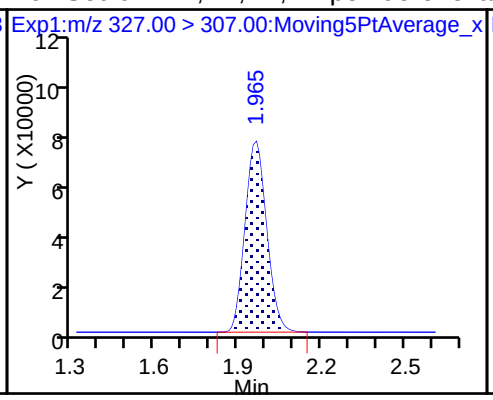
5 Perfluorobutanesulfonic acid



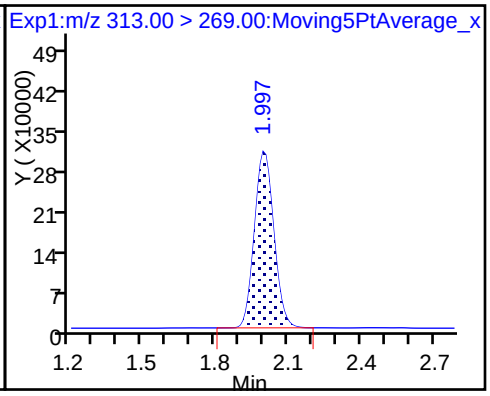
D 47 13C3-PFBS



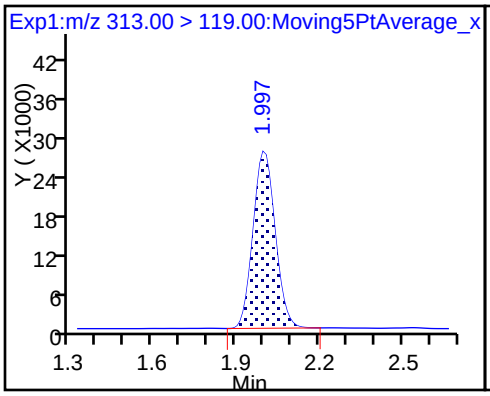
61 Sodium 1H,1H,2H,2H-perfluorohexane



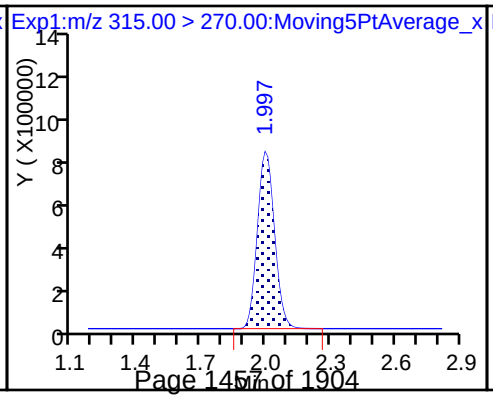
6 Perfluorohexanoic acid



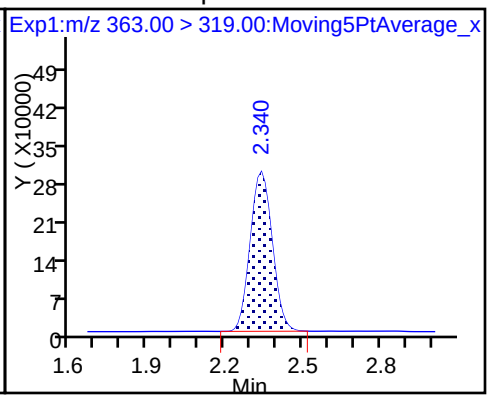
6 Perfluorohexanoic acid



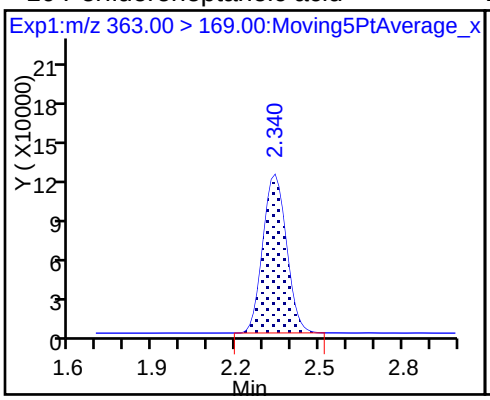
D 7 13C2 PFHxA



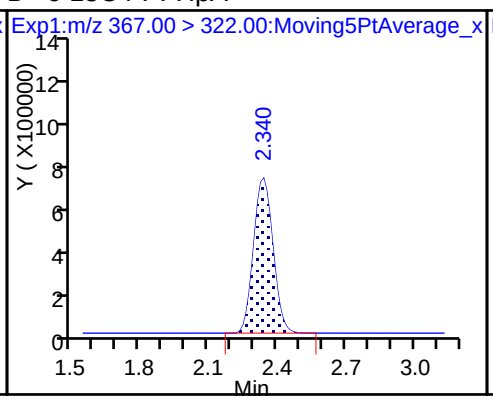
10 Perfluoroheptanoic acid



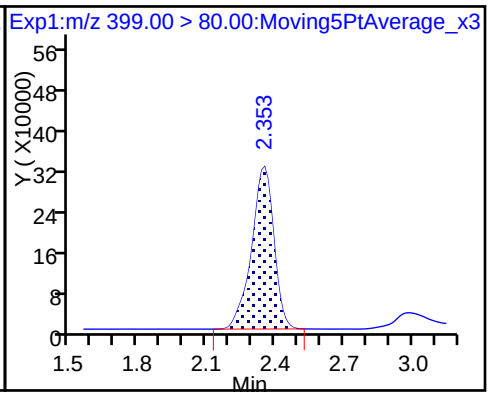
10 Perfluoroheptanoic acid



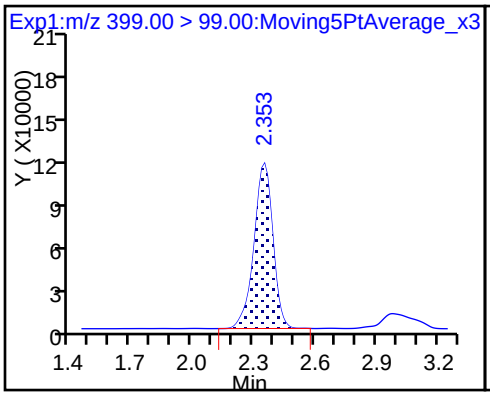
D 9 13C4-PFHpA



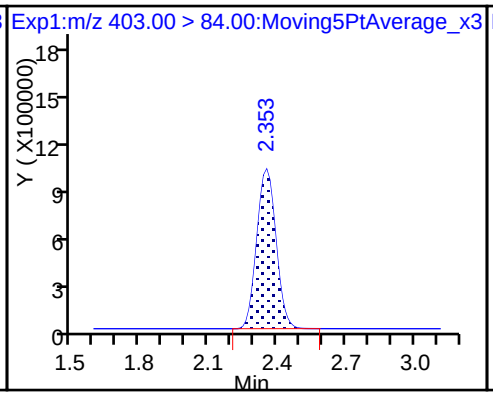
8 Perfluorohexanesulfonic acid



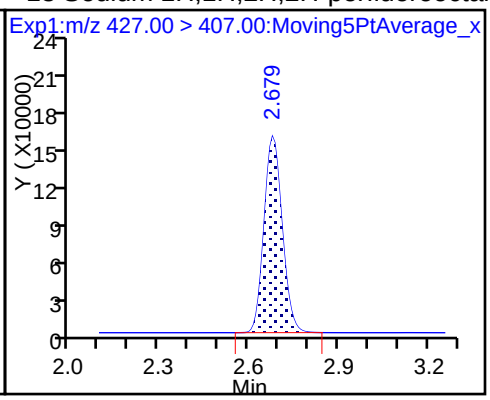
8 Perfluorohexanesulfonic acid



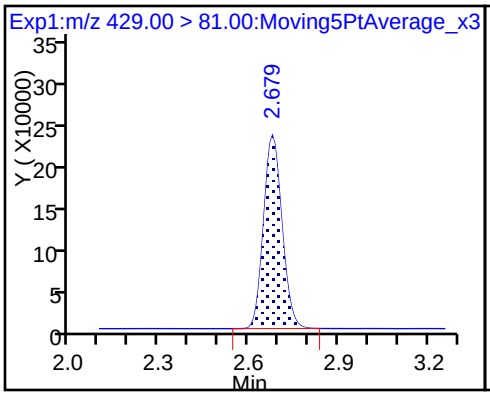
D 11 18O2 PFHxS



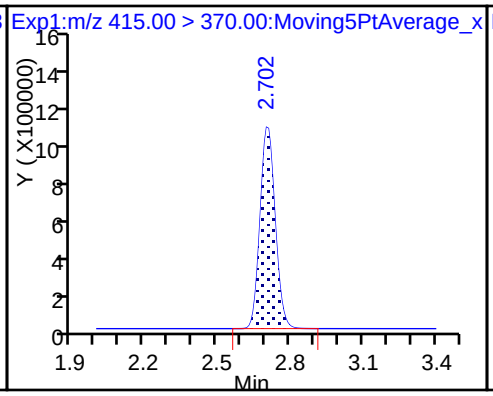
13 Sodium 1H,1H,2H,2H-perfluorooctane



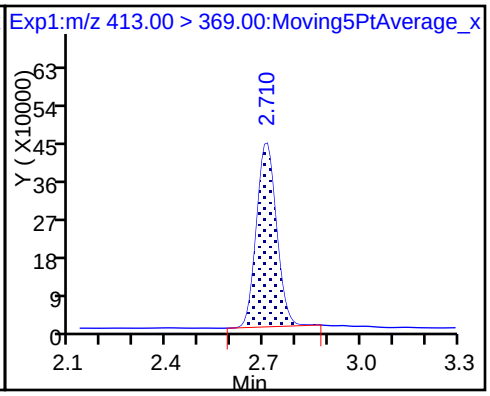
D 12 M2-6:2FTS



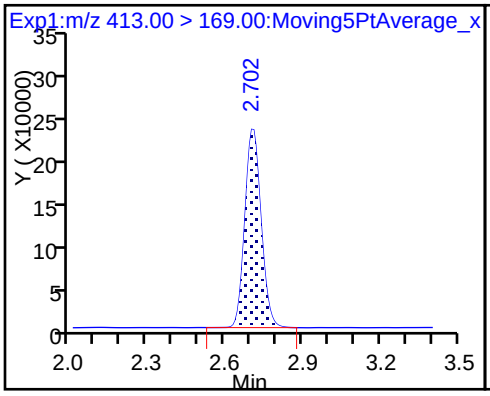
* 62 13C2-PFOA



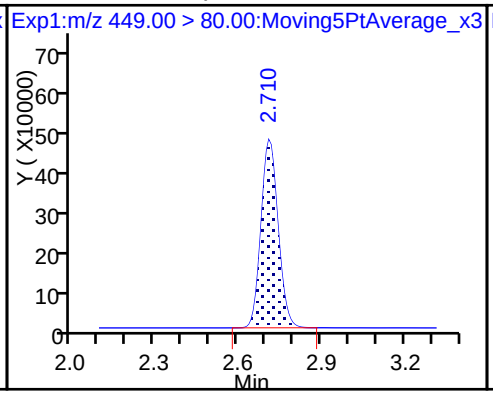
15 Perfluorooctanoic acid



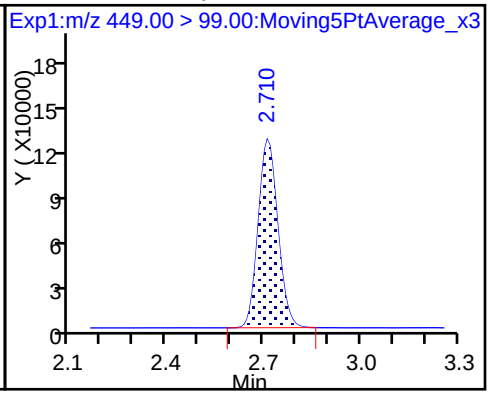
15 Perfluorooctanoic acid



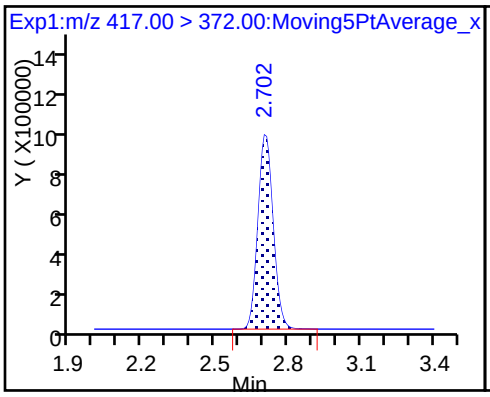
16 Perfluoroheptanesulfonic acid



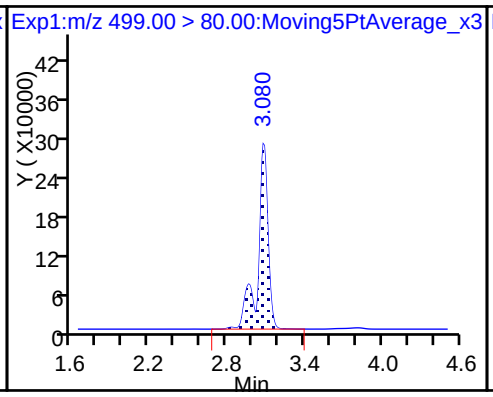
16 Perfluoroheptanesulfonic acid



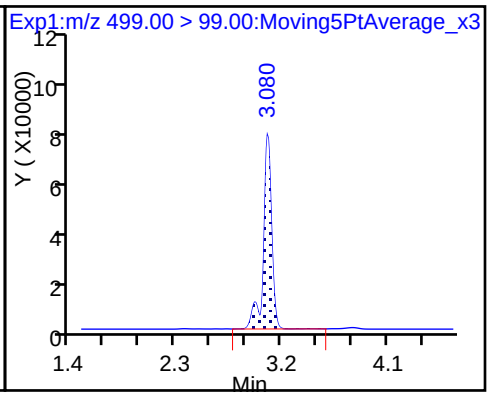
D 14 13C4 PFOA



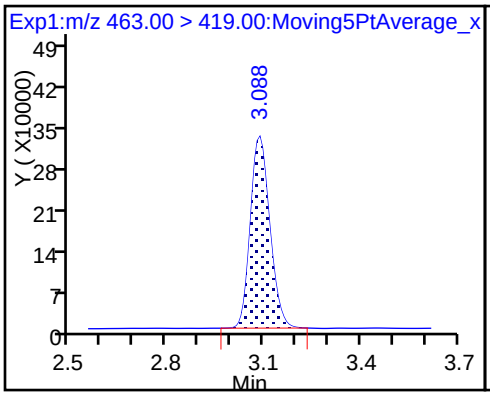
17 Perfluorooctane sulfonic acid



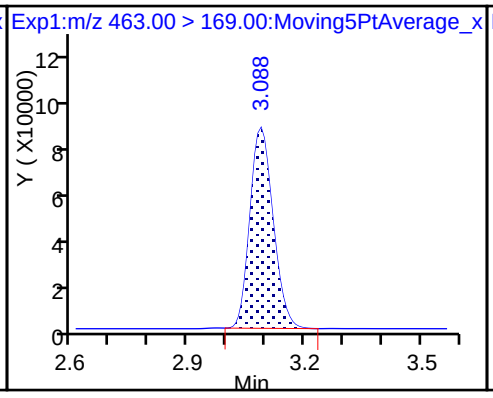
17 Perfluorooctane sulfonic acid



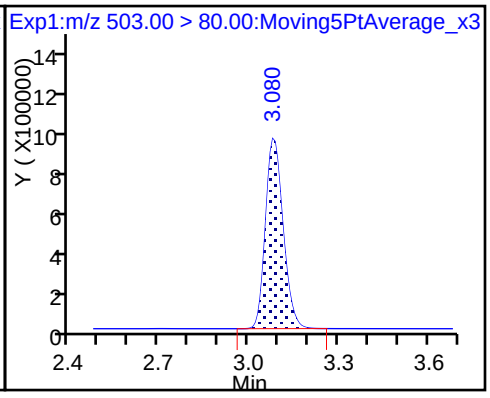
20 Perfluorononanoic acid



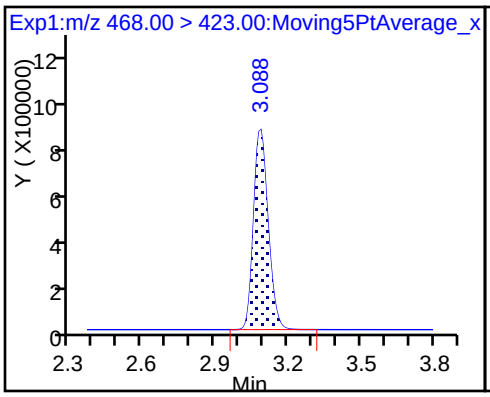
20 Perfluorononanoic acid



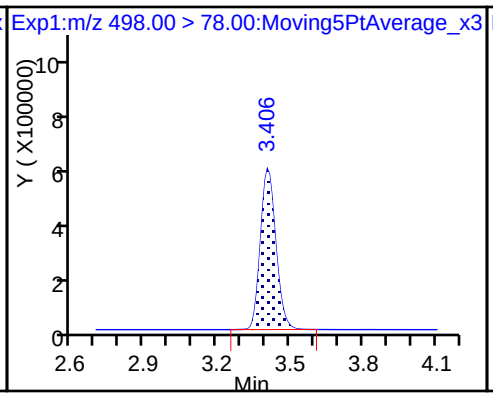
D 18 13C4 PFOS



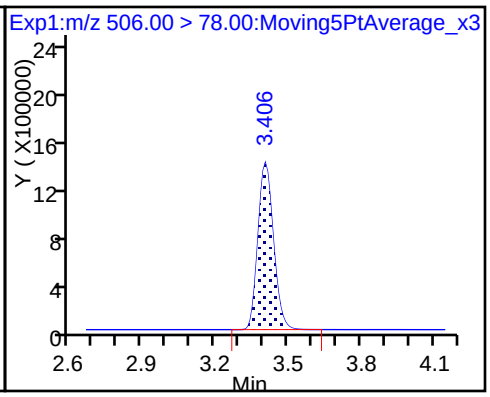
D 19 13C5 PFNA



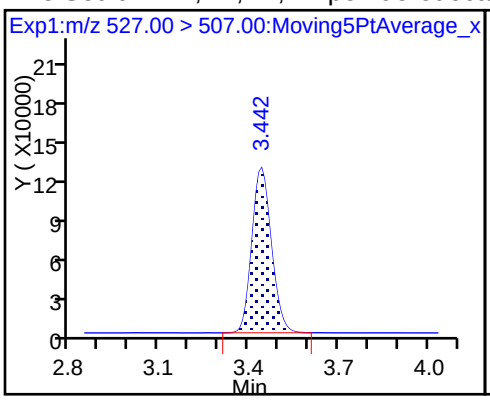
22 Perfluorooctane Sulfonamide



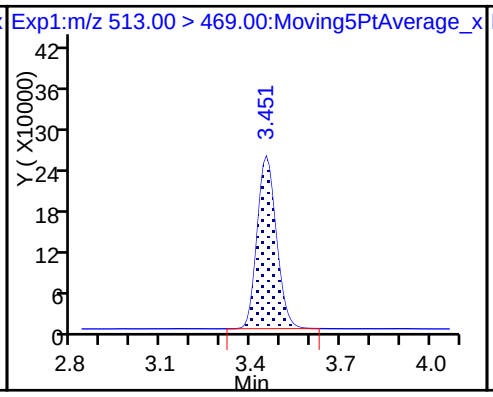
D 21 13C8 FOSA



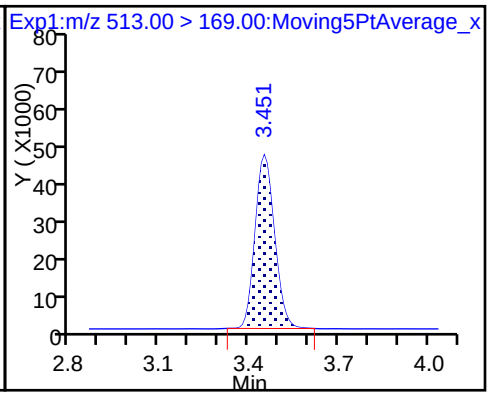
25 Sodium 1H,1H,2H,2H-perfluorodecane



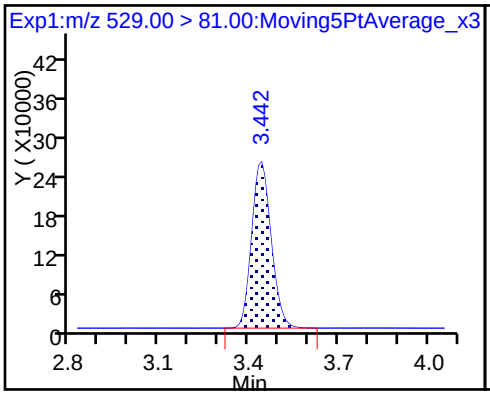
24 Perfluorodecanoic acid



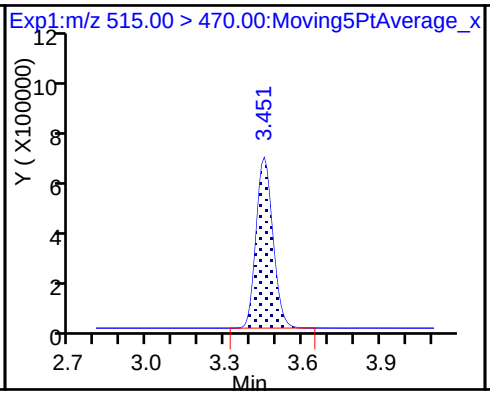
24 Perfluorodecanoic acid



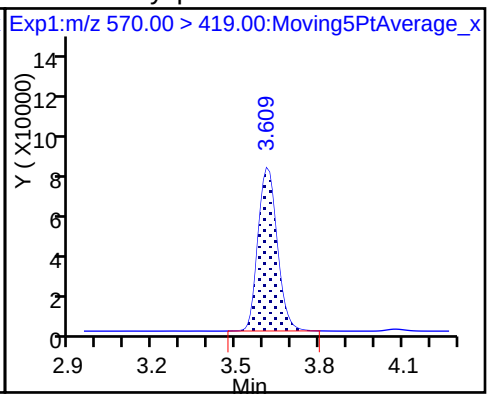
D 26 M2-8:2FTS



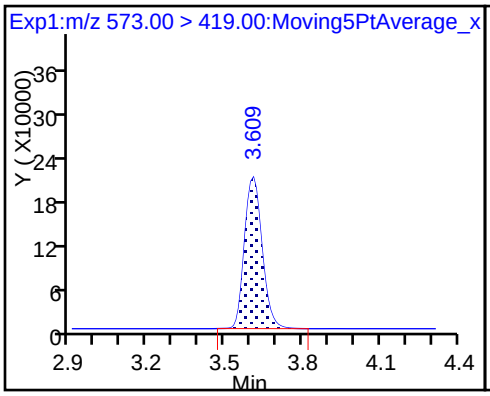
D 23 13C2 PFDA



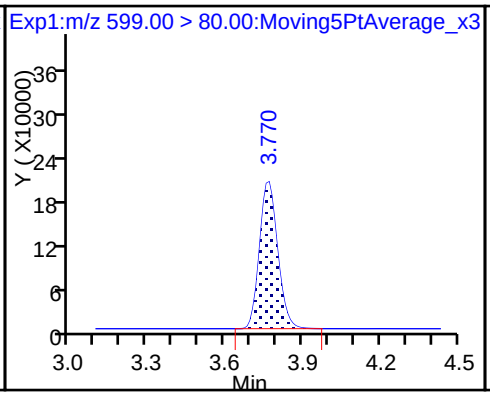
28 N-methyl perfluorooctane sulfonami



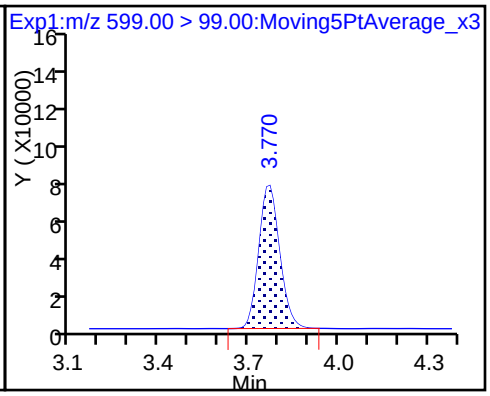
D 27 d3-NMeFOSAA



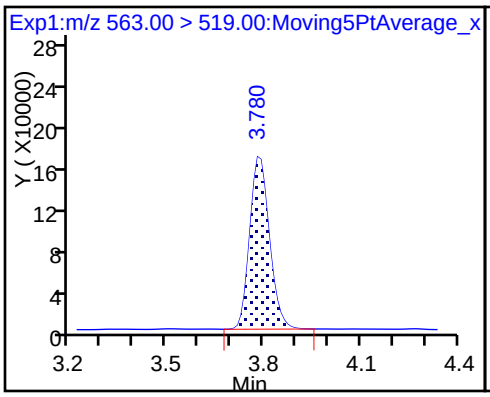
29 Perfluorodecane Sulfonic acid



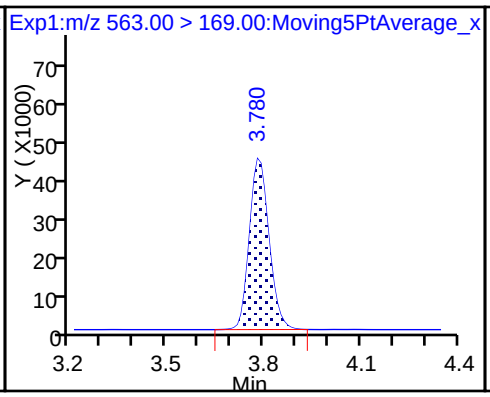
29 Perfluorodecane Sulfonic acid



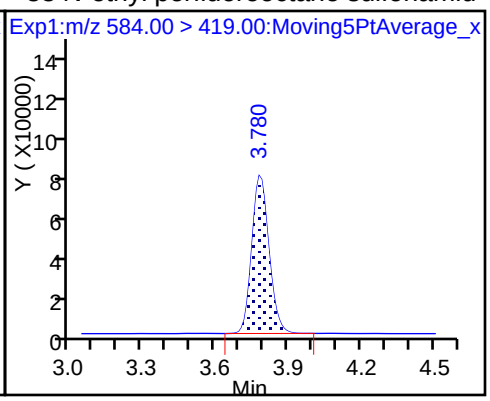
31 Perfluoroundecanoic acid



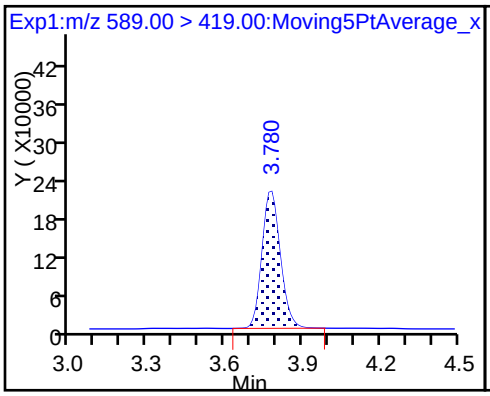
31 Perfluoroundecanoic acid



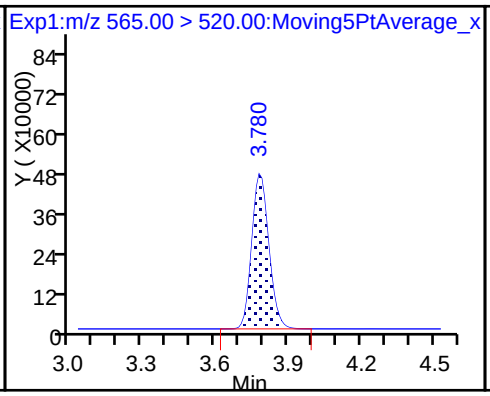
33 N-ethyl perfluorooctane sulfonamid



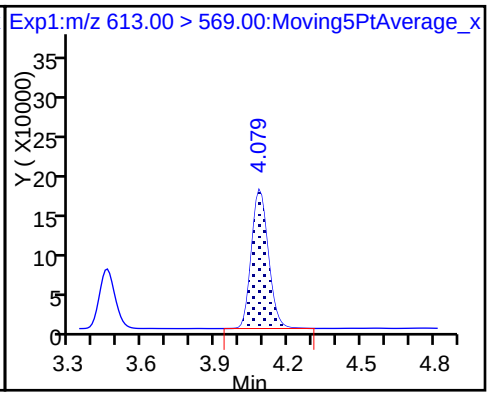
D 32 d5-NEtFOSAA



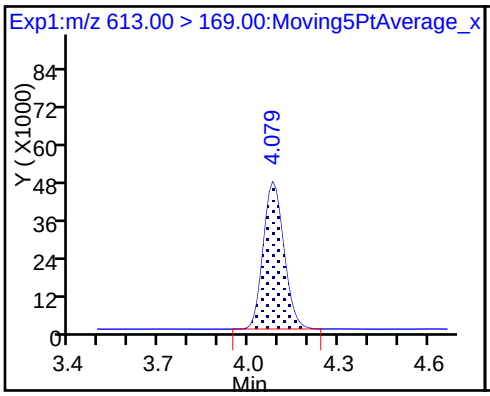
D 30 13C2 PFUnA



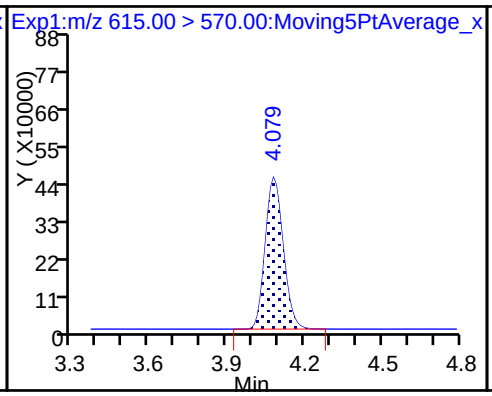
37 Perfluorododecanoic acid



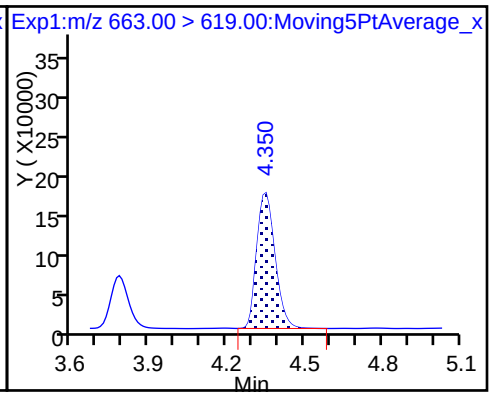
37 Perfluorododecanoic acid



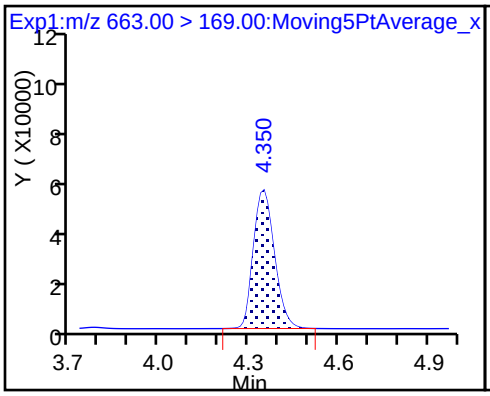
D 36 13C2 PFDoA



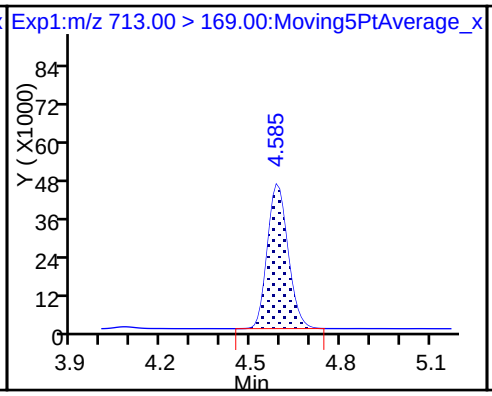
41 Perfluorotridecanoic acid



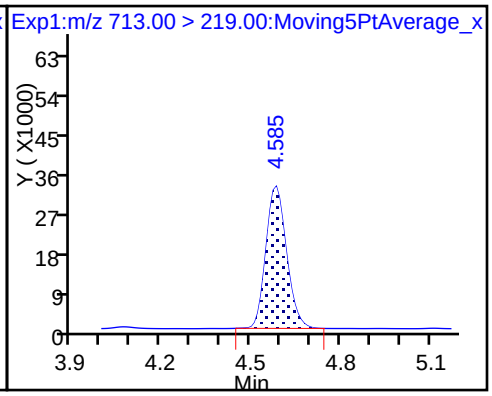
41 Perfluorotridecanoic acid



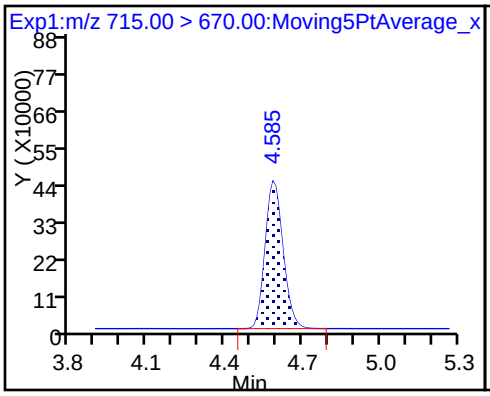
42 Perfluorotetradecanoic acid



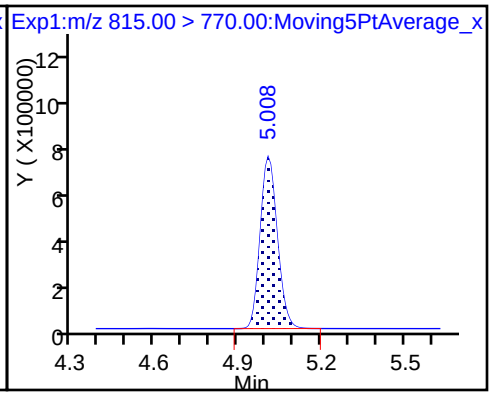
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213706/1 Calibration Date: 03/19/2018 13:10

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLAA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9417		2.54	2.50	1.5	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.230		2.63	2.50	5.3	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	82.98		2.37	2.21	7.2	30.0
4:2 FTS	AveID	16.07	12.34		1.79	2.34	-23.2	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9933		2.46	2.50	-1.6	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.044		2.52	2.50	0.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.091		2.23	2.28	-2.2	30.0
6:2FTS	AveID	1.665	1.709		2.43	2.37	2.6	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.121		2.51	2.50	0.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.366		2.47	2.38	3.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.095		2.35	2.32	1.1	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	1.085		2.66	2.50	6.4	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	1.040		2.68	2.50	7.0	30.0
8:2FTS	AveID	1.257	1.252		2.39	2.40	-0.4	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	1.026		2.70	2.50	8.2	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.034		2.48	2.50	-0.7	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6981		2.64	2.41	9.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.9516		2.43	2.50	-2.8	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7595		2.27	2.50	-9.4	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.021		2.49	2.50	-0.2	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	0.9627		2.34	2.50	-6.4	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2443		2.21	2.50	-11.4	30.0
13C4 PFBA	Ave	1.277	1.230		2.41	2.50	-3.6	30.0
13C5-PFPeA	Ave	0.9006	0.7893		2.19	2.50	-12.4	30.0
13C3-PFBS	Ave	0.0222	0.0214		2.23	2.33	-4.0	30.0
13C2 PFHxA	Ave	1.004	0.9365		2.33	2.50	-6.7	30.0
13C4-PFHpA	Ave	0.9767	0.9588		2.45	2.50	-1.8	30.0
18O2 PFHxS	Ave	1.303	1.307		2.37	2.37	0.3	30.0
M2-6:2FTS	Ave	0.2501	0.2212		2.10	2.38	-11.6	30.0
13C4 PFOA	Ave	0.9431	0.9364		2.48	2.50	-0.7	30.0
13C4 PFOS	Ave	0.9113	0.9119		2.39	2.39	0.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213706/1 Calibration Date: 03/19/2018 13:10

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLAA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7692		2.55	2.50	1.9	30.0
13C8 FOSA	Ave	1.319	1.350		2.56	2.50	2.3	30.0
M2-8:2FTS	Ave	0.2350	0.2510		2.56	2.40	6.8	30.0
13C2 PFDA	Ave	0.6303	0.6291		2.50	2.50	-0.2	30.0
d3-NMeFOSAA	Ave	0.2081	0.2375		2.85	2.50	14.1	30.0
d5-NEtFOSAA	Ave	0.1990	0.2252		2.83	2.50	13.2	30.0
13C2 PFUnA	Ave	0.4935	0.5087		2.58	2.50	3.1	30.0
13C2 PFDoA	Ave	0.4680	0.4579		2.45	2.50	-2.1	30.0
13C2-PFTeDA	Ave	0.4272	0.4899		2.87	2.50	14.7	30.0
13C2-PFHxDA	Ave	0.6248	0.6320		2.53	2.50	1.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\2018.03.19LLAA_026.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 19-Mar-2018 13:10:17 ALS Bottle#: 14 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 14:07:08 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK009

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.444	-0.003	0.534	5395510	2.41		96.4	86154	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.444	-0.003	1.000	5080858	2.54		102	2919	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.705	-0.005	0.630	3462108	2.19		87.6	73942	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.705	-0.005	1.000	4259963	2.63		105	1615	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.740	-0.004	0.644	87079	2.23		96.0	503	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.740	-0.004	1.000	6868368	2.37		107	2952	
298.90 > 99.00	1.736	1.740	-0.004	1.000	2832899		2.42(1.25-3.74)		2800	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.960	-0.004	0.725	482674	NC			5526	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.956	1.960	-0.004	1.000	1078950	1.79		76.8	49541	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.992	0.005	1.000	4080811	2.46		98.4	16171	
313.00 > 119.00	1.997	1.992	0.005	1.000	387643		10.53(5.03-15.10)		9840	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	2.003	-0.006	0.741	4108165	2.33		93.3	104154	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.335	-0.007	0.863	4205656	2.45		98.2	79256	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.335	-0.007	1.000	4390926	2.52		101	9469	
363.00 > 169.00	2.328	2.335	-0.007	1.000	1722390		2.55(1.13-3.40)		22326	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.348	-0.007	1.000	5691414	2.23		97.8	698	
399.00 > 99.00	2.341	2.348	-0.007	1.000	1852936		3.07(1.50-4.49)		684	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.361	-0.020	0.868	5421683	2.37		100	57409	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.673	2.675	-0.002	1.000	1571723	2.43		103	51609	
D 12 M2-6:2FTS										
429.00 > 81.00	2.673	2.682	-0.009	0.991	921882	2.10		88.4	21353	
D 14 13C4 PFOA										
417.00 > 372.00	2.697	2.706	-0.009	1.000	4107604	2.48		99.3	73609	
* 62 13C2-PFOA										
415.00 > 370.00	2.697	2.706	-0.009		4386533	2.50			92433	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.697	2.706	-0.009	1.000	4606316	2.51		100	1666	
413.00 > 169.00	2.697	2.706	-0.009	1.000	2594641		1.78(0.84-2.52)		8585	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.705	2.706	-0.001	1.000	5200185	2.47		104	46949	
449.00 > 99.00	2.705	2.706	-0.001	1.000	1412678		3.68(1.94-5.82)		20662	
D 18 13C4 PFOS										
503.00 > 80.00	3.072	3.082	-0.010	1.139	3824008	2.39		100	24398	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.072	3.083	-0.011	1.000	4064124	2.35		101	10588	
499.00 > 99.00	3.072	3.083	-0.011	1.000	912245		4.46(2.31-6.93)		6946	
20 Perfluorononanoic acid										
463.00 > 419.00	3.080	3.083	-0.003	1.000	3660396	2.66		106	8494	
463.00 > 169.00	3.080	3.083	-0.003	1.000	880937		4.16(1.90-5.69)		23632	
D 19 13C5 PFNA										
468.00 > 423.00	3.080	3.090	-0.010	1.142	3373881	2.55		102	74044	
D 21 13C8 FOSA										
506.00 > 78.00	3.399	3.410	-0.011	1.260	5921162	2.56		102	53661	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.399	3.412	-0.013	1.000	6158063	2.68		107	63753	
D 26 M2-8:2FTS										
529.00 > 81.00	3.435	3.438	-0.003	1.274	1054603	2.56		107	26034	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.435	3.439	-0.004	1.000	1320874	2.39		99.6	26606	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.444	3.448	-0.004	1.000	2832306	2.70		108	14443	
513.00 > 169.00	3.444	3.448	-0.004	1.000	525067		5.39(2.36-7.09)		23254	
D 23 13C2 PFDA										
515.00 > 470.00	3.444	3.456	-0.012	1.277	2759733	2.50		99.8	51692	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.601	3.605	-0.004	1.335	1041880	2.85		114	56126	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.601	3.617	-0.016	1.000	1077335	2.48		99.3	11070	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.758	3.765	-0.007	1.000	2691992	2.64		109	62875	
599.00 > 99.00	3.758	3.765	-0.007	1.000	887010		3.03(1.39-4.16)		20709	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.769	3.774	-0.005	1.397	987904	2.83		113	1742	
D 30 13C2 PFUnA										
565.00 > 520.00	3.779	3.785	-0.006	1.401	2231585	2.58		103	65791	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.779	3.786	-0.007	1.000	1694811	2.27		90.6	5981	
563.00 > 169.00	3.779	3.786	-0.007	1.000	452231		3.75(2.12-6.36)		36523	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.779	3.786	-0.007	1.003	940099	2.43		97.2	27274	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.068	4.084	-0.016	1.000	2050503	2.49		99.8	385	
613.00 > 169.00	4.068	4.084	-0.016	1.000	548581		3.74(2.13-6.40)		12591	
D 36 13C2 PFDoA										
615.00 > 570.00	4.068	4.084	-0.016	1.508	2008774	2.45		97.9	9182	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.339	4.346	-0.007	1.000	1933834	2.34		93.6	346	
663.00 > 169.00	4.339	4.346	-0.007	1.000	636548		3.04(1.25-3.76)		6508	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.575	4.581	-0.006	1.000	524998	2.21		88.6	5706	
713.00 > 219.00	4.575	4.581	-0.006	1.000	379322		1.38(0.71-2.13)		4179	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.575	4.581	-0.006	1.696	2149026	2.87		115	18807	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.999	5.004	-0.005	1.000	2822979	NC			257	
813.00 > 169.00	4.999	5.004	-0.005	1.000	487376		5.79(2.86-8.58)		2843	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.999	5.004	-0.005	1.854	2772216	2.53		101	8488	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.371	5.374	-0.003	1.000	3284864	NC			523	
913.00 > 169.00	5.371	5.374	-0.003	1.000	434268		7.56(3.83-11.48)		3860	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004 Amount Added: 1.00 Units: mL

Report Date: 19-Mar-2018 14:07:10 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\2018.03.19LLAA_026.d

Injection Date: 19-Mar-2018 13:10:17 Instrument ID: A8_N

Lims ID: CCV L5

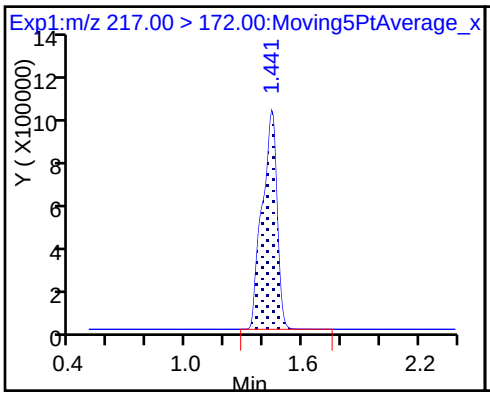
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 1

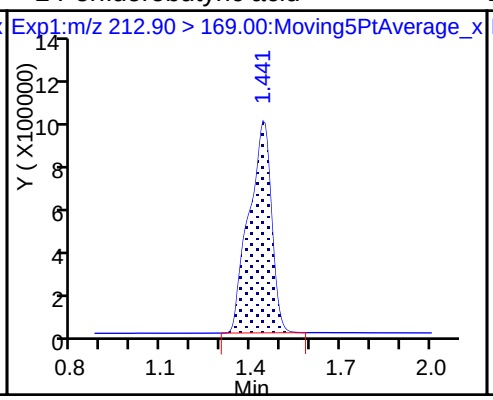
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

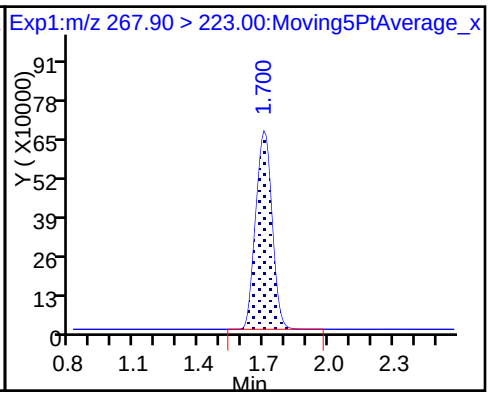
D 1 13C4 PFBA



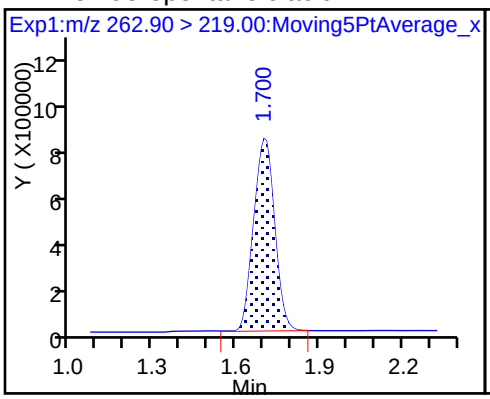
2 Perfluorobutyric acid



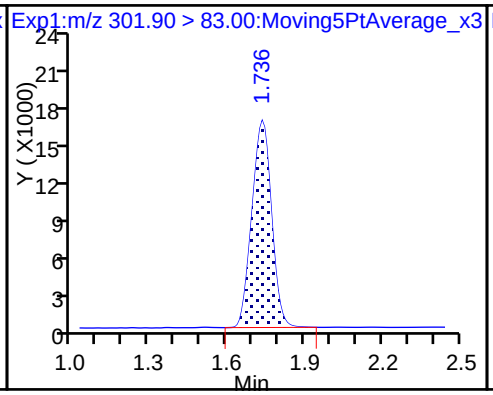
D 3 13C5-PFPeA



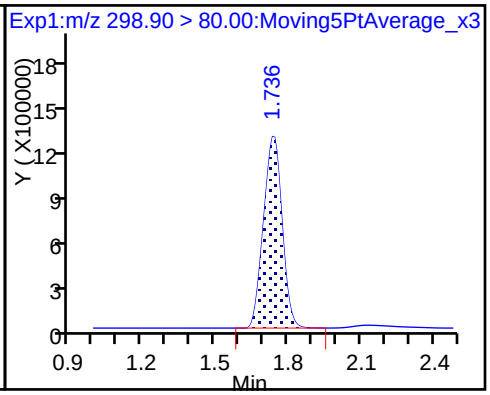
4 Perfluoropentanoic acid



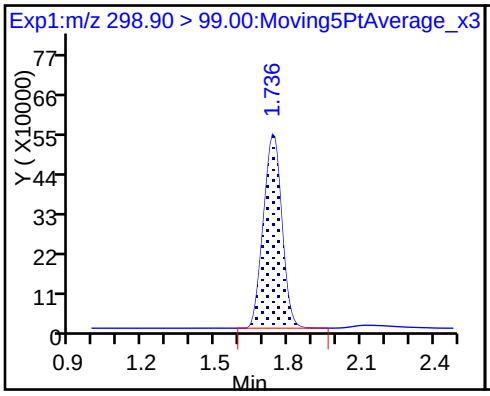
D 47 13C3-PFBS



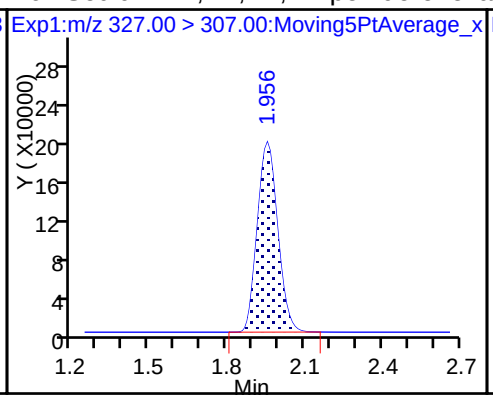
5 Perfluorobutanesulfonic acid



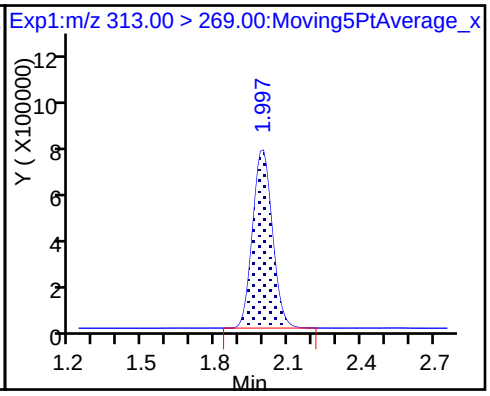
5 Perfluorobutanesulfonic acid



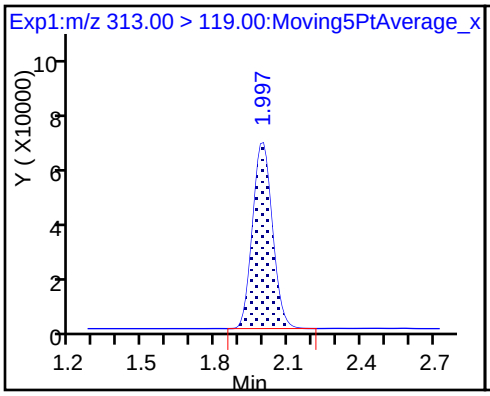
61 Sodium 1H,1H,2H,2H-perfluorohexane



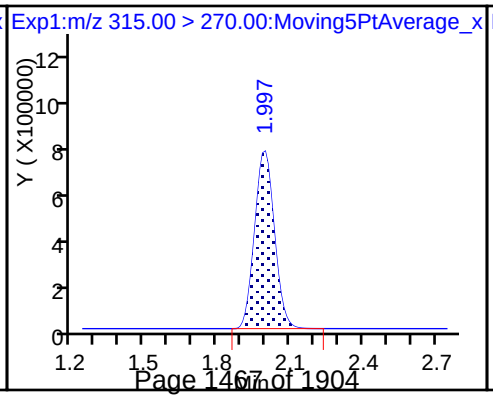
6 Perfluorohexanoic acid



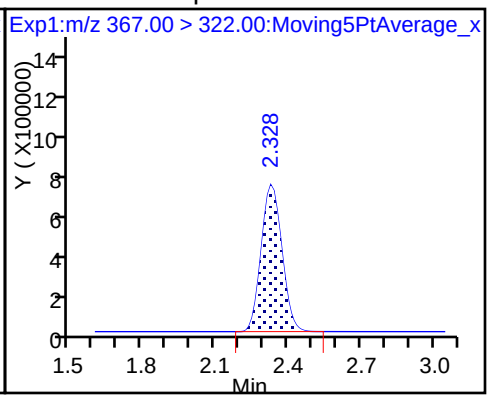
6 Perfluorohexanoic acid



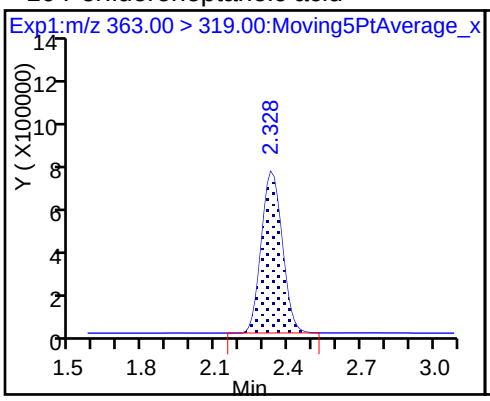
D 7 13C2 PFHxA



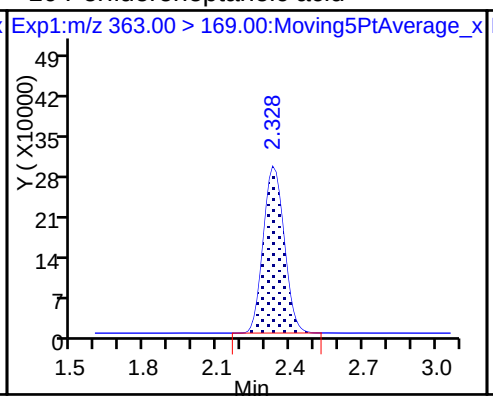
D 9 13C4-PFHpA



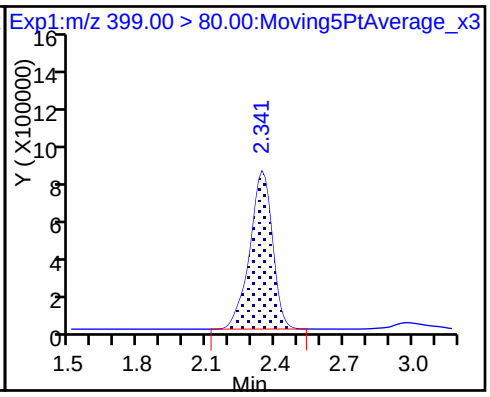
10 Perfluoroheptanoic acid



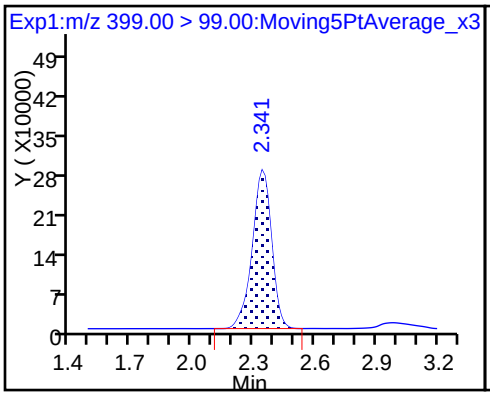
10 Perfluoroheptanoic acid



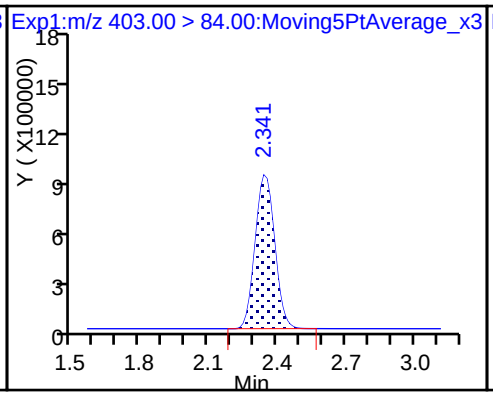
8 Perfluorohexanesulfonic acid



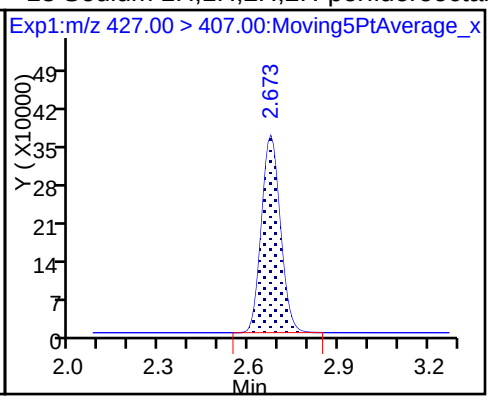
8 Perfluorohexanesulfonic acid



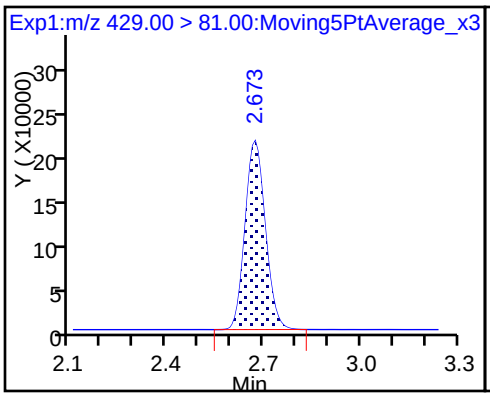
D 11 18O2 PFHxS



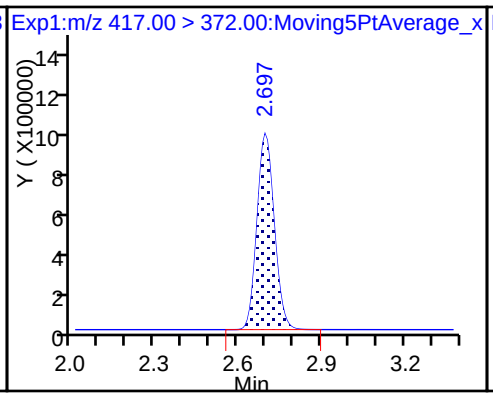
13 Sodium 1H,1H,2H,2H-perfluorooctane



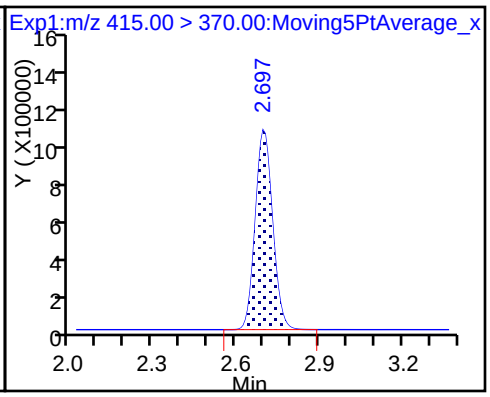
D 12 M2-6:2FTS



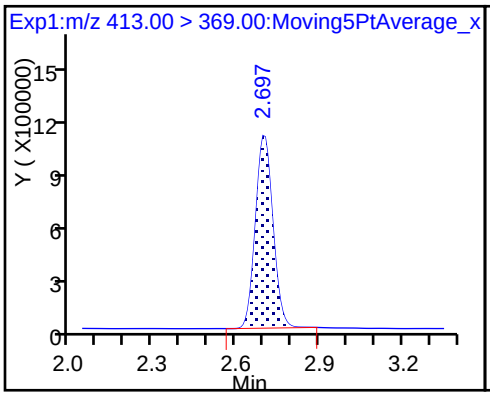
D 14 13C4 PFOA



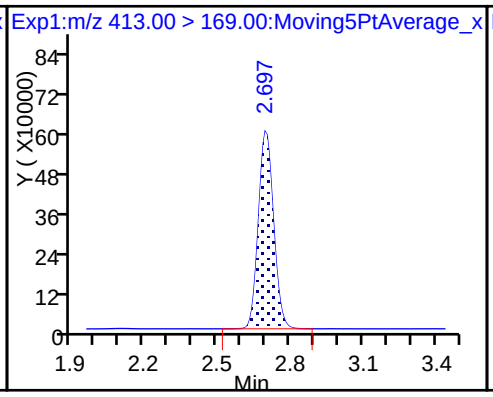
* 62 13C2-PFOA



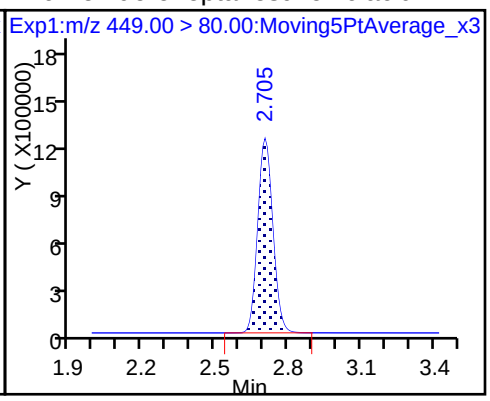
15 Perfluorooctanoic acid



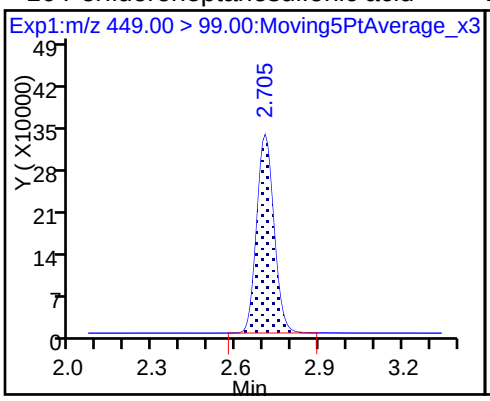
15 Perfluorooctanoic acid



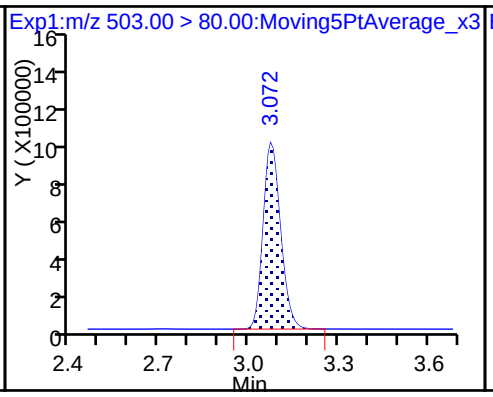
16 Perfluoroheptanesulfonic acid



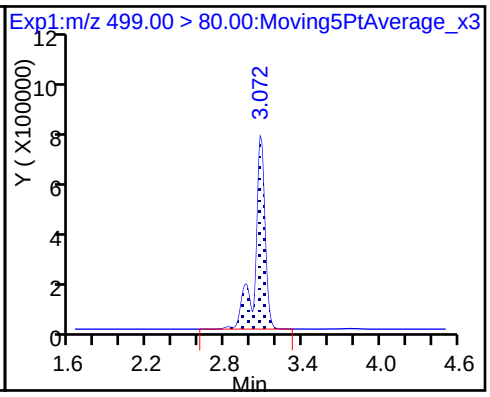
16 Perfluoroheptanesulfonic acid



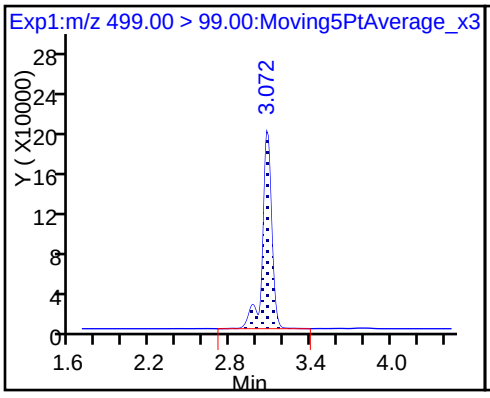
D 18 13C4 PFOS



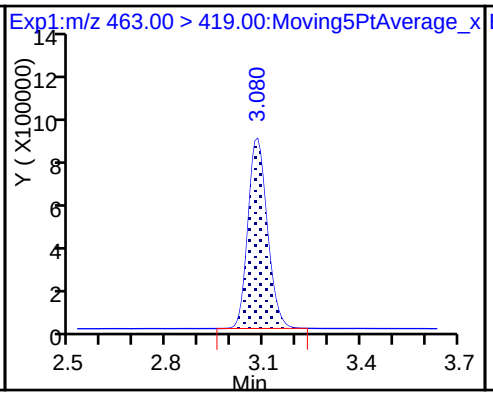
17 Perfluorooctane sulfonic acid



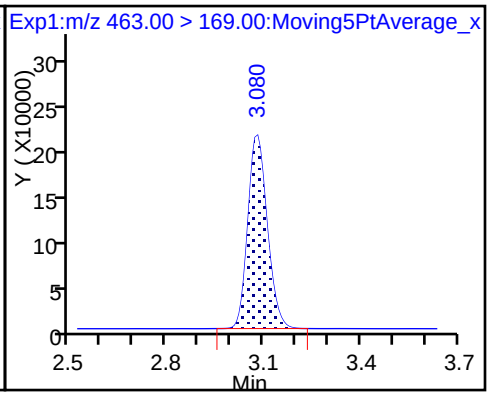
17 Perfluorooctane sulfonic acid



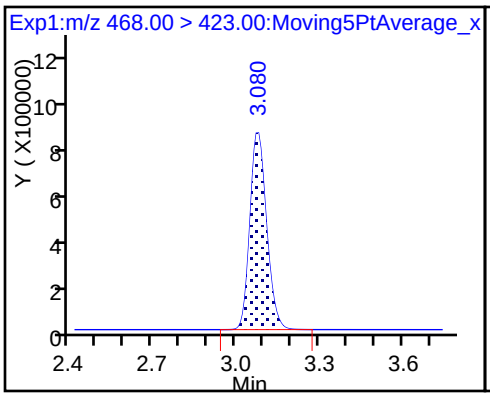
20 Perfluorononanoic acid



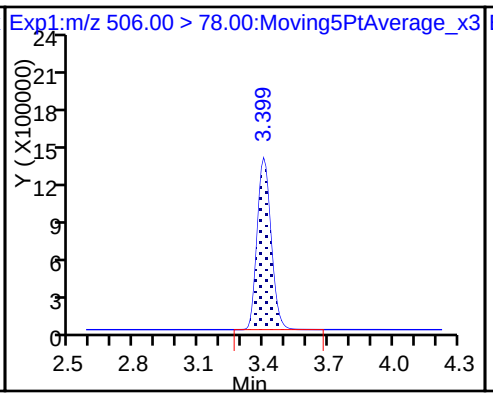
20 Perfluorononanoic acid



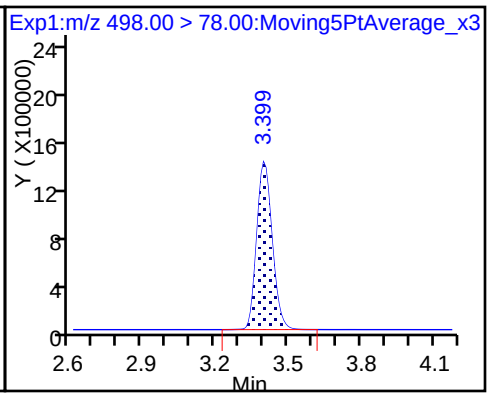
D 19 13C5 PFNA



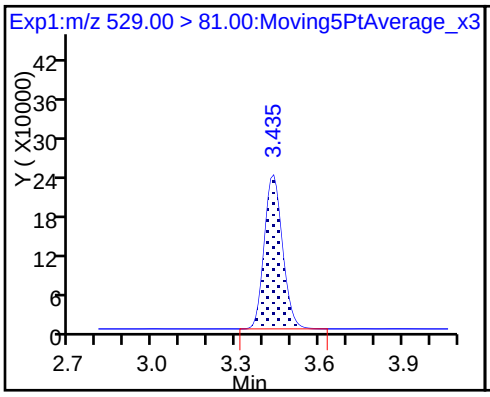
D 21 13C8 FOSA



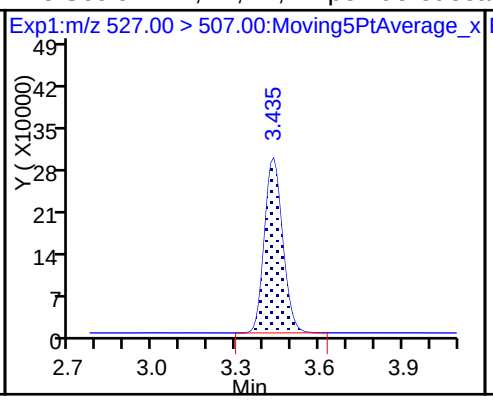
22 Perfluorooctane Sulfonamide



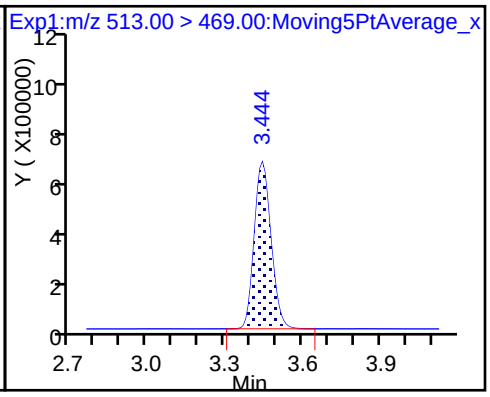
D 26 M2-8:2FTS



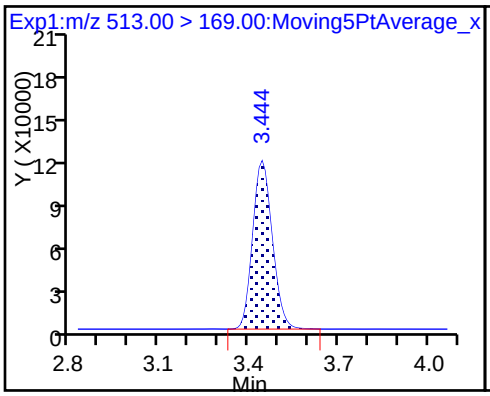
25 Sodium 1H,1H,2H,2H-perfluorodecan



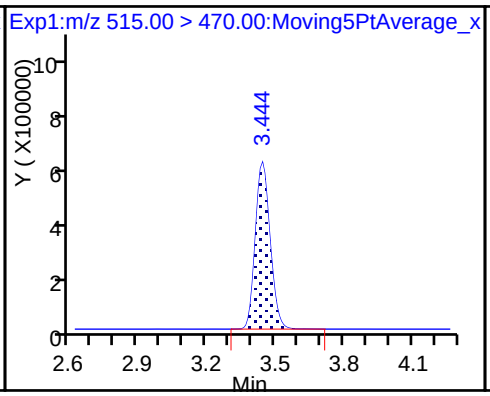
24 Perfluorodecanoic acid



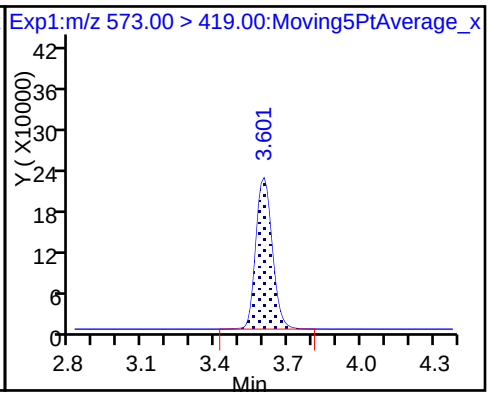
24 Perfluorodecanoic acid



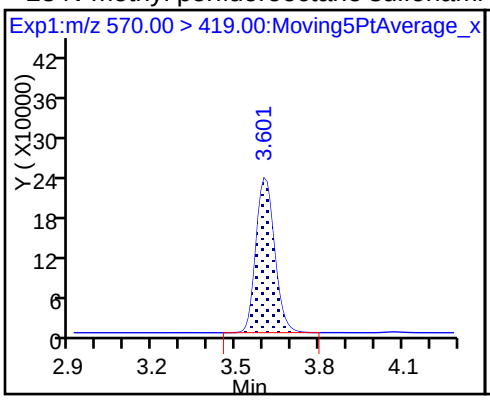
D 23 13C2 PFDA



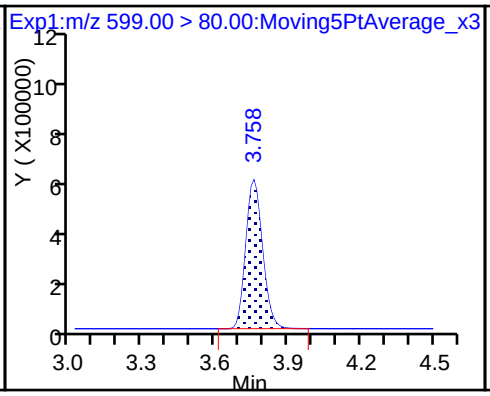
D 27 d3-NMeFOSAA



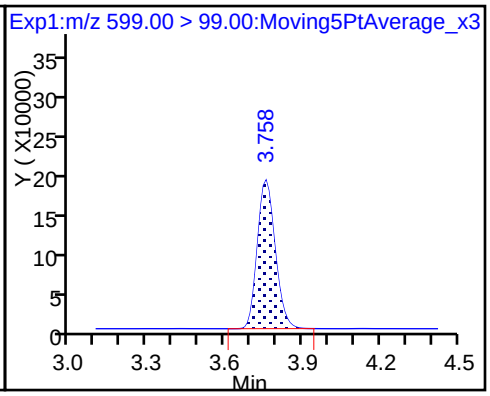
28 N-methyl perfluorooctane sulfonami



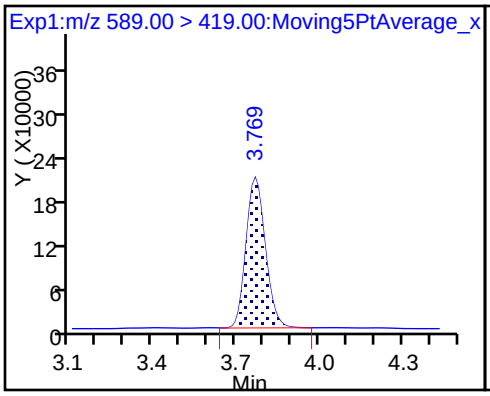
29 Perfluorodecane Sulfonic acid



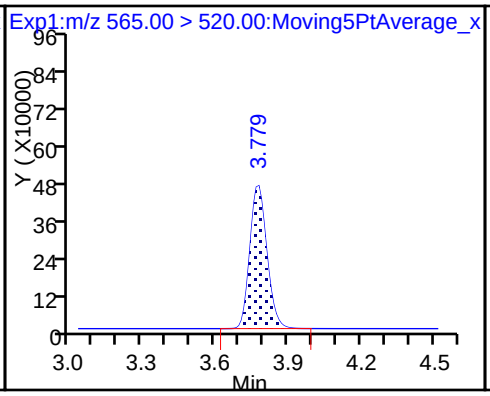
29 Perfluorodecane Sulfonic acid



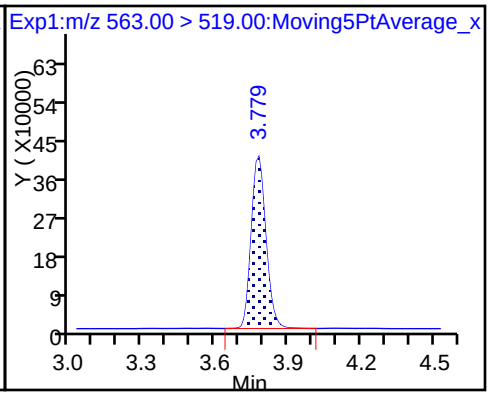
D 32 d5-NEtFOSAA



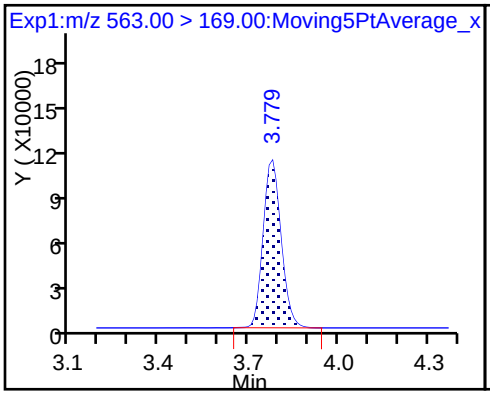
D 30 13C2 PFUnA



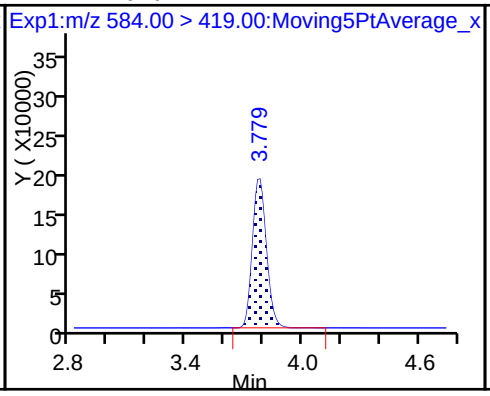
31 Perfluoroundecanoic acid



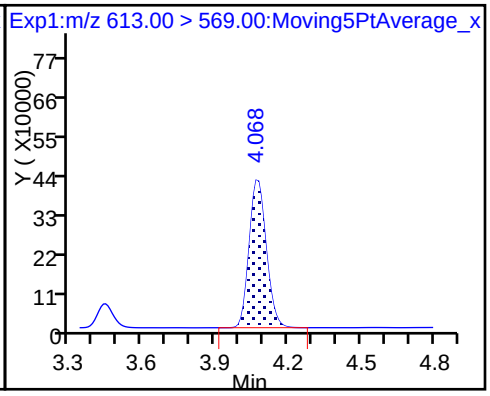
31 Perfluoroundecanoic acid



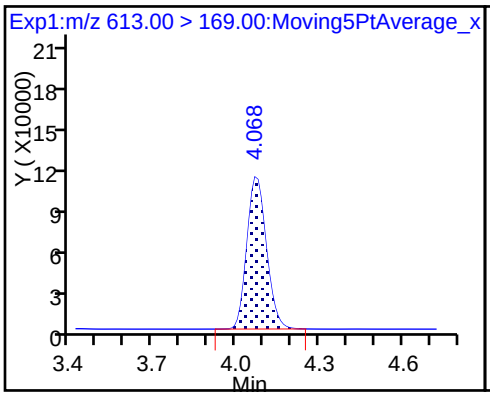
33 N-ethyl perfluorooctane sulfonamid



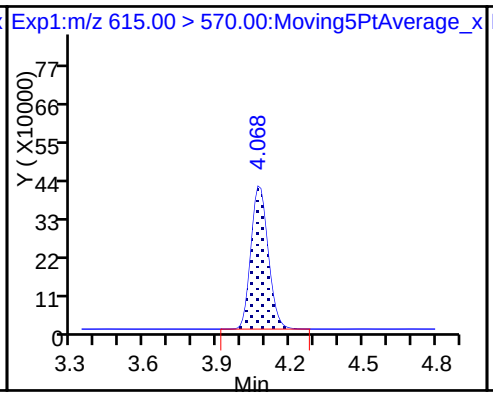
37 Perfluorododecanoic acid



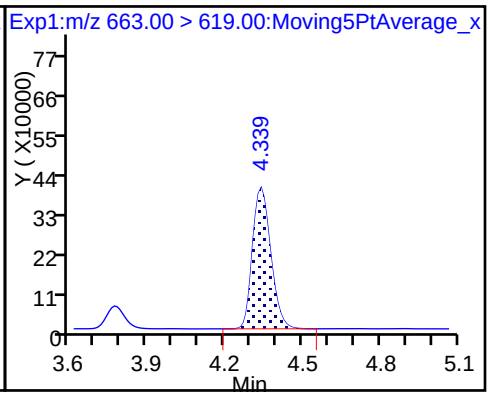
37 Perfluorododecanoic acid



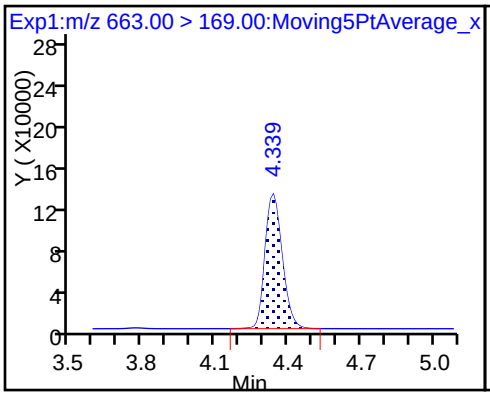
D 36 13C2 PFDoA



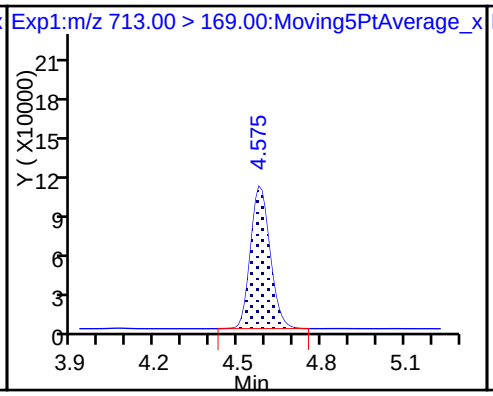
41 Perfluorotridecanoic acid



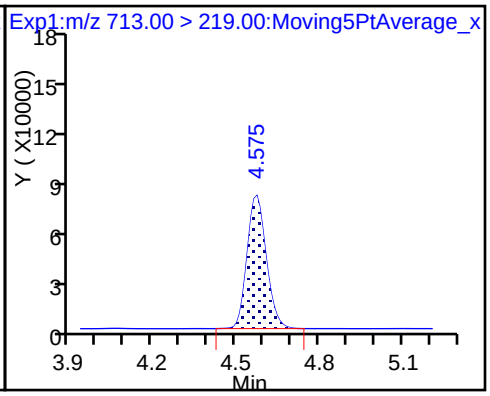
41 Perfluorotridecanoic acid



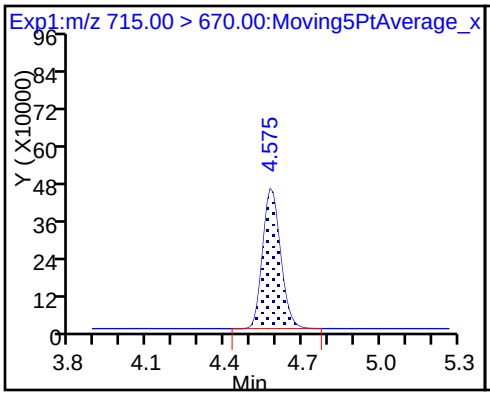
42 Perfluorotetradecanoic acid



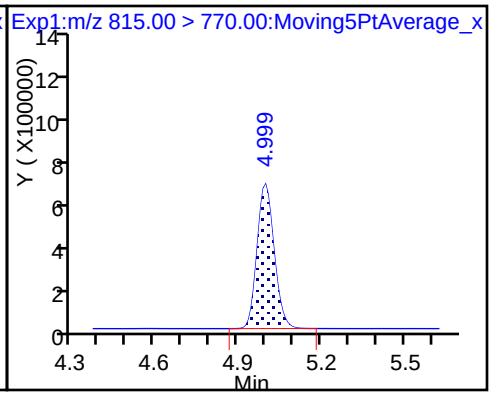
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213706/3 Calibration Date: 03/19/2018 13:26

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLAA_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.8859		0.955	1.00	-4.5	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.110		0.950	1.00	-5.0	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	78.54		0.897	0.884	1.5	30.0
4:2 FTS	AveID	16.07	11.34		0.659	0.934	-29.5	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9917		0.983	1.00	-1.7	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	0.9747		0.940	1.00	-6.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.017		0.829	0.910	-8.8	30.0
6:2FTS	AveID	1.665	1.620		0.923	0.948	-2.7	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.314		0.952	0.952	0.0	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.053		0.943	1.00	-5.7	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.9730		0.954	1.00	-4.6	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.043		0.894	0.928	-3.6	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	0.9727		1.00	1.00	0.1	30.0
8:2FTS	AveID	1.257	1.197		0.912	0.958	-4.8	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9802		1.03	1.00	3.3	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.027		0.986	1.00	-1.4	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6313		0.953	0.964	-1.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.8817		0.901	1.00	-9.9	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7578		0.904	1.00	-9.6	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	0.9938		0.971	1.00	-2.9	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.068		1.04	1.00	3.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2553		0.926	1.00	-7.4	30.0
13C4 PFBA	Ave	1.277	1.233		2.41	2.50	-3.4	30.0
13C5-PFPeA	Ave	0.9006	0.8218		2.28	2.50	-8.7	30.0
13C3-PFBS	Ave	0.0222	0.0219		2.29	2.33	-1.5	30.0
13C2 PFHxA	Ave	1.004	0.9523		2.37	2.50	-5.2	30.0
13C4-PFHpA	Ave	0.9767	0.9871		2.53	2.50	1.1	30.0
18O2 PFHxS	Ave	1.303	1.326		2.41	2.37	1.8	30.0
M2-6:2FTS	Ave	0.2501	0.2293		2.18	2.38	-8.3	30.0
13C4 PFOA	Ave	0.9431	0.9498		2.52	2.50	0.7	30.0
13C4 PFOS	Ave	0.9113	0.9199		2.41	2.39	0.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213706/3 Calibration Date: 03/19/2018 13:26

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLAA_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7969		2.64	2.50	5.6	30.0
13C8 FOSA	Ave	1.319	1.391		2.63	2.50	5.4	30.0
M2-8:2FTS	Ave	0.2350	0.2589		2.64	2.40	10.2	30.0
13C2 PFDA	Ave	0.6303	0.6665		2.64	2.50	5.7	30.0
d3-NMeFOSAA	Ave	0.2081	0.2122		2.55	2.50	1.9	30.0
d5-NEtFOSAA	Ave	0.1990	0.2347		2.95	2.50	17.9	30.0
13C2 PFUnA	Ave	0.4935	0.5021		2.54	2.50	1.7	30.0
13C2 PFDoA	Ave	0.4680	0.4698		2.51	2.50	0.4	30.0
13C2-PFTeDA	Ave	0.4272	0.4731		2.77	2.50	10.8	30.0
13C2-PFHxDA	Ave	0.6248	0.6626		2.65	2.50	6.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\2018.03.19LLAA_036.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 19-Mar-2018 13:26:00 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 14:07:13 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK009

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.444	1.444	0.0	0.533	5470845	2.41		96.6	97498	
2 Perfluorobutyric acid										
212.90 > 169.00	1.444	1.444	0.0	1.000	1938551	0.9552		95.5	1076	
D 3 13C5-PFPeA										
267.90 > 223.00	1.705	1.705	0.0	0.630	3646062	2.28		91.3	89973	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.705	1.705	0.0	1.000	1618238	0.9499		95.0	623	
D 47 13C3-PFBS										
301.90 > 83.00	1.740	1.740	0.0	0.643	90304	2.29		98.5	546	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.740	1.740	0.0	1.000	2696800	0.8973		102	1182	
298.90 > 99.00	1.740	1.740	0.0	1.000	1104715		2.44(1.25-3.74)		1128	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.960	0.0	0.724	490944	NC			5198	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.960	1.960	0.0	1.000	411275	0.6588		70.5	19181	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.992	1.992	0.0	1.000	1675860	0.9828		98.3	5907	
313.00 > 119.00	1.992	1.992	0.0	1.000	152880		10.96(5.03-15.10)		5435	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	2.003	-0.011	0.736	4224787	2.37		94.8	84774	
D 9 13C4-PFHpA										
367.00 > 322.00	2.335	2.335	0.0	0.863	4379415	2.53		101	83698	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.335	2.335	0.0	1.000	1707408	0.9404		94.0	4489	
363.00 > 169.00	2.335	2.335	0.0	1.000	700615		2.44(1.13-3.40)		10923	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.348	2.348	0.0	1.000	2177424	0.8295		91.2	282	
399.00 > 99.00	2.348	2.348	0.0	1.000	760358		2.86(1.50-4.49)		301	
D 11 18O2 PFHxS										
403.00 > 84.00	2.348	2.361	-0.013	0.868	5565947	2.41		102	64671	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.675	2.675	0.0	1.000	624781	0.9225		97.3	29084	
D 12 M2-6:2FTS										
429.00 > 81.00	2.675	2.682	-0.007	0.988	966268	2.18		91.7	22546	
D 14 13C4 PFOA										
417.00 > 372.00	2.706	2.706	0.0	1.000	4213756	2.52		101	70065	
* 62 13C2-PFOA										
415.00 > 370.00	2.706	2.706	0.0		4436546	2.50			73234	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.706	2.706	0.0	1.000	1774217	0.9429		94.3	592	
413.00 > 169.00	2.706	2.706	0.0	1.000	985731		1.80(0.84-2.52)		3640	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.706	2.706	0.0	1.000	2042456	0.9520		100	31807	
449.00 > 99.00	2.714	2.706	0.008	1.003	550625		3.71(1.94-5.82)		9921	
D 18 13C4 PFOS										
503.00 > 80.00	3.083	3.082	0.001	1.139	3901776	2.41		101	44087	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.083	3.083	0.0	1.000	1580774	0.8944		96.4	4334	
499.00 > 99.00	3.083	3.083	0.0	1.000	354256		4.46(2.31-6.93)		2973	
20 Perfluorononanoic acid										
463.00 > 419.00	3.083	3.083	0.0	1.000	1376098	0.9544		95.4	3260	
463.00 > 169.00	3.083	3.083	0.0	1.000	343890		4.00(1.90-5.69)		9486	
D 19 13C5 PFNA										
468.00 > 423.00	3.083	3.090	-0.007	1.139	3535671	2.64		106	86489	
D 21 13C8 FOSA										
506.00 > 78.00	3.403	3.410	-0.007	1.257	6169191	2.63		105	53365	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.412	3.412	0.0	1.003	2400340	1.00		100	38613	
D 26 M2-8:2FTS										
529.00 > 81.00	3.439	3.438	0.001	1.271	1100537	2.64		110	20244	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.439	3.439	0.0	1.000	526893	0.9120		95.2	16693	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.448	3.448	0.0	1.000	1159361	1.03		103	9386	
513.00 > 169.00	3.448	3.448	0.0	1.000	219890		5.27(2.36-7.09)		10010	
D 23 13C2 PFDA										
515.00 > 470.00	3.448	3.456	-0.008	1.274	2957115	2.64		106	51526	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.606	3.605	0.001	1.332	941213	2.55		102	40050	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.617	3.617	0.0	1.003	386530	0.9857		98.6	6193	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.765	3.765	0.0	1.000	993567	0.9532		98.9	41701	
599.00 > 99.00	3.765	3.765	0.0	1.000	330115		3.01(1.39-4.16)		6928	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.775	3.774	0.001	1.395	1041134	2.95		118	2258	
D 30 13C2 PFUnA										
565.00 > 520.00	3.786	3.785	0.001	1.399	2227749	2.54		102	77176	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.786	3.786	0.0	1.000	675260	0.9042		90.4	2330	
563.00 > 169.00	3.786	3.786	0.0	1.000	196065		3.44(2.12-6.36)		23253	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.786	3.786	0.0	1.003	367175	0.9005		90.1	5774	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.084	4.084	0.0	1.000	828591	0.9715		97.1	149	
613.00 > 169.00	4.084	4.084	0.0	1.000	214323		3.87(2.13-6.40)		4423	
D 36 13C2 PFDoA										
615.00 > 570.00	4.084	4.084	0.0	1.509	2084403	2.51		100	14317	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.346	4.346	0.0	1.000	890416	1.04		104	183	
663.00 > 169.00	4.346	4.346	0.0	1.000	246350		3.61(1.25-3.76)		2625	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.581	4.581	0.0	1.000	214304	0.9256		92.6	3206	
713.00 > 219.00	4.581	4.581	0.0	1.000	151937		1.41(0.71-2.13)		2122	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.581	4.581	0.0	1.693	2098838	2.77		111	17622	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.004	5.004	0.0	1.000	1106475	NC			107	
813.00 > 169.00	5.004	5.004	0.0	1.000	188000		5.89(2.86-8.58)		1447	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.004	5.004	0.0	1.849	2939417	2.65		106	9111	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.374	5.374	0.0	1.000	1191751	NC			220	
913.00 > 169.00	5.367	5.374	-0.007	0.999	155005		7.69(3.83-11.48)		1811	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 19-Mar-2018 14:07:15 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\2018.03.19LLAA_036.d

Injection Date: 19-Mar-2018 13:26:00 Instrument ID: A8_N

Lims ID: CCV L4

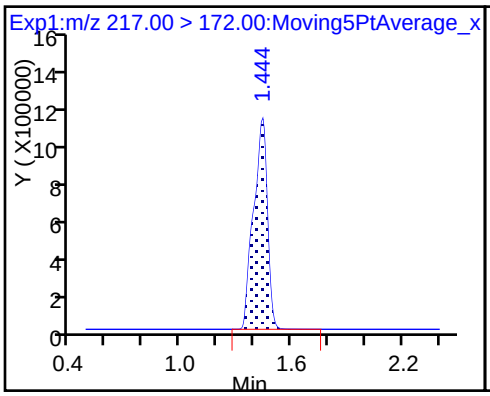
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3

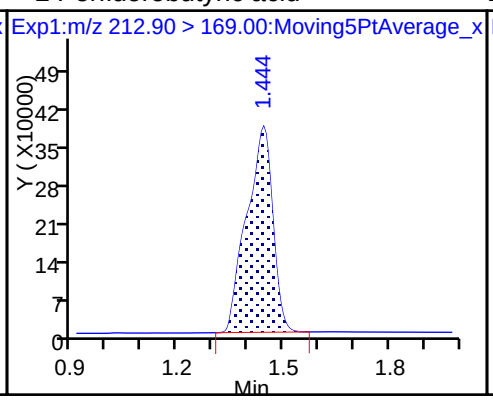
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

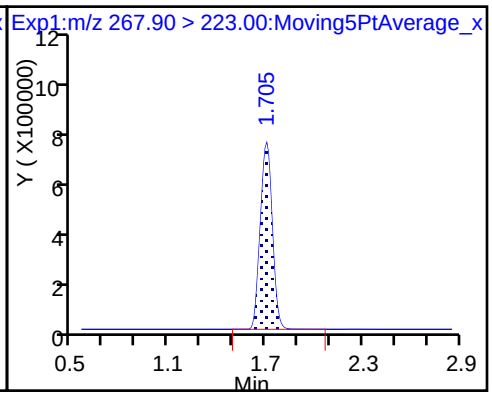
D 1 13C4 PFBA



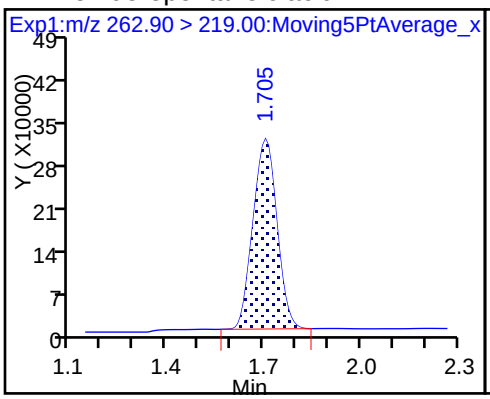
2 Perfluorobutyric acid



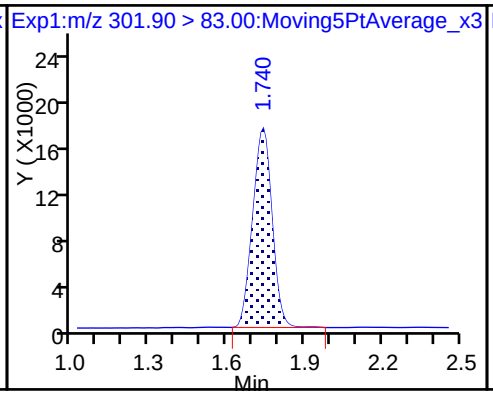
D 3 13C5-PFPeA



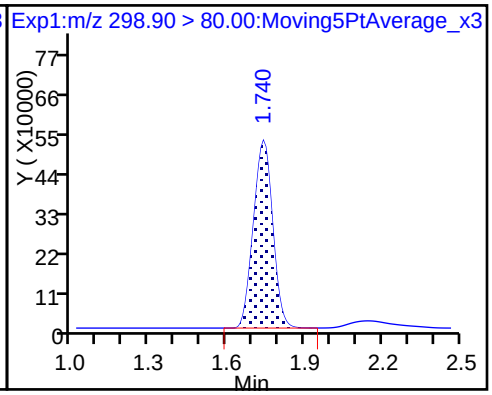
4 Perfluoropentanoic acid



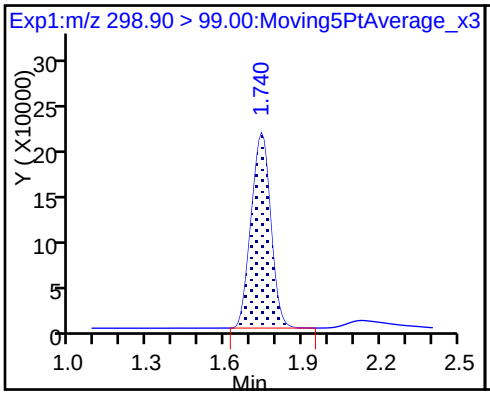
D 47 13C3-PFBS



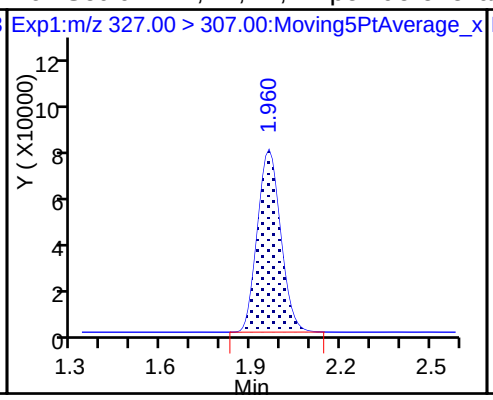
5 Perfluorobutanesulfonic acid



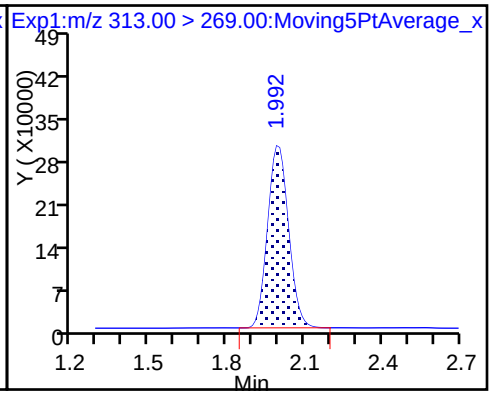
5 Perfluorobutanesulfonic acid



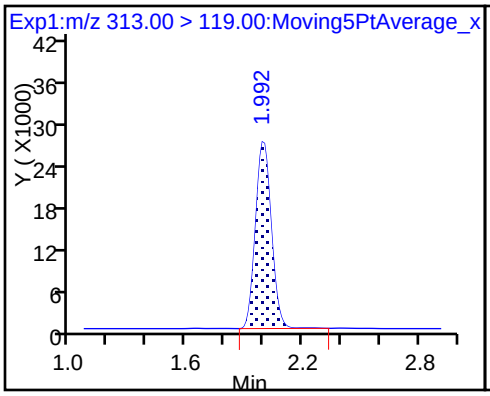
61 Sodium 1H,1H,2H,2H-perfluorohexane



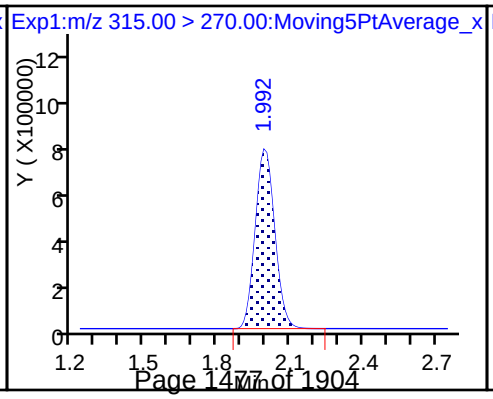
6 Perfluorohexanoic acid



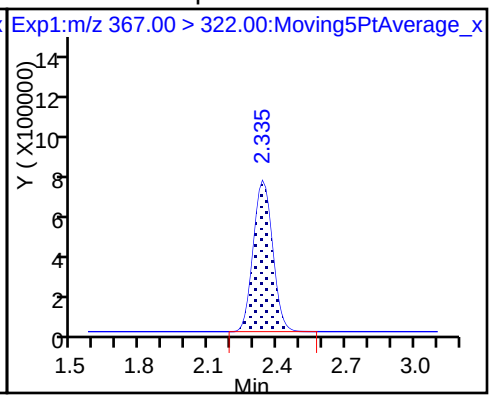
6 Perfluorohexanoic acid



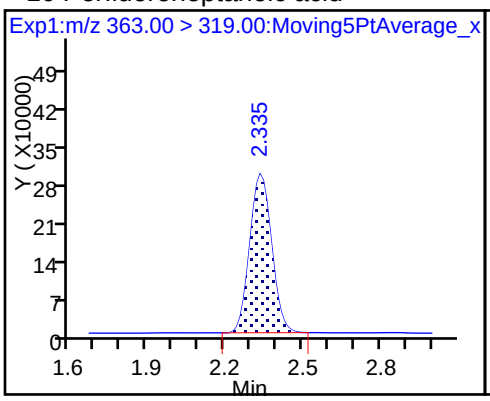
D 7 13C2 PFHxA



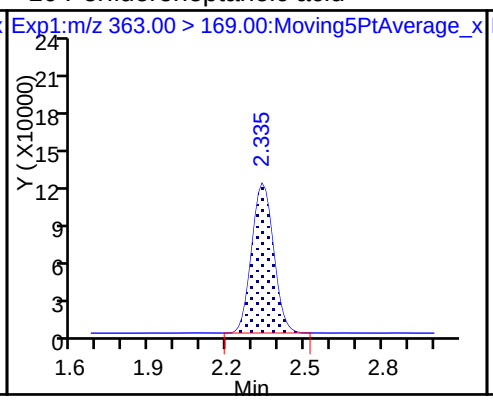
D 9 13C4-PFHpA



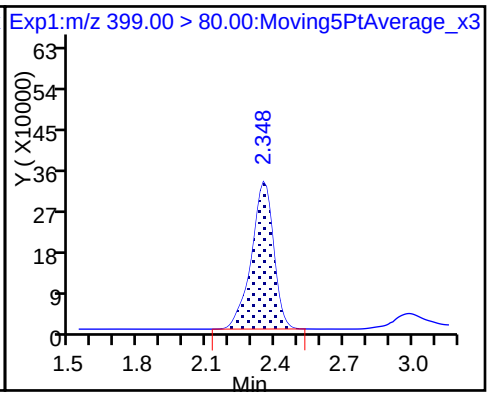
10 Perfluoroheptanoic acid



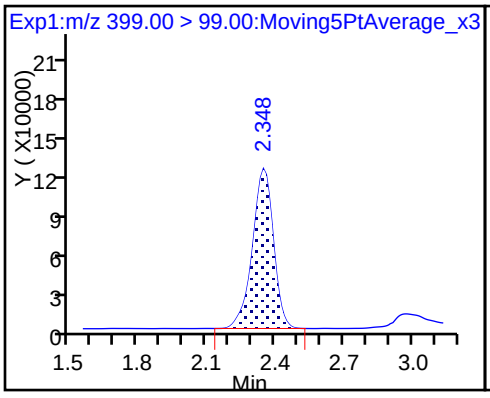
10 Perfluoroheptanoic acid



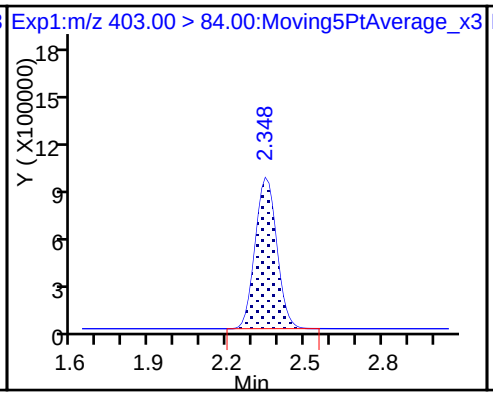
8 Perfluorohexanesulfonic acid



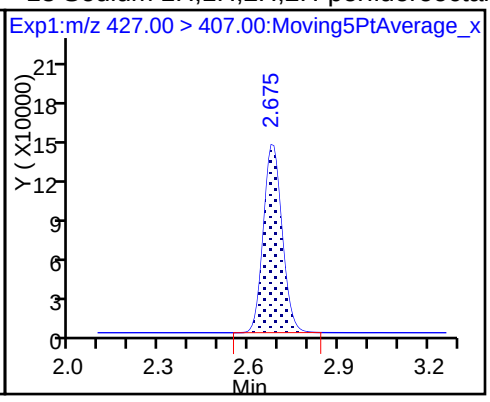
8 Perfluorohexanesulfonic acid



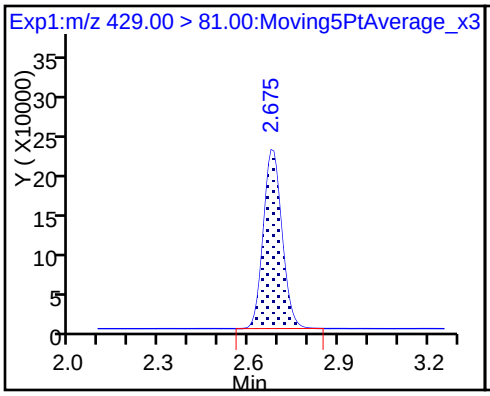
D 11 18O2 PFHxS



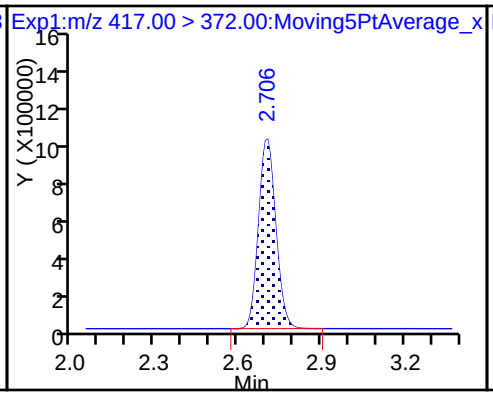
13 Sodium 1H,1H,2H,2H-perfluorooctane



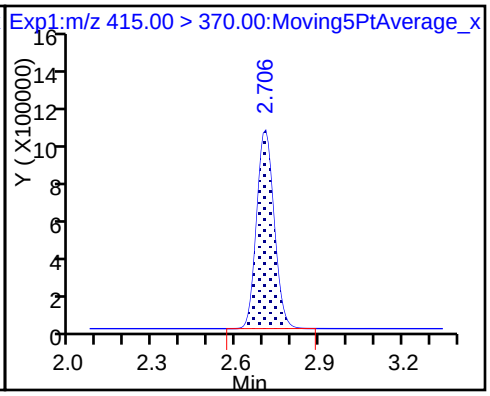
D 12 M2-6:2FTS



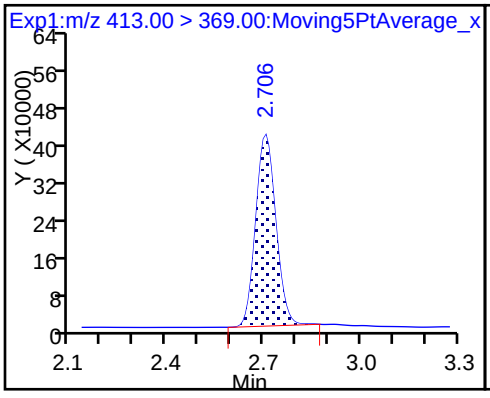
D 14 13C4 PFOA



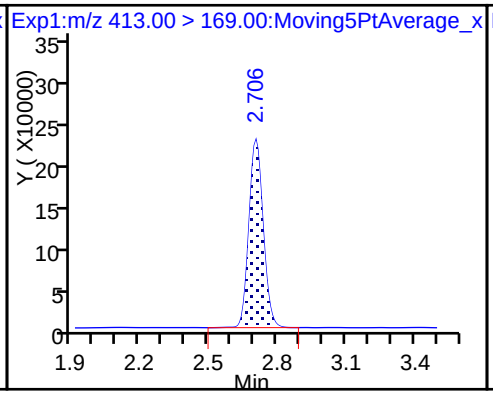
* 62 13C2-PFOA



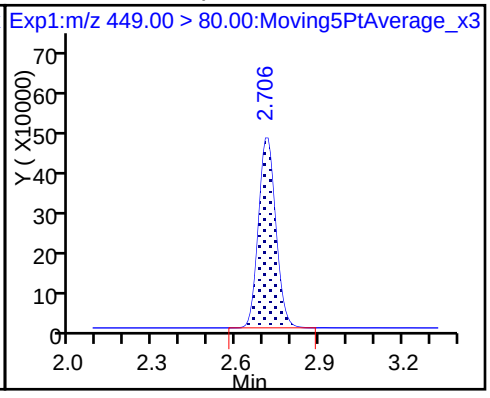
15 Perfluorooctanoic acid



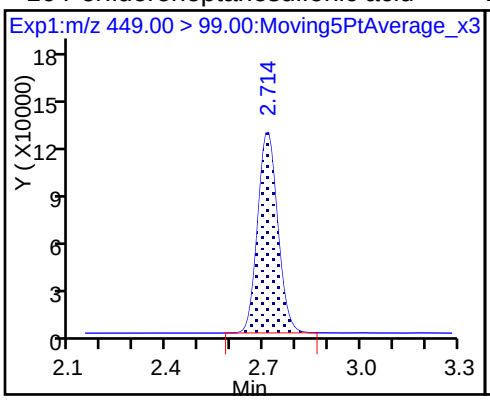
15 Perfluorooctanoic acid



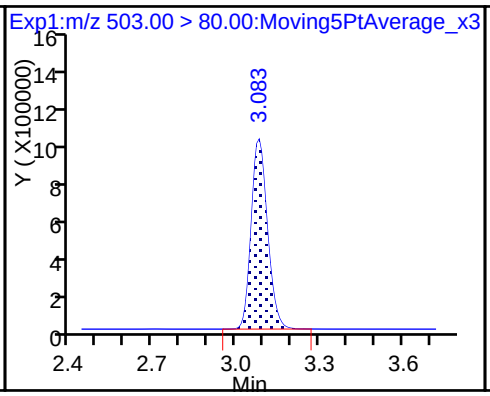
16 Perfluoroheptanesulfonic acid



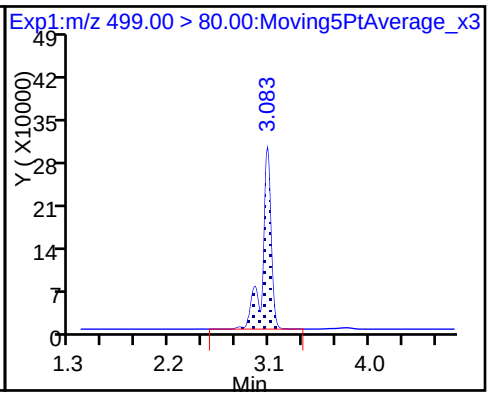
16 Perfluoroheptanesulfonic acid



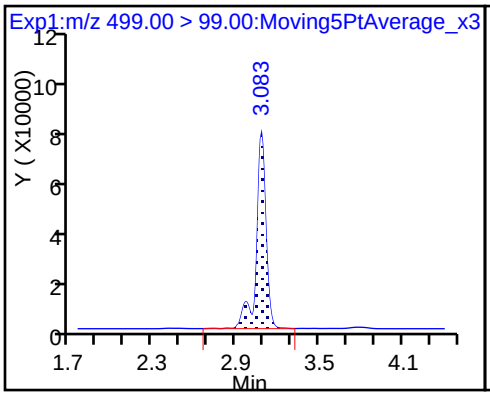
D 18 13C4 PFOS



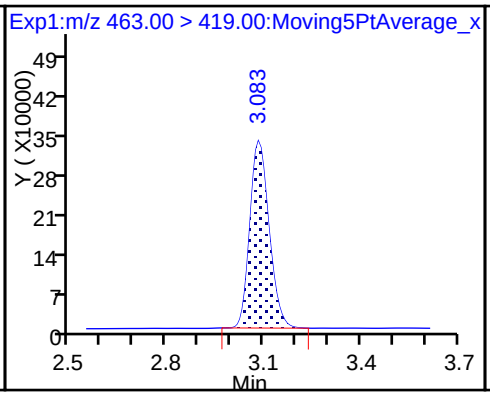
17 Perfluorooctane sulfonic acid



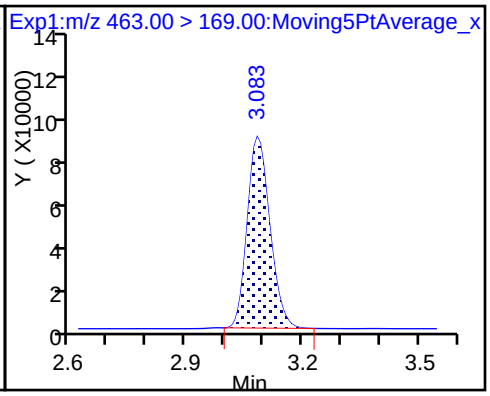
17 Perfluorooctane sulfonic acid



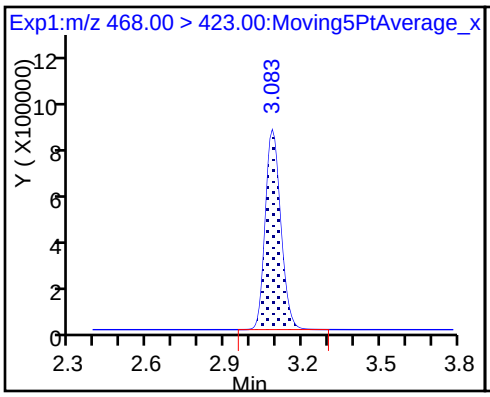
20 Perfluorononanoic acid



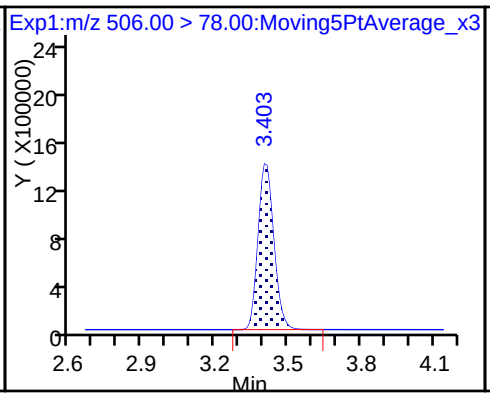
20 Perfluorononanoic acid



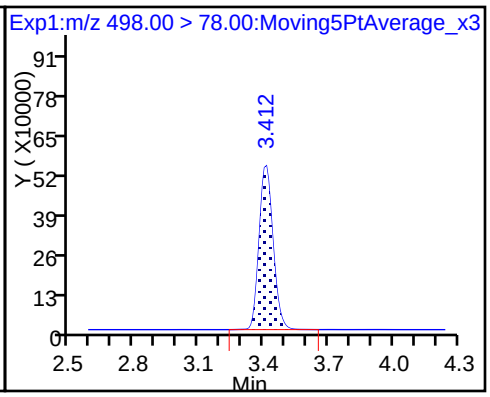
D 19 13C5 PFNA



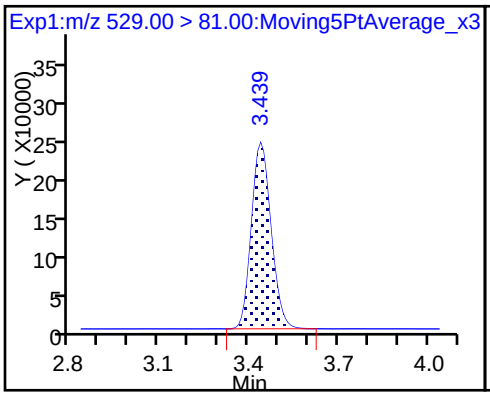
D 21 13C8 FOSA



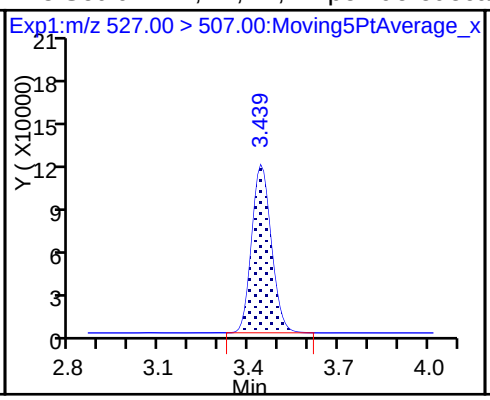
22 Perfluorooctane Sulfonamide



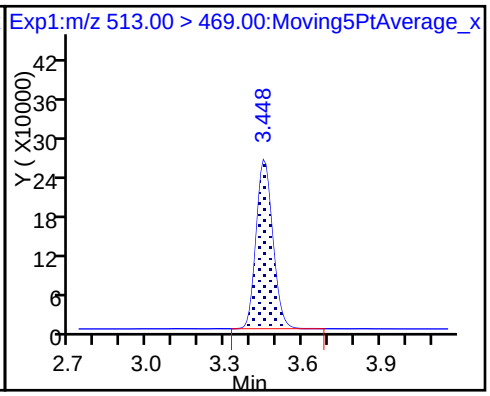
D 26 M2-8:2FTS



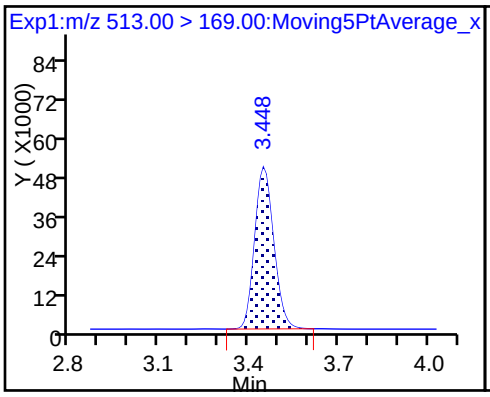
25 Sodium 1H,1H,2H,2H-perfluorodecan



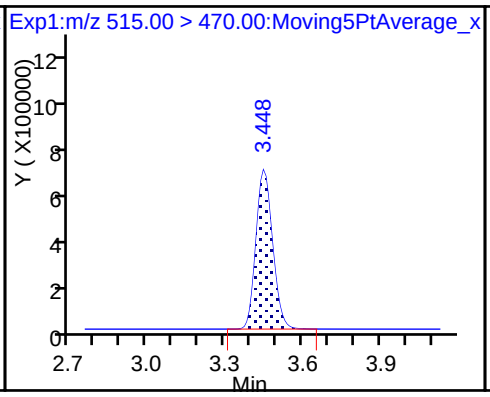
24 Perfluorodecanoic acid



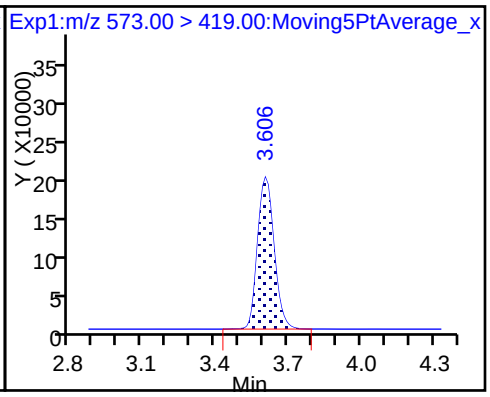
24 Perfluorodecanoic acid



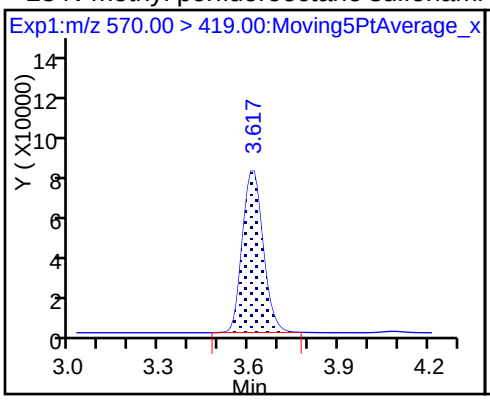
D 23 13C2 PFDA



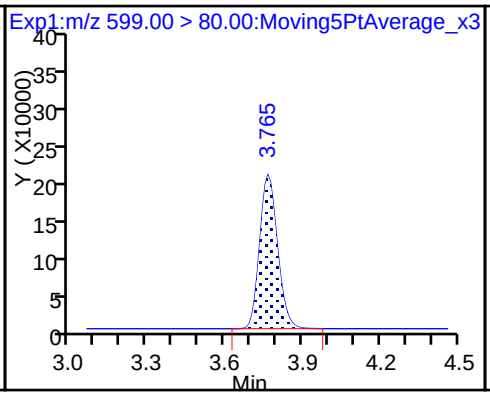
D 27 d3-NMeFOSAA



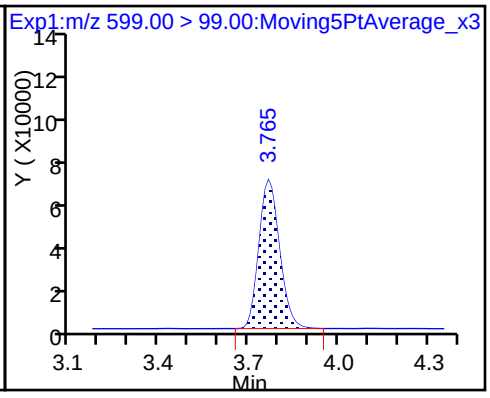
28 N-methyl perfluorooctane sulfonami



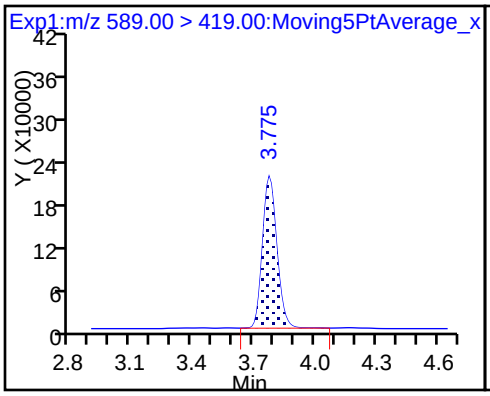
29 Perfluorodecane Sulfonic acid



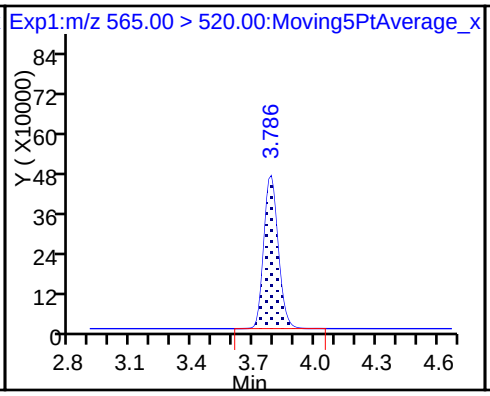
29 Perfluorodecane Sulfonic acid



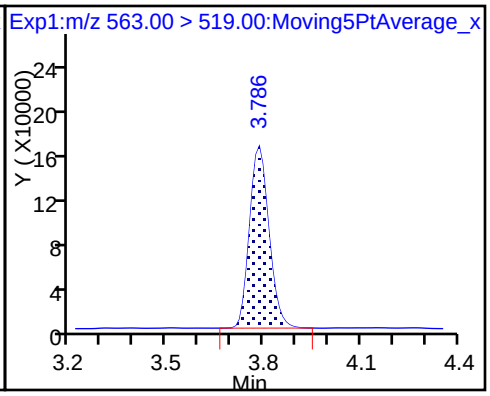
D 32 d5-NEtFOSAA



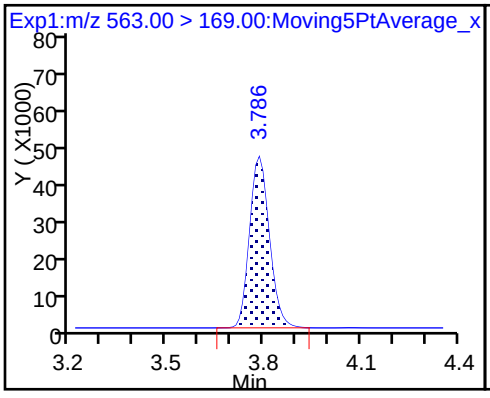
D 30 13C2 PFUnA



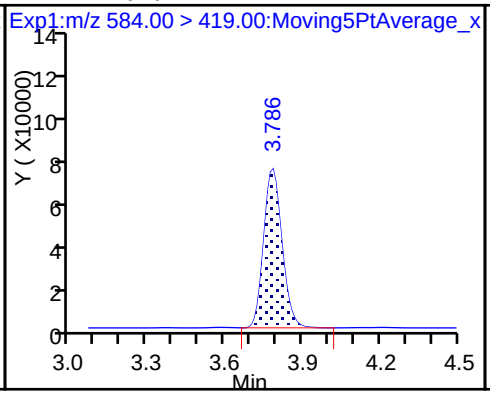
31 Perfluoroundecanoic acid



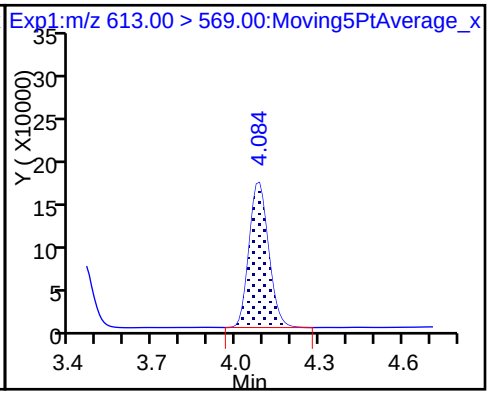
31 Perfluoroundecanoic acid



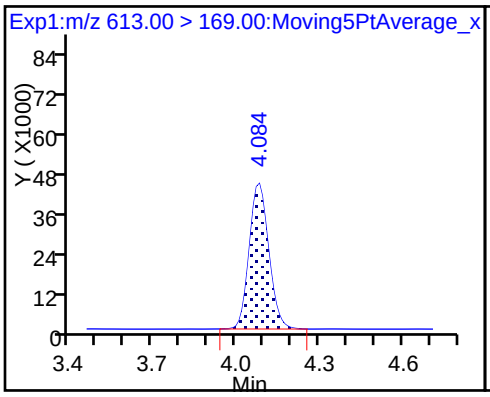
33 N-ethyl perfluorooctane sulfonamid



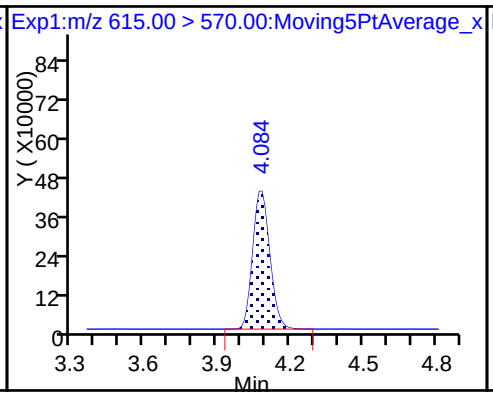
37 Perfluorododecanoic acid



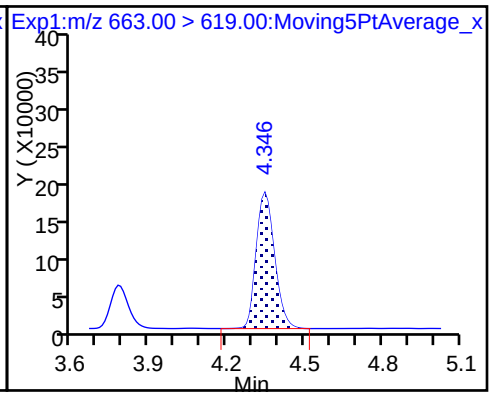
37 Perfluorododecanoic acid



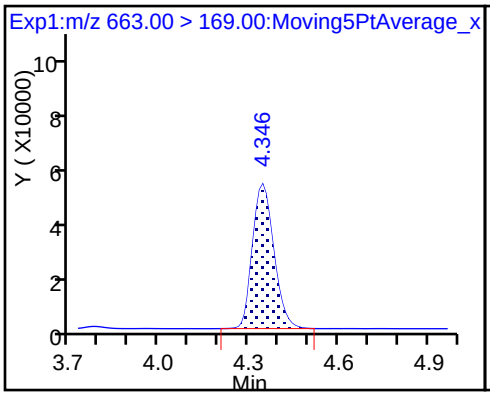
D 36 13C2 PFDoA



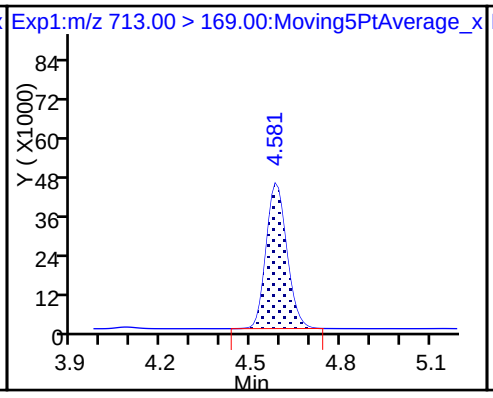
41 Perfluorotridecanoic acid



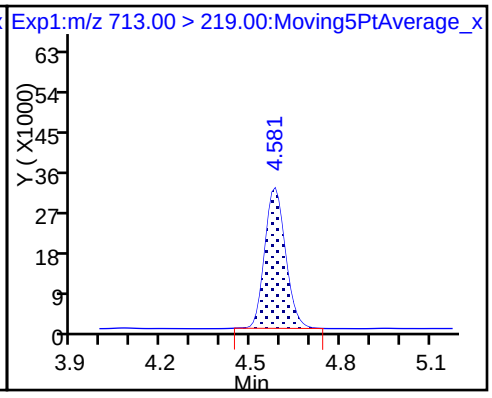
41 Perfluorotridecanoic acid



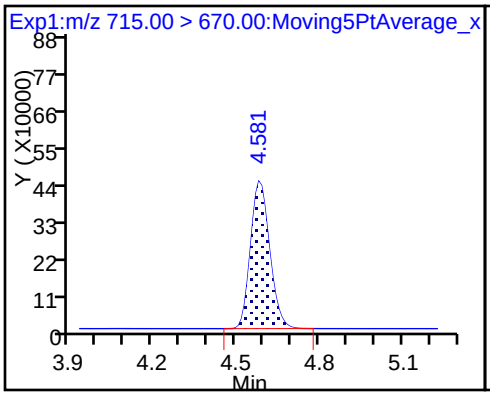
42 Perfluorotetradecanoic acid



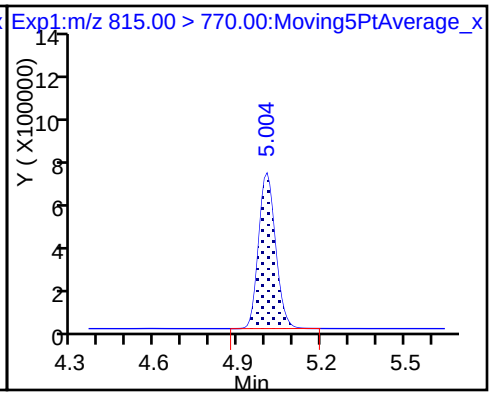
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213789/1 Calibration Date: 03/19/2018 19:18

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLAX_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9123		0.984	1.00	-1.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.079		0.924	1.00	-7.6	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	77.45		0.885	0.884	0.0	30.0
4:2 FTS	AveID	16.07	18.47		1.07	0.934	14.9	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9774		0.969	1.00	-3.1	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.037		1.00	1.00	0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.031		0.841	0.910	-7.6	30.0
6:2FTS	AveID	1.665	1.662		0.947	0.948	-0.1	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.291		0.935	0.952	-1.8	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.087		0.974	1.00	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.035		0.887	0.928	-4.4	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.9781		0.959	1.00	-4.1	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	1.006		1.04	1.00	3.6	30.0
8:2FTS	AveID	1.257	1.182		0.901	0.958	-6.0	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9562		1.01	1.00	0.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.008		0.968	1.00	-3.2	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.5972		0.902	0.964	-6.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.8796		0.898	1.00	-10.2	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7145		0.853	1.00	-14.7	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	0.9940		0.972	1.00	-2.8	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	0.9429		0.917	1.00	-8.3	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2531		0.918	1.00	-8.2	30.0
13C4 PFBA	Ave	1.277	1.401		2.74	2.50	9.7	30.0
13C5-PFPeA	Ave	0.9006	0.9588		2.66	2.50	6.5	30.0
13C3-PFBS	Ave	0.0222	0.0227		2.38	2.33	2.2	30.0
13C2 PFHxA	Ave	1.004	1.050		2.61	2.50	4.6	30.0
13C4-PFHpA	Ave	0.9767	0.9623		2.46	2.50	-1.5	30.0
18O2 PFHxS	Ave	1.303	1.331		2.42	2.37	2.1	30.0
M2-6:2FTS	Ave	0.2501	0.2453		2.33	2.38	-1.9	30.0
13C4 PFOA	Ave	0.9431	0.9484		2.51	2.50	0.6	30.0
13C4 PFOS	Ave	0.9113	0.9591		2.52	2.39	5.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213789/1 Calibration Date: 03/19/2018 19:18

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLAX_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7627		2.53	2.50	1.1	30.0
13C8 FOSA	Ave	1.319	1.403		2.66	2.50	6.3	30.0
M2-8:2FTS	Ave	0.2350	0.2452		2.50	2.40	4.3	30.0
13C2 PFDA	Ave	0.6303	0.6314		2.50	2.50	0.2	30.0
d3-NMeFOSAA	Ave	0.2081	0.1673		2.01	2.50	-19.6	30.0
d5-NEtFOSAA	Ave	0.1990	0.1731		2.17	2.50	-13.0	30.0
13C2 PFUnA	Ave	0.4935	0.4883		2.47	2.50	-1.1	30.0
13C2 PFDoA	Ave	0.4680	0.4341		2.32	2.50	-7.2	30.0
13C2-PFTeDA	Ave	0.4272	0.4295		2.51	2.50	0.6	30.0
13C2-PFHxDA	Ave	0.6248	0.5720		2.29	2.50	-8.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_036.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 19-Mar-2018 19:18:15 ALS Bottle#: 13 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:44:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.444	1.444	0.0	0.536	5737998	2.74		110	101010	
2 Perfluorobutyric acid										
212.90 > 169.00	1.444	1.444	0.0	1.000	2093868	0.9837		98.4	1233	
D 3 13C5-PFPeA										
267.90 > 223.00	1.706	1.705	0.001	0.634	3927034	2.66		106	111033	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.706	1.705	0.001	1.000	1694645	0.9236		92.4	618	
D 47 13C3-PFBS										
301.90 > 83.00	1.742	1.740	0.002	0.647	86478	2.38		102	519	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.742	1.740	0.002	1.000	2546465	0.8848		100	1055	
298.90 > 99.00	1.742	1.740	0.002	1.000	1077442		2.36(1.25-3.74)		1028	
D 60 M2-4:2FTS										
329.00 > 81.00	1.953	1.960	-0.007	0.725	725538	NC			13472	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.953	1.960	-0.007	1.000	641738	1.07		115	30089	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.995	1.992	0.003	1.000	1681527	0.9686		96.9	6934	
313.00 > 119.00	1.995	1.992	0.003	1.000	153520		10.95(5.03-15.10)		4025	
D 7 13C2 PFHxA										
315.00 > 270.00	1.995	1.992	0.003	0.741	4301183	2.61		105	97571	
D 9 13C4-PFHpA										
367.00 > 322.00	2.326	2.335	-0.009	0.864	3941420	2.46		98.5	60661	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.326	2.335	-0.009	1.000	1635614	1.00		100	3346	
363.00 > 169.00	2.326	2.335	-0.009	1.000	650745		2.51(1.13-3.40)		10020	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.338	2.348	-0.010	1.000	2045140	0.8410		92.4	3495	
399.00 > 99.00	2.338	2.348	-0.010	1.000	728051		2.81(1.50-4.49)		1650	
D 11 18O2 PFHxS										
403.00 > 84.00	2.338	2.348	-0.010	0.868	5156483	2.42		102	96561	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.669	2.675	-0.006	1.000	633380	0.9466		99.9	24702	
D 12 M2-6:2FTS										
429.00 > 81.00	2.669	2.675	-0.006	0.991	954659	2.33		98.1	27859	
D 14 13C4 PFOA										
417.00 > 372.00	2.693	2.706	-0.013	1.000	3884699	2.51		101	60722	
* 62 13C2-PFOA										
415.00 > 370.00	2.693	2.706	-0.013		4095930	2.50			86626	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.701	2.706	-0.005	1.003	1689305	0.9738		97.4	507	
413.00 > 169.00	2.701	2.706	-0.005	1.003	920658		1.83(0.84-2.52)		3872	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.701	2.706	-0.005	1.000	1931115	0.9352		98.2	35321	
449.00 > 99.00	2.701	2.706	-0.005	1.000	521337		3.70(1.94-5.82)		13674	
D 18 13C4 PFOS										
503.00 > 80.00	3.069	3.083	-0.014	1.140	3755471	2.52		105	35147	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.069	3.083	-0.014	1.000	1508957	0.8870		95.6	4533	
499.00 > 99.00	3.069	3.083	-0.014	1.000	333726		4.52(2.31-6.93)		2878	
20 Perfluorononanoic acid										
463.00 > 419.00	3.076	3.083	-0.007	1.002	1222118	0.9593		95.9	2616	
463.00 > 169.00	3.076	3.083	-0.007	1.002	304201		4.02(1.90-5.69)		12431	
D 19 13C5 PFNA										
468.00 > 423.00	3.069	3.083	-0.014	1.140	3123799	2.53		101	48436	
D 21 13C8 FOSA										
506.00 > 78.00	3.403	3.403	0.0	1.264	5746654	2.66		106	65186	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.403	3.412	-0.009	1.000	2313391	1.04		104	37699	
D 26 M2-8:2FTS										
529.00 > 81.00	3.421	3.439	-0.018	1.271	962052	2.50		104	30609	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.430	3.439	-0.009	1.003	454963	0.9009		94.0	16888	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.439	3.448	-0.009	1.000	989105	1.01		101	6705	
513.00 > 169.00	3.430	3.448	-0.018	0.997	187031		5.29(2.36-7.09)		7019	
D 23 13C2 PFDA										
515.00 > 470.00	3.439	3.448	-0.009	1.277	2585993	2.50		100	36174	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.586	3.606	-0.020	1.332	685401	2.01		80.4	36245	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.596	3.617	-0.021	1.003	276413	0.9680		96.8	4506	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.745	3.765	-0.020	1.000	904542	0.9016		93.5	23653	
599.00 > 99.00	3.745	3.765	-0.020	1.000	312473		2.89(1.39-4.16)		5020	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.755	3.775	-0.020	1.395	708896	2.17		87.0	1769	
D 30 13C2 PFUnA										
565.00 > 520.00	3.766	3.786	-0.020	1.398	2000100	2.47		98.9	46548	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.766	3.786	-0.020	1.000	571629	0.8526		85.3	1192	
563.00 > 169.00	3.766	3.786	-0.020	1.000	170544		3.35(2.12-6.36)		20623	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.766	3.786	-0.020	1.003	249407	0.8984		89.8	6414	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.063	4.084	-0.021	1.000	706891	0.9716		97.2	146	
613.00 > 169.00	4.063	4.084	-0.021	1.000	188873		3.74(2.13-6.40)		5554	
D 36 13C2 PFDoA										
615.00 > 570.00	4.063	4.084	-0.021	1.509	1777965	2.32		92.8	10869	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.325	4.346	-0.021	1.000	670553	0.9165		91.7	141	
663.00 > 169.00	4.325	4.346	-0.021	1.000	217499		3.08(1.25-3.76)		2689	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.561	4.581	-0.020	1.000	178090	0.9176		91.8	2658	
713.00 > 219.00	4.561	4.581	-0.020	1.000	125865		1.41(0.71-2.13)		1447	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.561	4.581	-0.020	1.694	1759374	2.51		101	13232	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.978	5.004	-0.026	1.000	883308	NC			62.4	
813.00 > 169.00	4.978	5.004	-0.026	1.000	152380		5.80(2.86-8.58)		2005	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.978	5.004	-0.026	1.849	2342719	2.29		91.5	8848	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.342	5.374	-0.032	1.000	890061	NC			223	
913.00 > 169.00	5.334	5.374	-0.040	0.999	116071		7.67(3.83-11.48)		1481	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 10:49:23 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_036.d

Injection Date: 19-Mar-2018 19:18:15 Instrument ID: A8_N

Lims ID: CCV L4

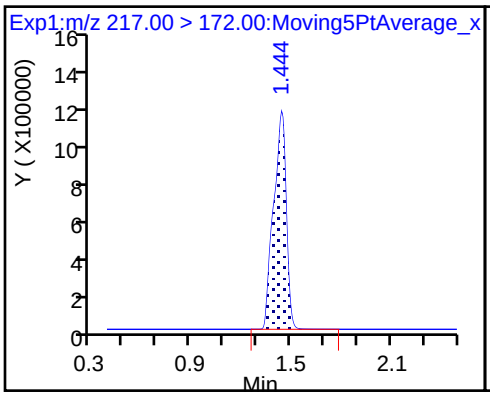
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 1

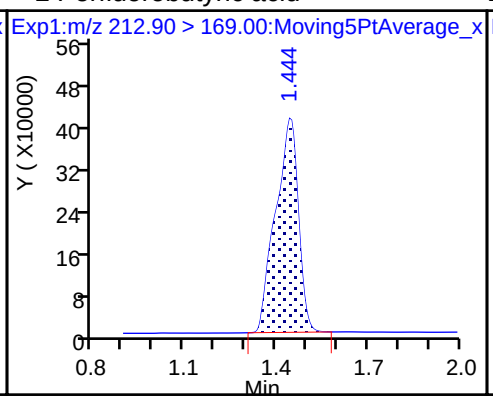
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

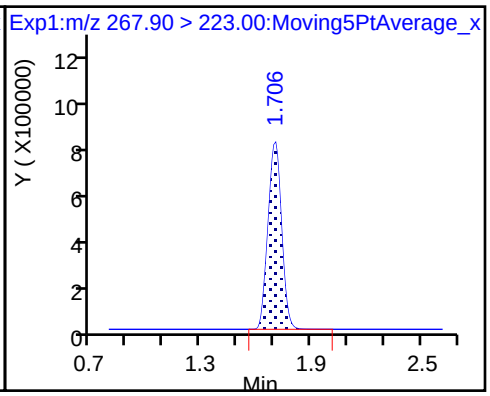
D 1 13C4 PFBA



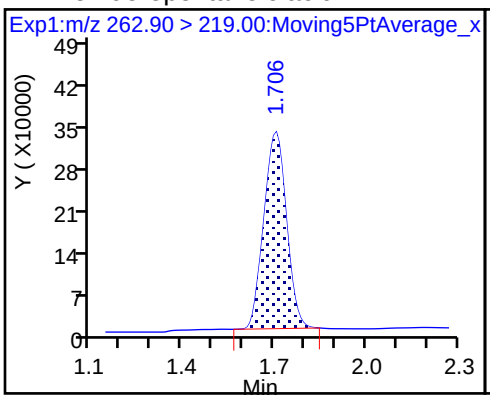
2 Perfluorobutyric acid



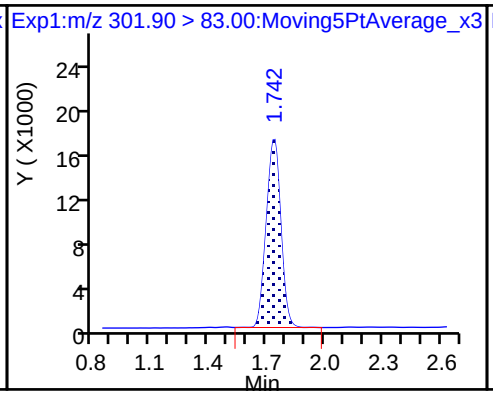
D 3 13C5-PFPeA



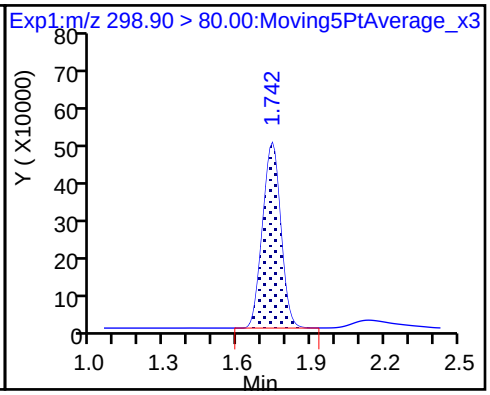
4 Perfluoropentanoic acid



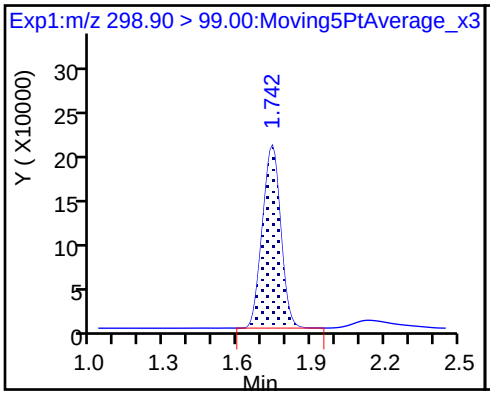
D 47 13C3-PFBS



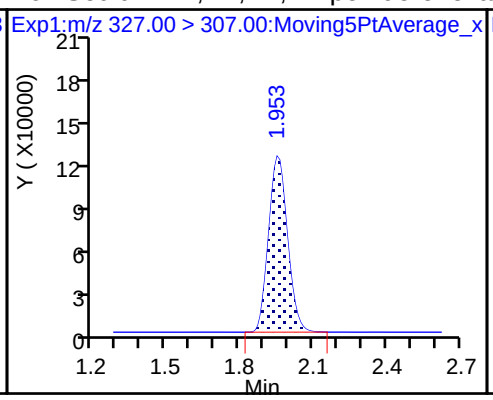
5 Perfluorobutanesulfonic acid



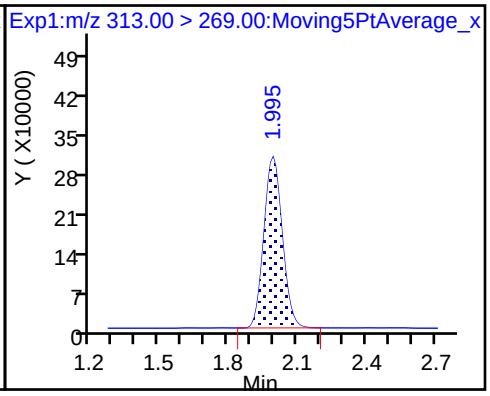
5 Perfluorobutanesulfonic acid



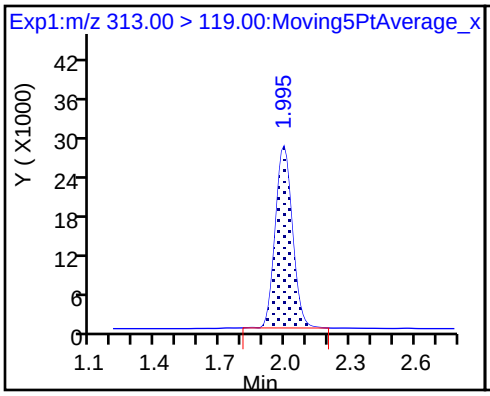
61 Sodium 1H,1H,2H,2H-perfluorohexane



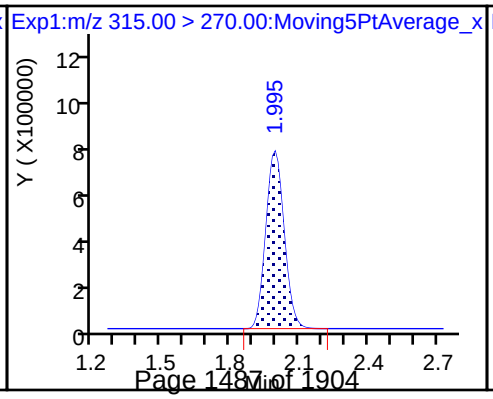
6 Perfluorohexanoic acid



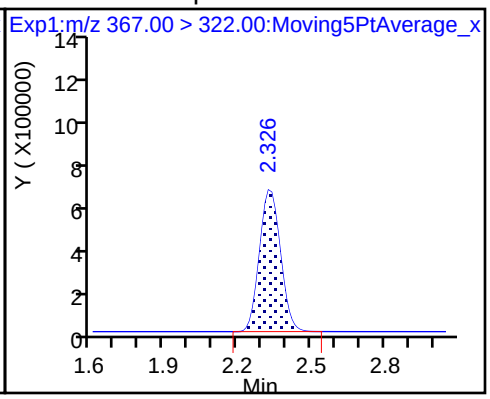
6 Perfluorohexanoic acid



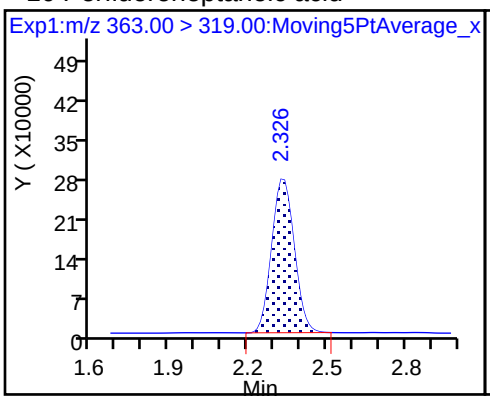
D 7 13C2 PFHxA



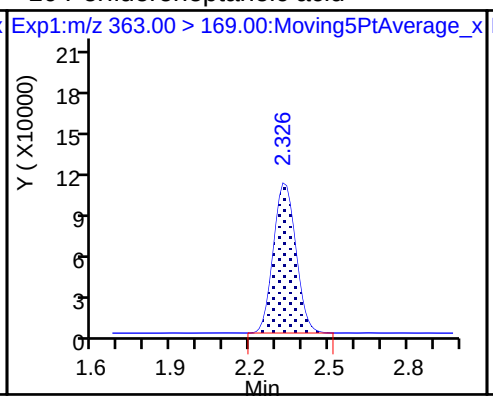
D 9 13C4-PFHpA



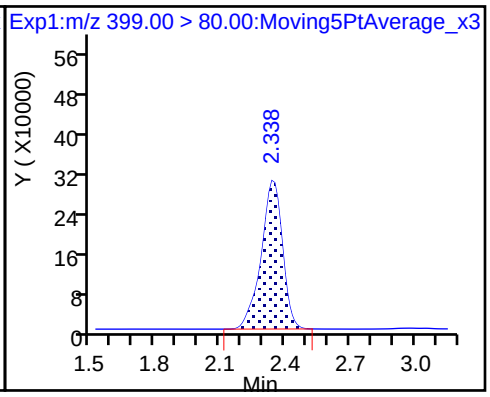
10 Perfluoroheptanoic acid



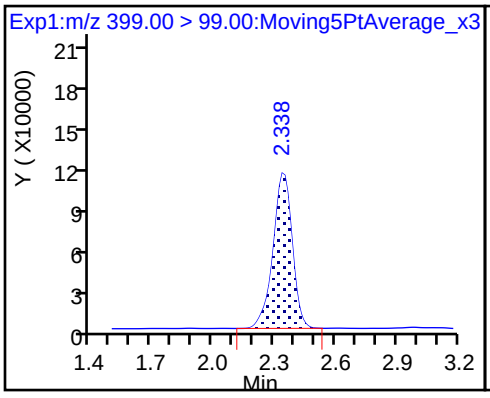
10 Perfluoroheptanoic acid



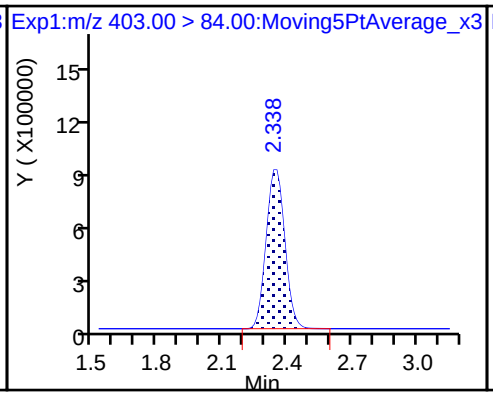
8 Perfluorohexanesulfonic acid



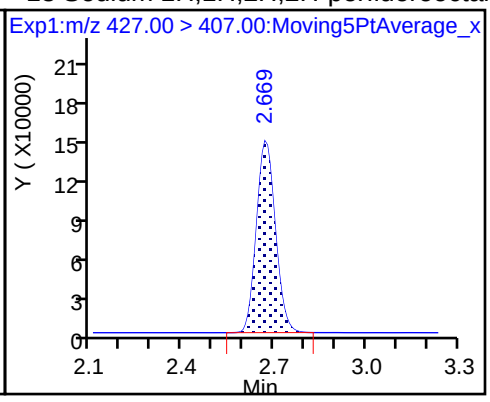
8 Perfluorohexanesulfonic acid



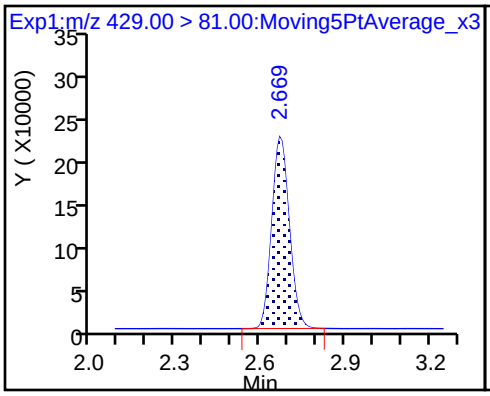
D 11 18O2 PFHxS



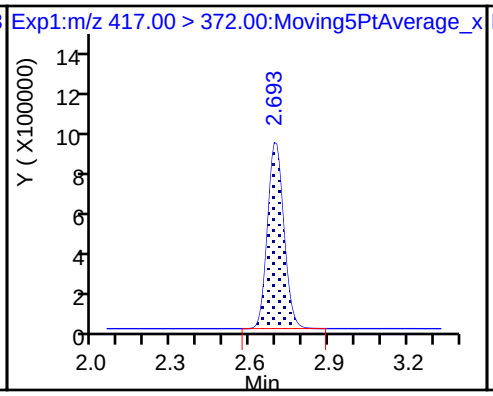
13 Sodium 1H,1H,2H,2H-perfluorooctane



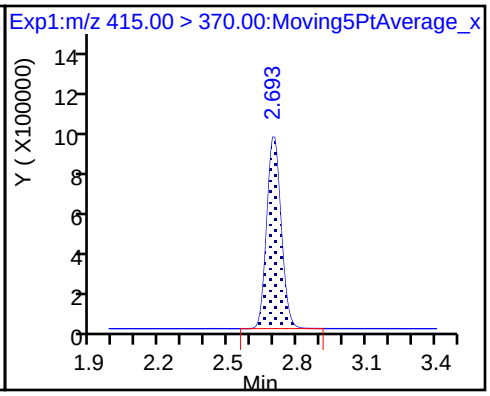
D 12 M2-6:2FTS



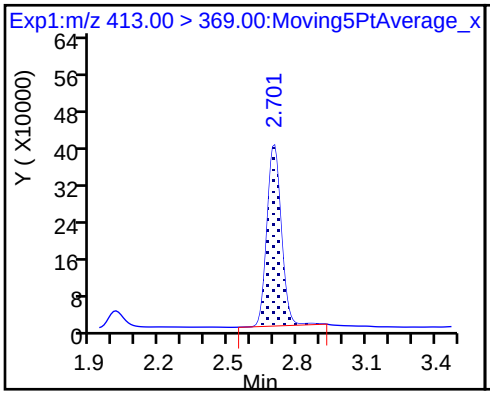
D 14 13C4 PFOA



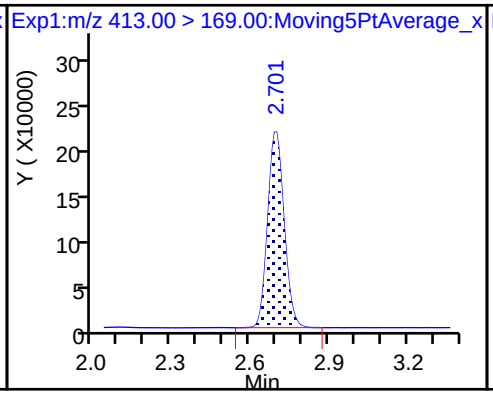
* 62 13C2-PFOA



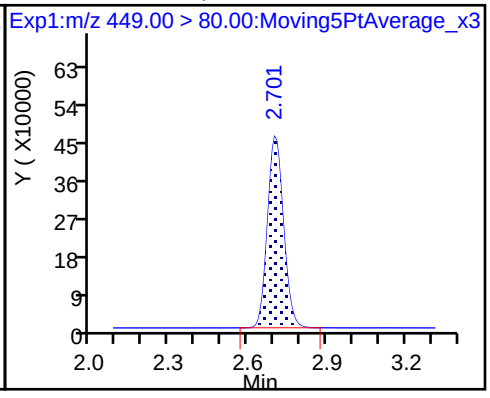
15 Perfluorooctanoic acid



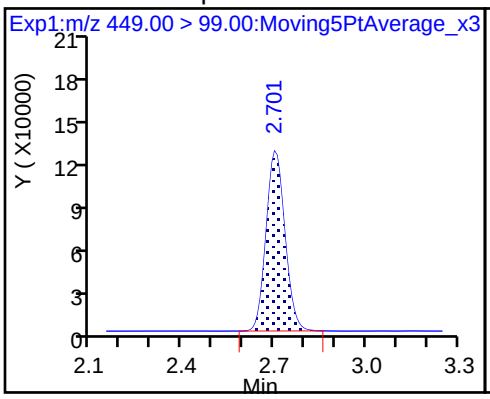
15 Perfluorooctanoic acid



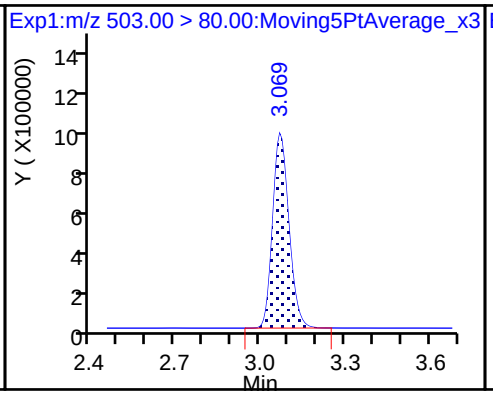
16 Perfluoroheptanesulfonic acid



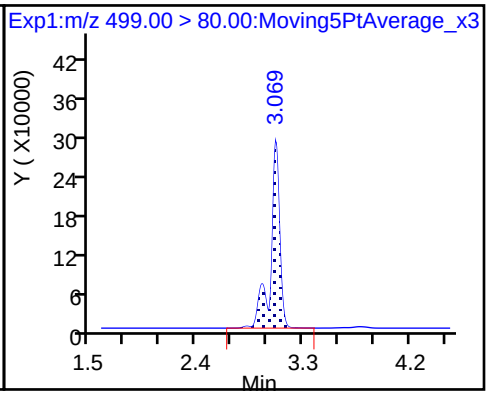
16 Perfluoroheptanesulfonic acid



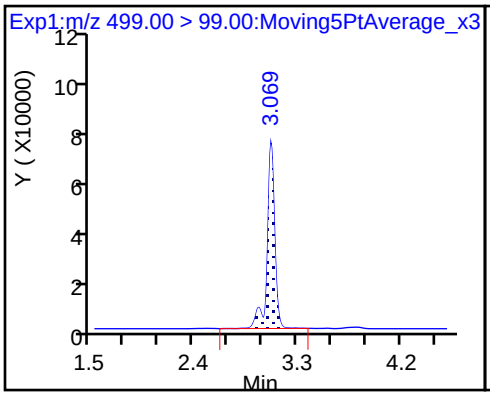
D 18 13C4 PFOS



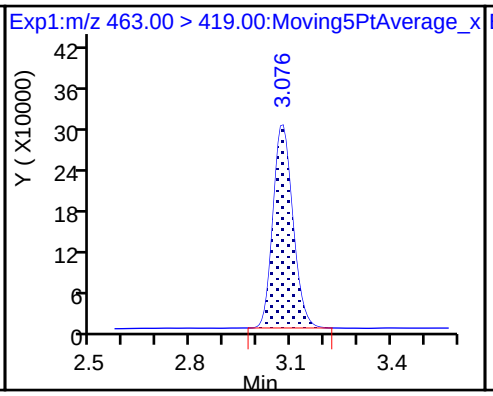
17 Perfluorooctane sulfonic acid



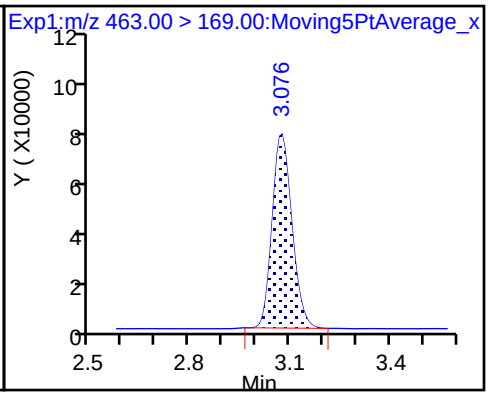
17 Perfluorooctane sulfonic acid



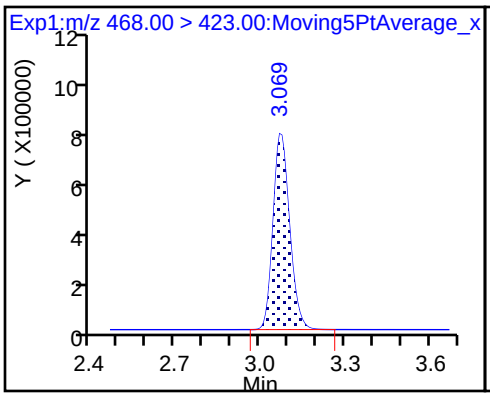
20 Perfluorononanoic acid



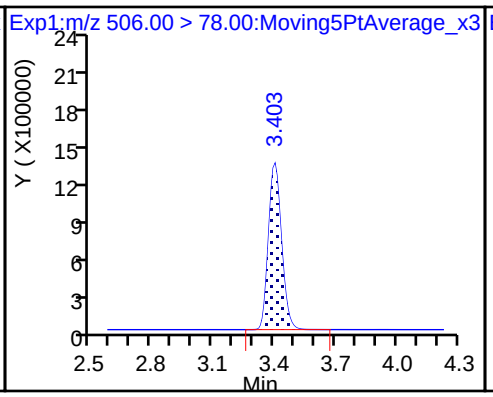
20 Perfluorononanoic acid



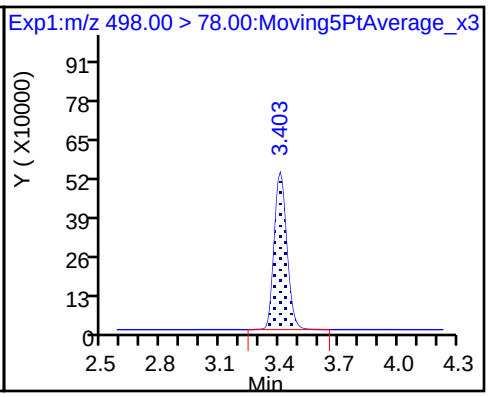
D 19 13C5 PFNA



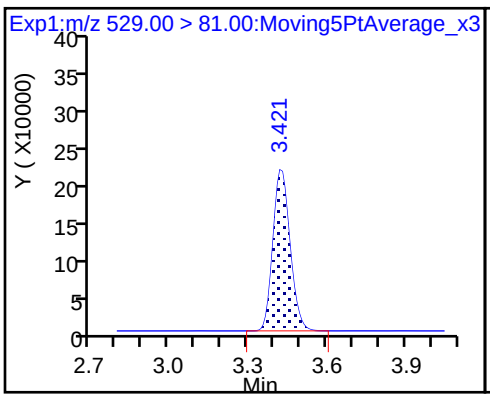
D 21 13C8 FOSA



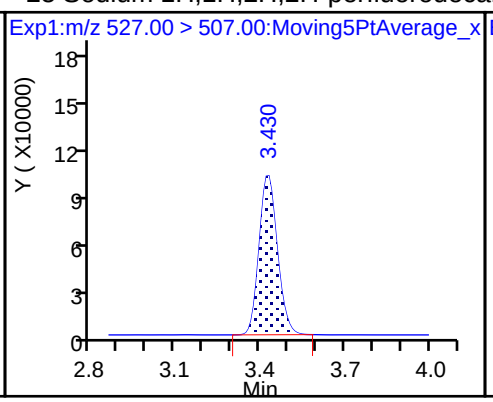
22 Perfluorooctane Sulfonamide



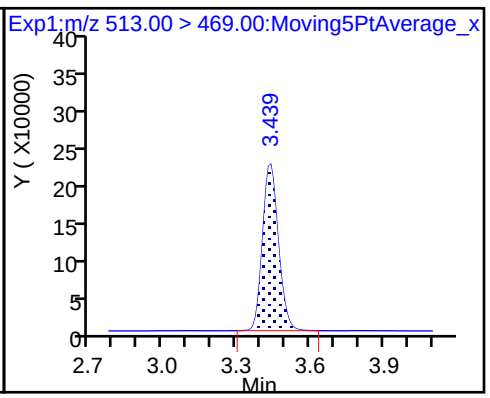
D 26 M2-8:2FTS



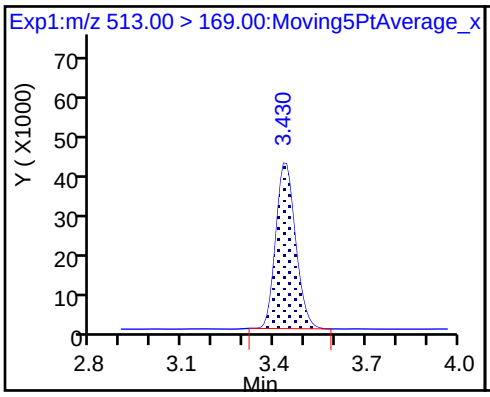
25 Sodium 1H,1H,2H,2H-perfluorodecan



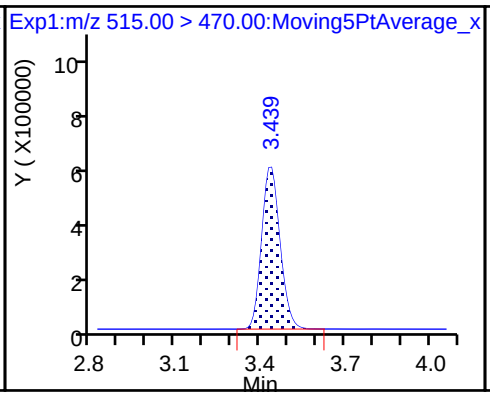
24 Perfluorodecanoic acid



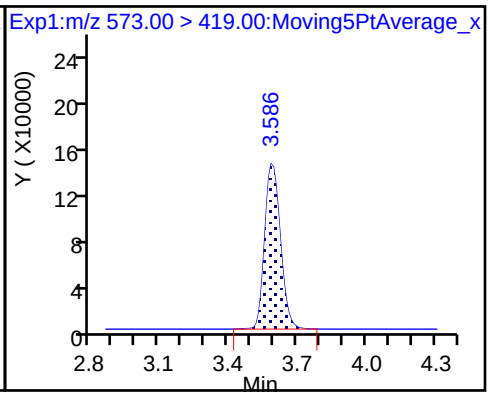
24 Perfluorodecanoic acid



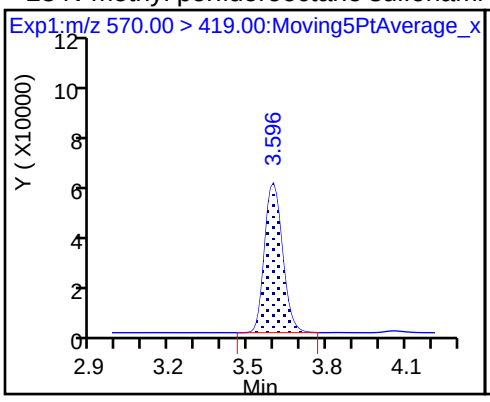
D 23 13C2 PFDA



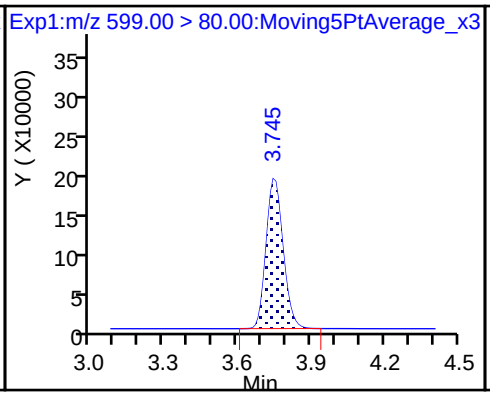
D 27 d3-NMeFOSAA



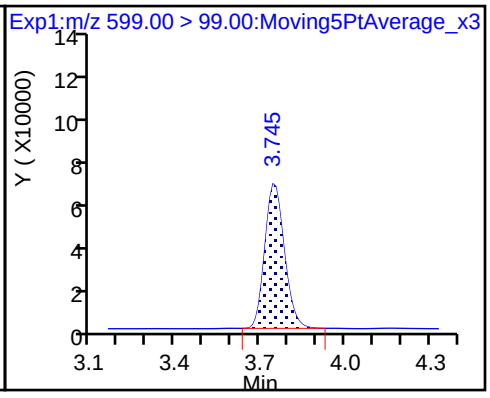
28 N-methyl perfluorooctane sulfonami



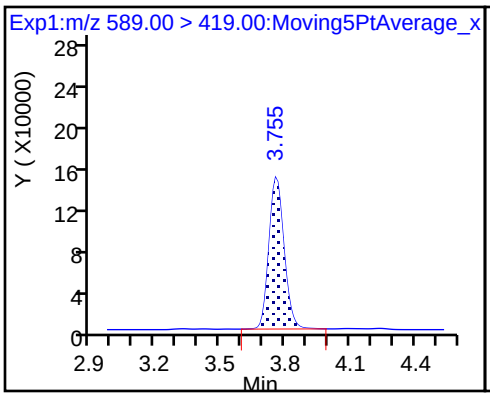
29 Perfluorodecane Sulfonic acid



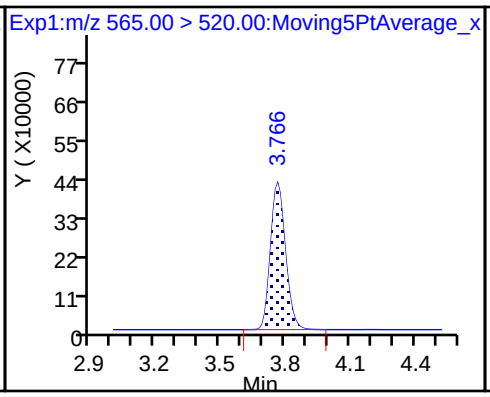
29 Perfluorodecane Sulfonic acid



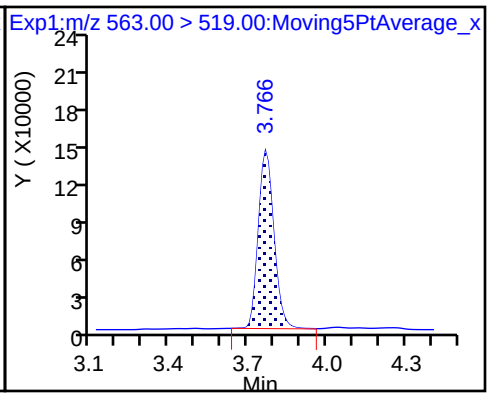
D 32 d5-NEtFOSAA



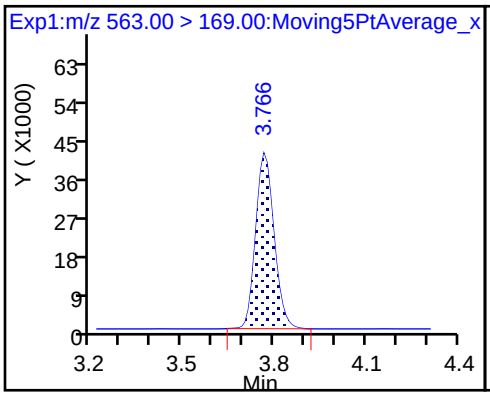
D 30 13C2 PFUnA



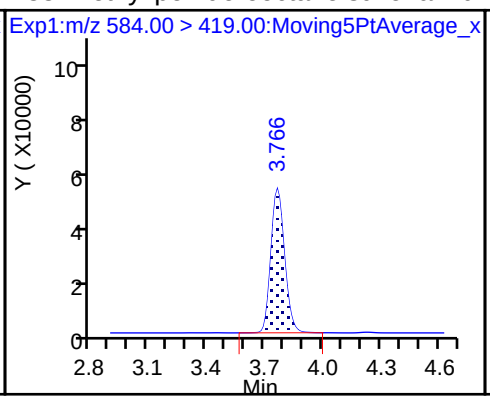
31 Perfluoroundecanoic acid



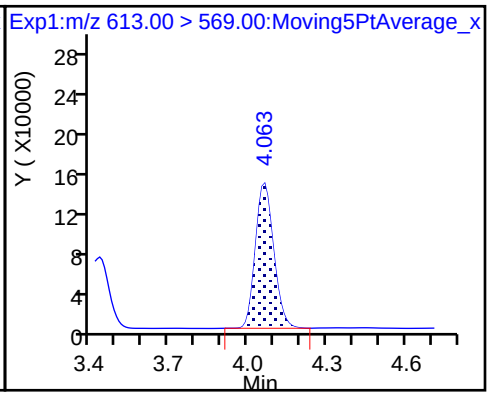
31 Perfluoroundecanoic acid



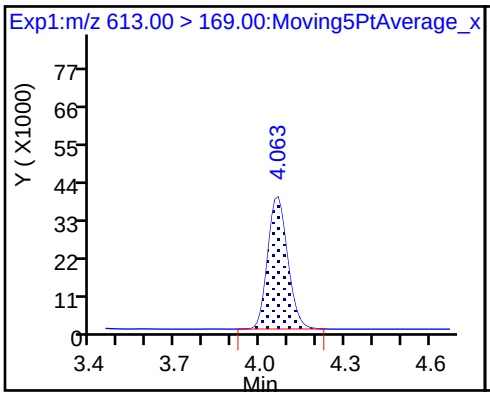
33 N-ethyl perfluorooctane sulfonamid



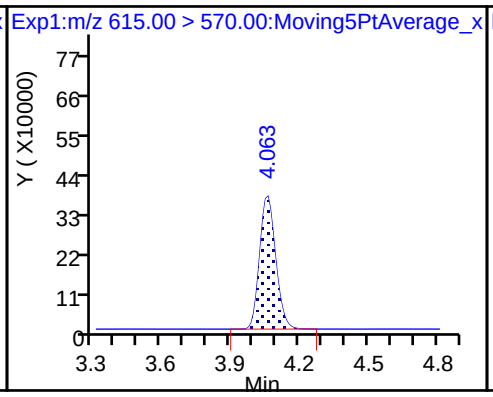
37 Perfluorododecanoic acid



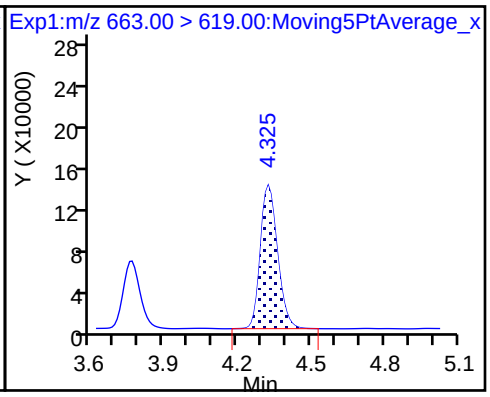
37 Perfluorododecanoic acid



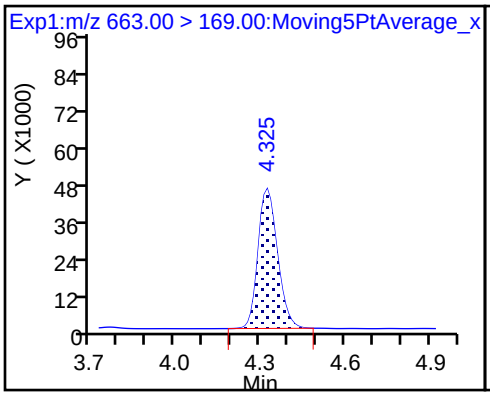
D 36 13C2 PFDoA



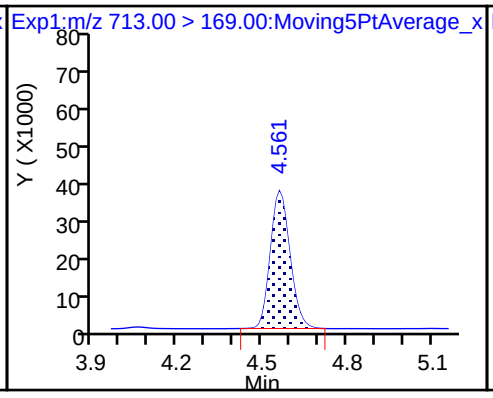
41 Perfluorotridecanoic acid



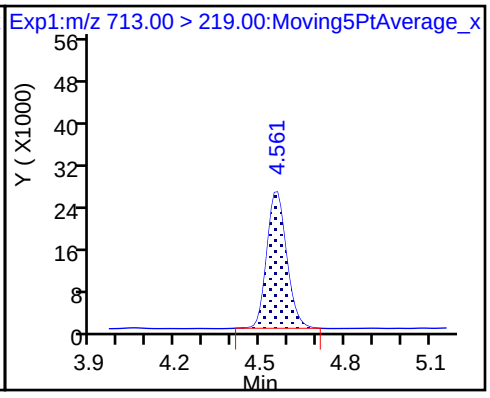
41 Perfluorotridecanoic acid



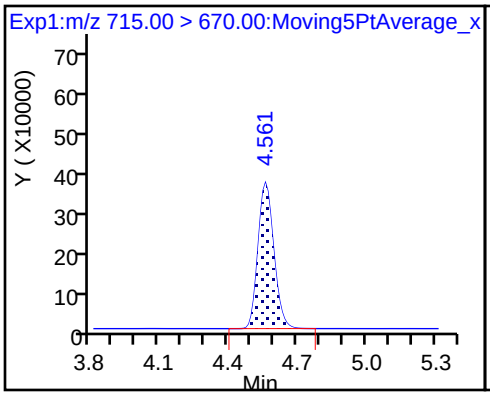
42 Perfluorotetradecanoic acid



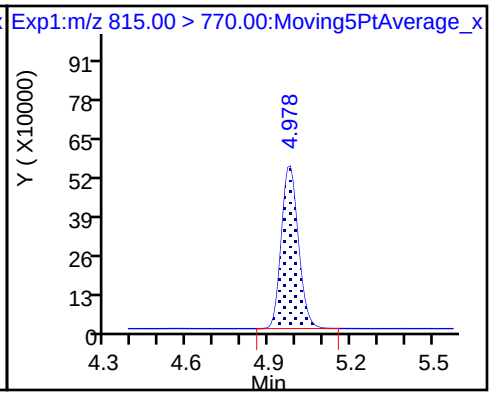
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213789/12 Calibration Date: 03/19/2018 20:44

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLAX_047.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9431		2.54	2.50	1.7	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.175		2.51	2.50	0.5	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	80.48		2.30	2.21	4.0	30.0
4:2 FTS	AveID	16.07	18.65		2.71	2.34	16.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.062		2.63	2.50	5.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.058		2.55	2.50	2.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.111		2.27	2.28	-0.4	30.0
6:2FTS	AveID	1.665	1.731		2.46	2.37	4.0	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.198		2.68	2.50	7.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.424		2.58	2.38	8.4	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	1.009		2.47	2.50	-1.0	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.141		2.44	2.32	5.4	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9717	1.091		2.81	2.50	12.3	30.0
8:2FTS	AveID	1.257	1.281		2.44	2.40	1.9	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9849		2.59	2.50	3.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.004		2.41	2.50	-3.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6777		2.56	2.41	6.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.9140		2.33	2.50	-6.7	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7503		2.24	2.50	-10.5	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.046		2.56	2.50	2.3	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.057		2.57	2.50	2.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2558		2.32	2.50	-7.2	30.0
13C4 PFBA	Ave	1.277	1.383		2.71	2.50	8.4	30.0
13C5-PFPeA	Ave	0.9006	0.9271		2.57	2.50	2.9	30.0
13C3-PFBS	Ave	0.0222	0.0226		2.37	2.33	1.9	30.0
13C2 PFHxA	Ave	1.004	0.9855		2.45	2.50	-1.9	30.0
13C4-PFHpA	Ave	0.9767	0.9828		2.52	2.50	0.6	30.0
18O2 PFHxS	Ave	1.303	1.321		2.40	2.37	1.4	30.0
M2-6:2FTS	Ave	0.2501	0.2489		2.36	2.38	-0.5	30.0
13C4 PFOA	Ave	0.9431	0.9081		2.41	2.50	-3.7	30.0
13C4 PFOS	Ave	0.9113	0.9053		2.37	2.39	-0.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-213789/12 Calibration Date: 03/19/2018 20:44

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.19LLAX_047.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7551		2.50	2.50	0.0	30.0
13C8 FOSA	Ave	1.319	1.343		2.54	2.50	1.8	30.0
M2-8:2FTS	Ave	0.2350	0.2304		2.35	2.40	-2.0	30.0
13C2 PFDA	Ave	0.6303	0.6380		2.53	2.50	1.2	30.0
d3-NMeFOSAA	Ave	0.2081	0.1753		2.11	2.50	-15.8	30.0
d5-NEtFOSAA	Ave	0.1990	0.1781		2.24	2.50	-10.5	30.0
13C2 PFUnA	Ave	0.4935	0.4753		2.41	2.50	-3.7	30.0
13C2 PFDoA	Ave	0.4680	0.4238		2.26	2.50	-9.5	30.0
13C2-PFTeDA	Ave	0.4272	0.4194		2.45	2.50	-1.8	30.0
13C2-PFHxDA	Ave	0.6248	0.5540		2.22	2.50	-11.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_047.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 19-Mar-2018 20:44:23 ALS Bottle#: 14 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:41 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:47:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.444	-0.003	0.537	5641405	2.71		108	89469	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.444	-0.003	1.000	5320573	2.54		102	2965	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.705	-0.005	0.634	3781145	2.57		103	102819	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.705	-0.005	1.000	4441125	2.51		101	1583	
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.740	-0.013	0.644	85886	2.37		102	409	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.740	-0.004	1.005	6570619	2.30		104	2594	
298.90 > 99.00	1.736	1.740	-0.004	1.005	2749409		2.39(1.25-3.74)		2555	
D 60 M2-4:2FTS										
329.00 > 81.00	1.946	1.960	-0.014	0.726	696721	NC			9299	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.946	1.960	-0.014	1.000	1608855	2.71		116	99437	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.986	1.992	-0.006	1.000	4270836	2.63		105	15375	
313.00 > 119.00	1.986	1.992	-0.006	1.000	405781		10.52(5.03-15.10)		9105	
D 7 13C2 PFHxA										
315.00 > 270.00	1.986	1.992	-0.006	0.741	4019642	2.45		98.1	102586	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.335	-0.020	0.864	4008514	2.52		101	84138	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.335	-0.020	1.000	4239921	2.55		102	8169	
363.00 > 169.00	2.315	2.335	-0.020	1.000	1638945		2.59(1.13-3.40)		30703	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.348	-0.020	1.000	5445222	2.27		99.6	8387	
399.00 > 99.00	2.328	2.348	-0.020	1.000	1720927		3.16(1.50-4.49)		3721	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.348	-0.020	0.869	5096576	2.40		101	77961	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.657	2.675	-0.018	1.000	1665678	2.46		104	64591	
D 12 M2-6:2FTS										
429.00 > 81.00	2.657	2.675	-0.018	0.991	964335	2.36		99.5	28051	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.706	-0.025	1.000	3703940	2.41		96.3	106756	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.706	-0.025		4078674	2.50			67352	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.706	-0.025	1.000	4435799	2.68		107	2092	
413.00 > 169.00	2.681	2.706	-0.025	1.000	2271130		1.95(0.84-2.52)		6986	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.706	-0.017	1.000	5006870	2.58		108	43455	
449.00 > 99.00	2.689	2.706	-0.017	1.000	1273992		3.93(1.94-5.82)		19949	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.083	-0.025	1.141	3530083	2.37		99.3	34056	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.058	3.083	-0.025	1.000	3908892	2.44		105	11768	
499.00 > 99.00	3.058	3.083	-0.025	1.000	845234		4.62(2.31-6.93)		7133	
20 Perfluorononanoic acid										
463.00 > 419.00	3.058	3.083	-0.025	1.000	3108206	2.47		99.0	7542	
463.00 > 169.00	3.058	3.083	-0.025	1.000	781803		3.98(1.90-5.69)		19351	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.083	-0.025	1.141	3079696	2.50		100	64148	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.403	-0.014	1.264	5476622	2.54		102	52044	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.412	-0.023	1.000	5974741	2.81		112	59092	
D 26 M2-8:2FTS										
529.00 > 81.00	3.417	3.439	-0.023	1.275	900195	2.35		98.0	24781	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.417	3.439	-0.023	1.000	1153046	2.44		102	28344	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.426	3.448	-0.022	1.000	2562885	2.59		104	19207	
513.00 > 169.00	3.426	3.448	-0.022	1.000	480858		5.33(2.36-7.09)		21611	
D 23 13C2 PFDA										
515.00 > 470.00	3.426	3.448	-0.022	1.278	2602181	2.53		101	45064	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.579	3.606	-0.027	1.335	714790	2.11		84.2	25875	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.579	3.617	-0.038	1.000	717588	2.41		96.4	11968	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.738	3.765	-0.027	1.000	2412179	2.56		106	84738	
599.00 > 99.00	3.738	3.765	-0.027	1.000	824385		2.93(1.39-4.16)		11583	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.748	3.775	-0.027	1.398	726251	2.24		89.5	1642	
D 30 13C2 PFUnA										
565.00 > 520.00	3.758	3.786	-0.028	1.402	1938658	2.41		96.3	40408	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.786	-0.028	1.000	1454616	2.24		89.5	3447	
563.00 > 169.00	3.758	3.786	-0.028	1.000	393170		3.70(2.12-6.36)		31486	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.758	3.786	-0.028	1.003	663761	2.33		93.3	16909	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.056	4.084	-0.028	1.003	1807917	2.56		102	361	
613.00 > 169.00	4.046	4.084	-0.038	1.000	481082		3.76(2.13-6.40)		9876	
D 36 13C2 PFDoA										
615.00 > 570.00	4.046	4.084	-0.038	1.509	1728337	2.26		90.5	8498	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.346	-0.028	1.000	1827582	2.57		103	399	
663.00 > 169.00	4.318	4.346	-0.028	1.000	583296		3.13(1.25-3.76)		6749	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.554	4.581	-0.027	1.000	437604	2.32		92.8	6531	
713.00 > 219.00	4.543	4.581	-0.038	0.998	315893		1.39(0.71-2.13)		2877	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.554	4.581	-0.027	1.699	1710718	2.45		98.2	15596	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	5.004	-0.040	1.000	2151393	NC			164	
813.00 > 169.00	4.964	5.004	-0.040	1.000	372509		5.78(2.86-8.58)		4024	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.964	5.004	-0.040	1.852	2259362	2.22		88.7	9794	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.330	5.374	-0.044	1.000	2187288	NC			493	
913.00 > 169.00	5.322	5.374	-0.052	0.999	293194		7.46(3.83-11.48)		2879	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 10:49:43 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_047.d

Injection Date: 19-Mar-2018 20:44:23 Instrument ID: A8_N

Lims ID: CCV L5

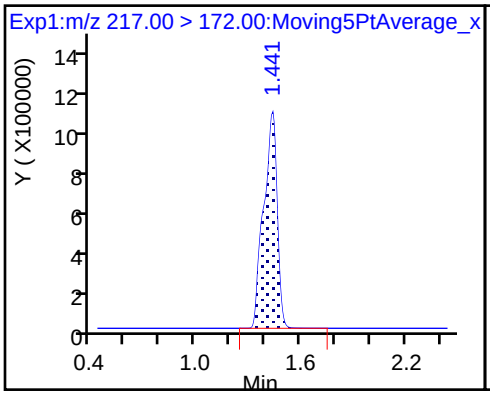
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 12

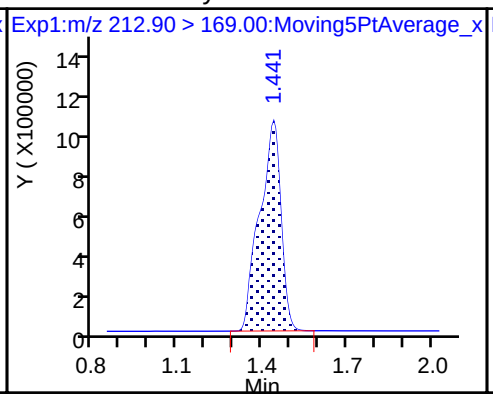
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

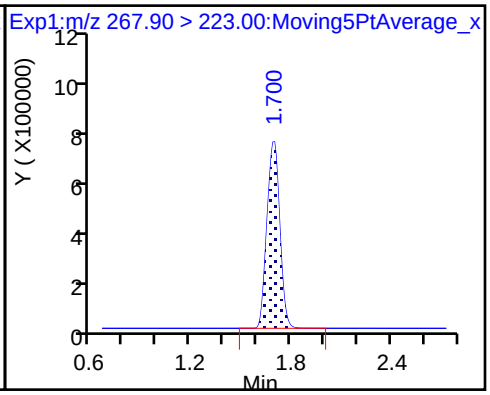
D 1 13C4 PFBA



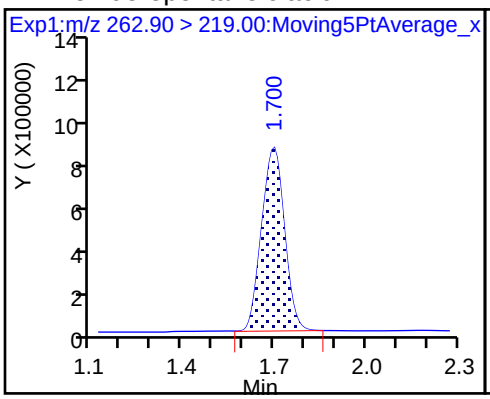
2 Perfluorobutyric acid



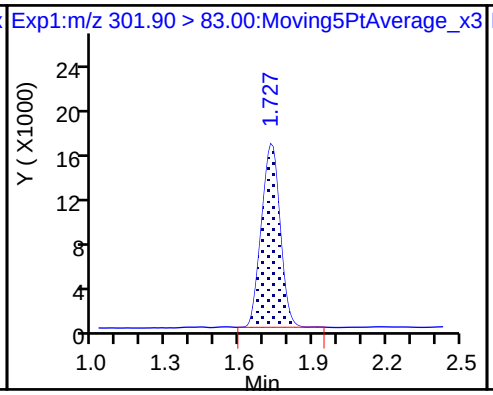
D 3 13C5-PFPeA



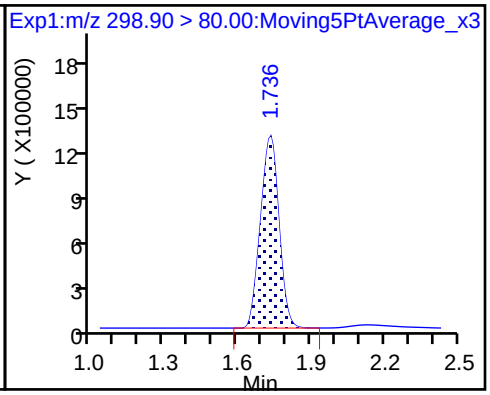
4 Perfluoropentanoic acid



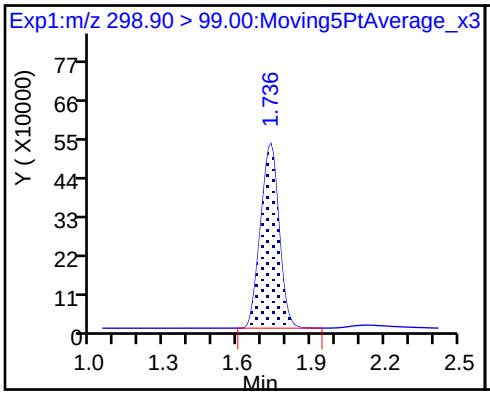
D 47 13C3-PFBS



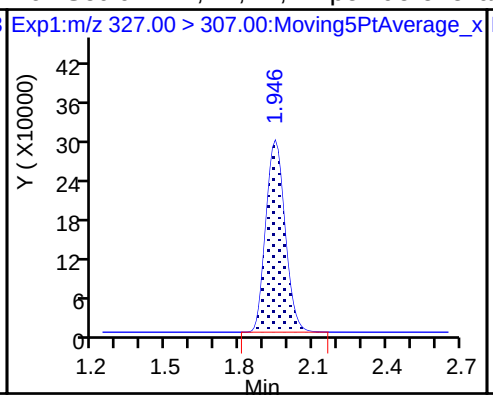
5 Perfluorobutanesulfonic acid



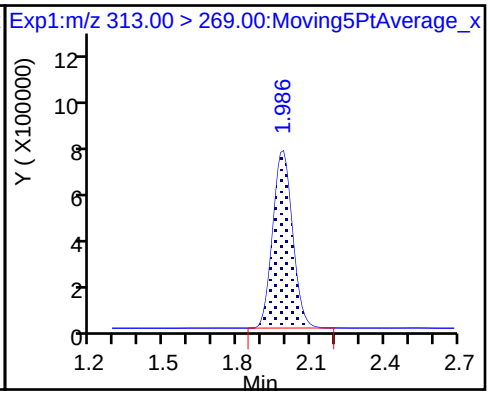
5 Perfluorobutanesulfonic acid



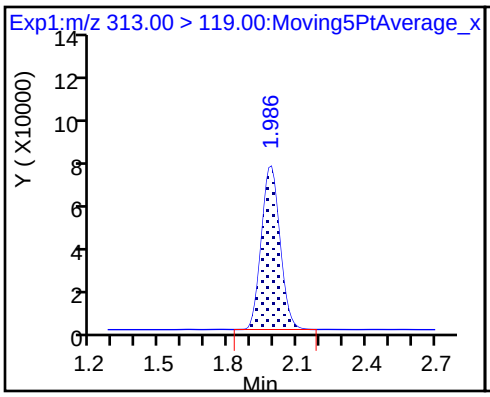
61 Sodium 1H,1H,2H,2H-perfluorohexane



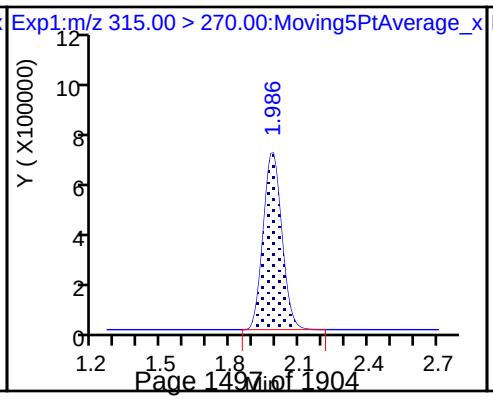
6 Perfluorohexanoic acid



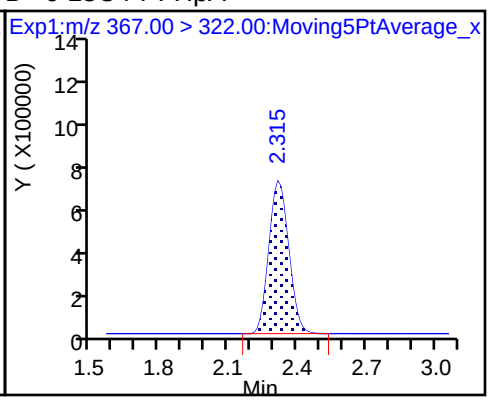
6 Perfluorohexanoic acid



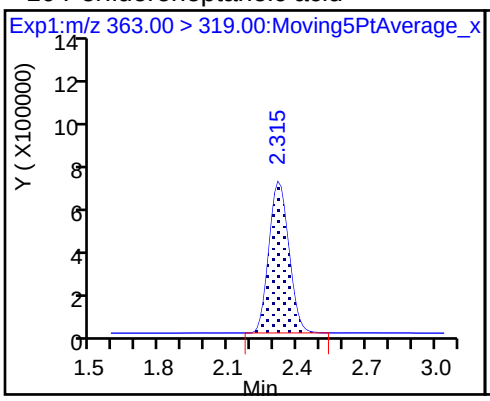
D 7 13C2 PFHxA



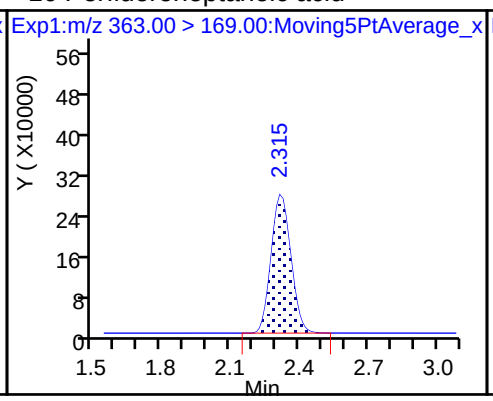
D 9 13C4-PFHpA



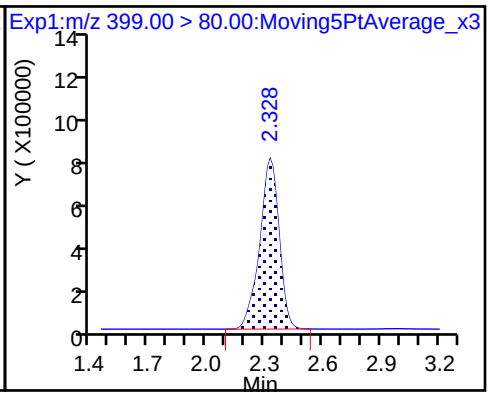
10 Perfluoroheptanoic acid



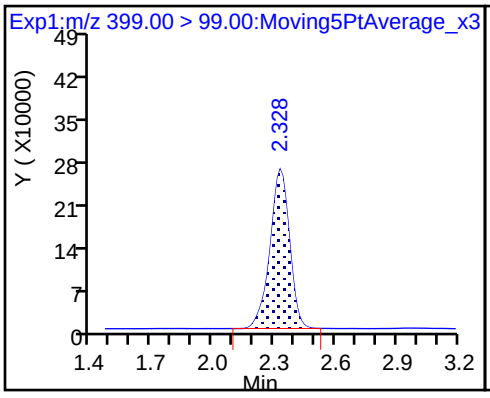
10 Perfluoroheptanoic acid



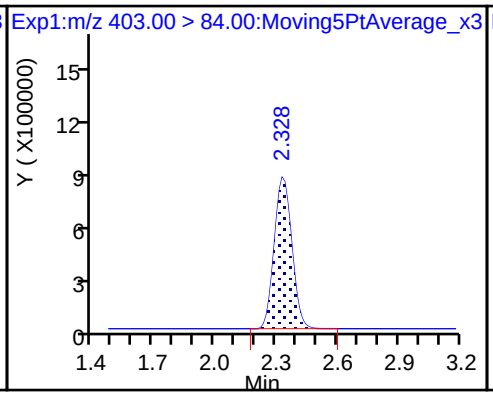
8 Perfluorohexanesulfonic acid



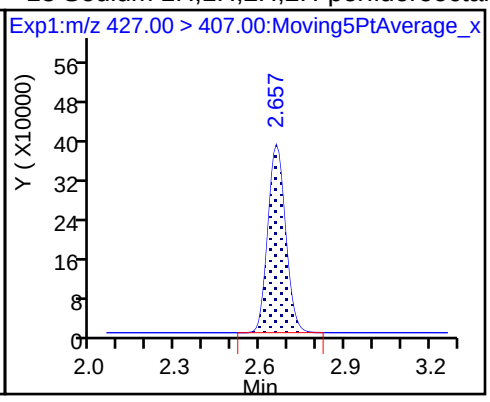
8 Perfluorohexanesulfonic acid



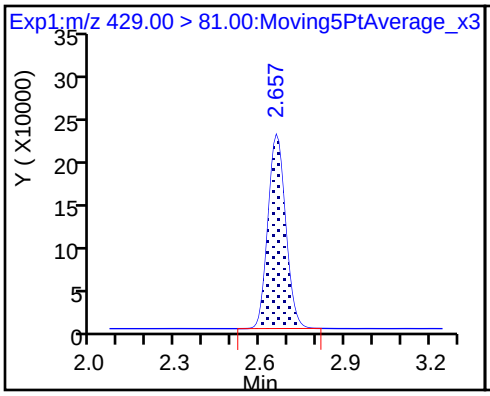
D 11 18O2 PFHxS



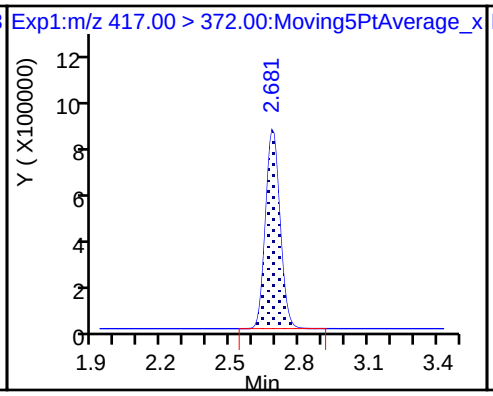
13 Sodium 1H,1H,2H,2H-perfluorooctane



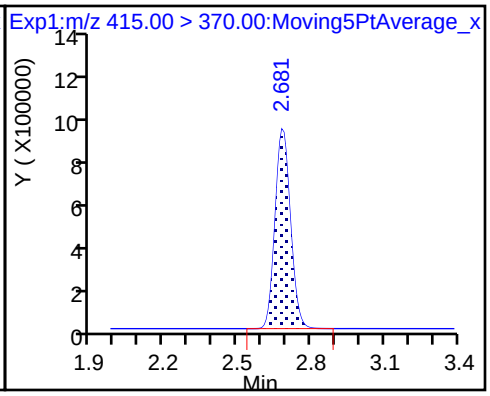
D 12 M2-6:2FTS



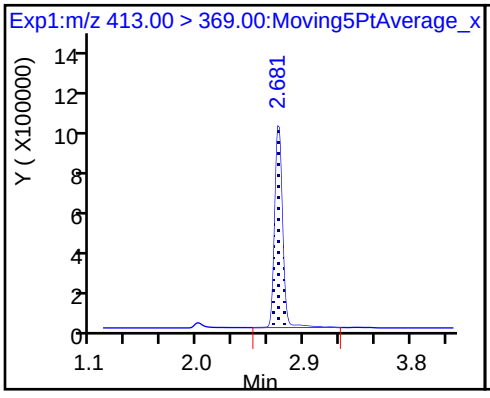
D 14 13C4 PFOA



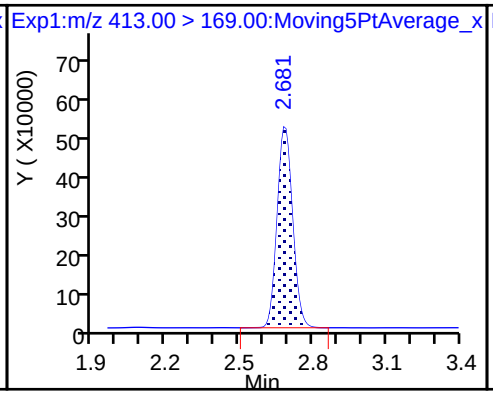
* 62 13C2-PFOA



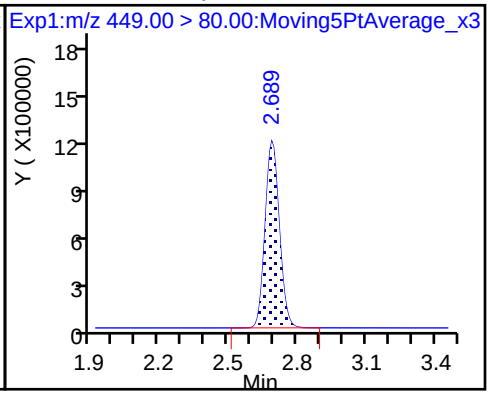
15 Perfluorooctanoic acid



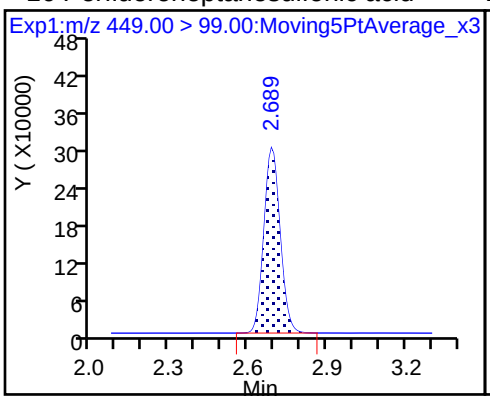
15 Perfluorooctanoic acid



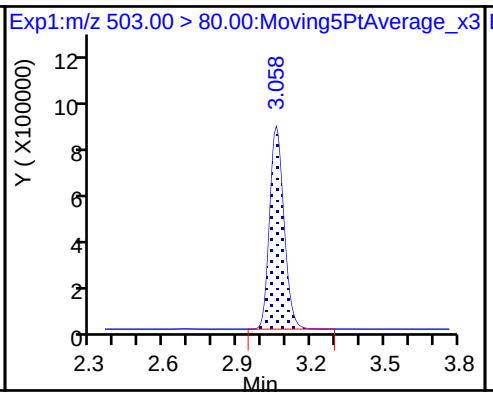
16 Perfluoroheptanesulfonic acid



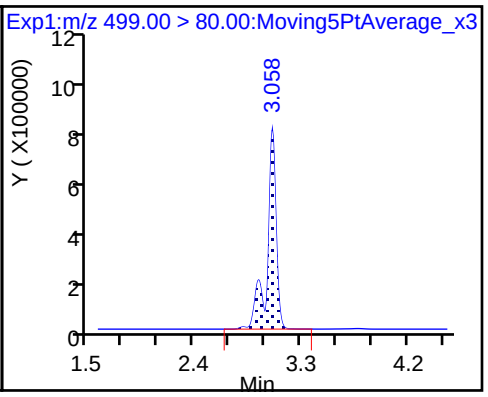
16 Perfluoroheptanesulfonic acid



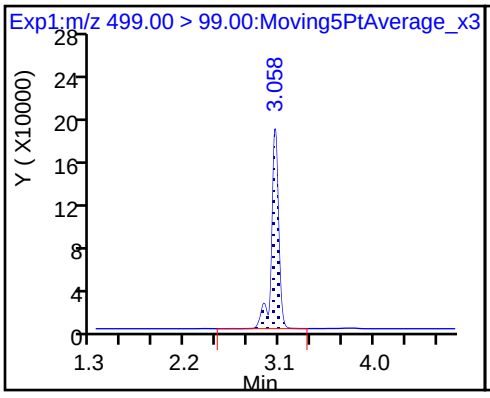
D 18 13C4 PFOS



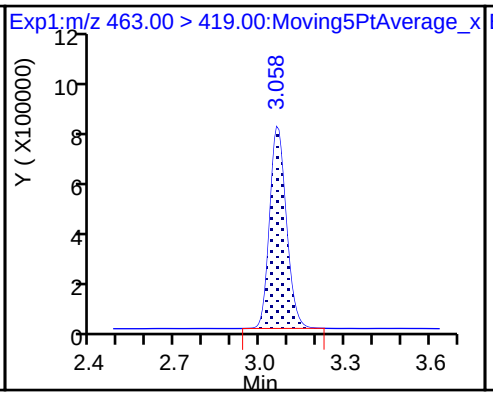
17 Perfluorooctane sulfonic acid



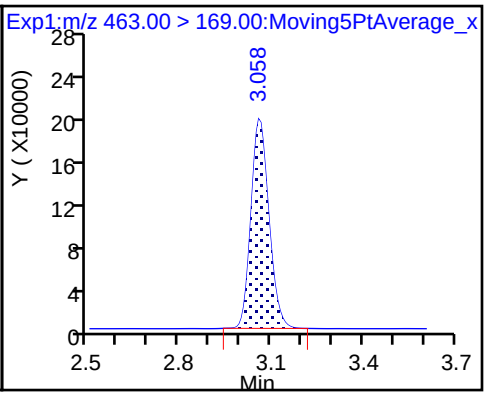
17 Perfluorooctane sulfonic acid



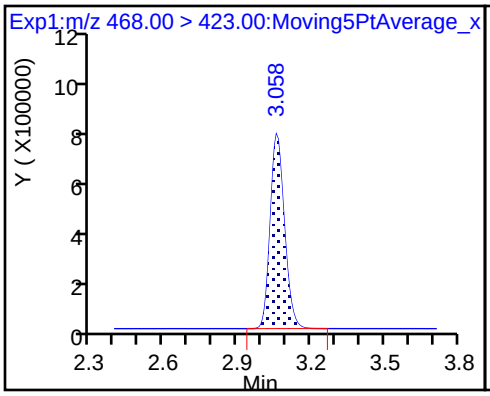
20 Perfluorononanoic acid



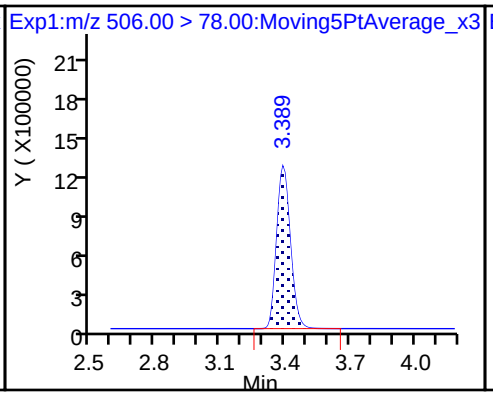
20 Perfluorononanoic acid



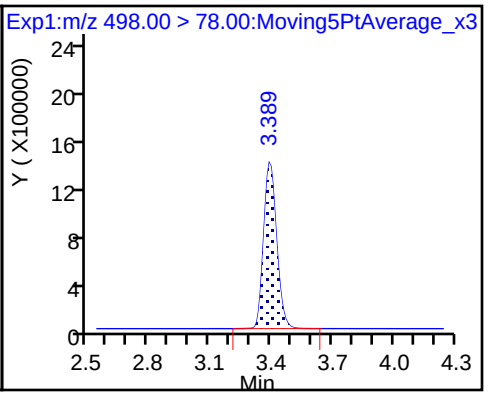
D 19 13C5 PFNA



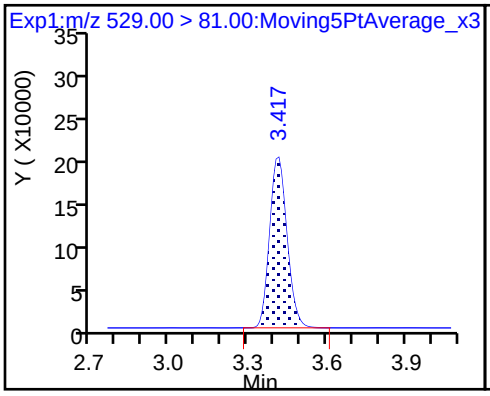
D 21 13C8 FOSA



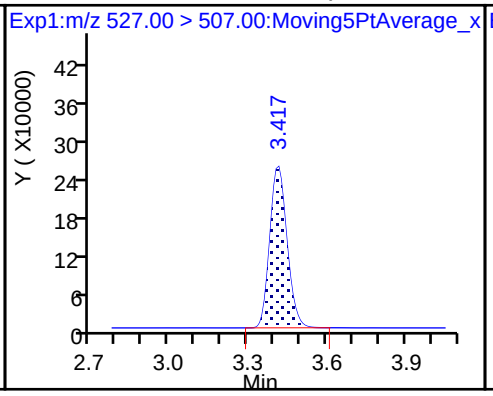
22 Perfluorooctane Sulfonamide



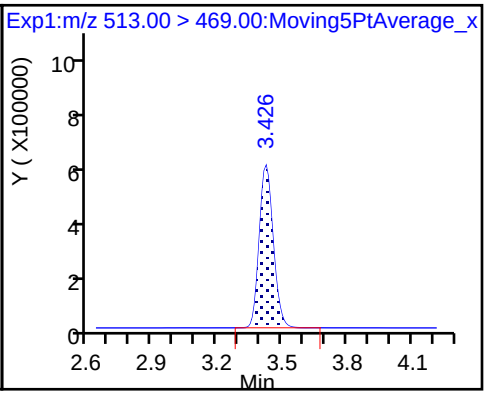
D 26 M2-8:2FTS



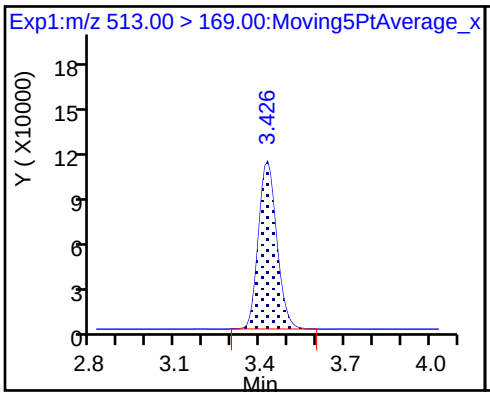
25 Sodium 1H,1H,2H,2H-perfluorodecan



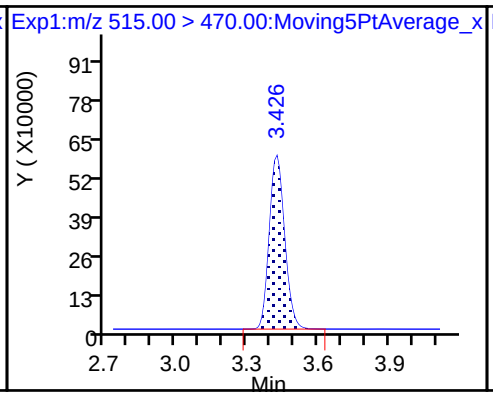
24 Perfluorodecanoic acid



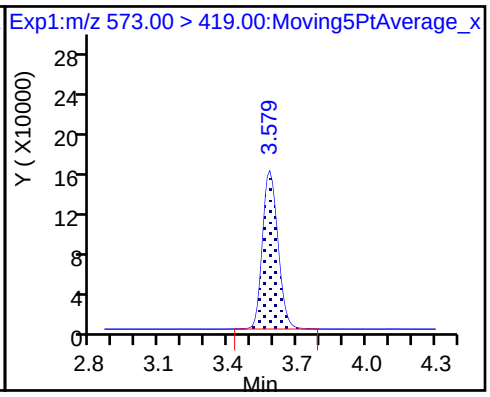
24 Perfluorodecanoic acid



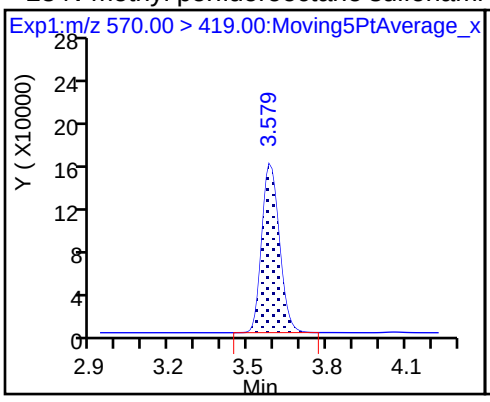
D 23 13C2 PFDA



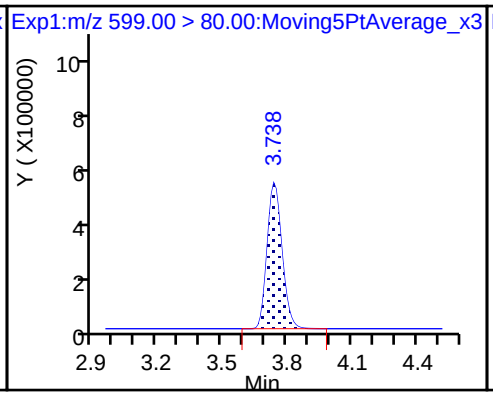
D 27 d3-NMeFOSAA



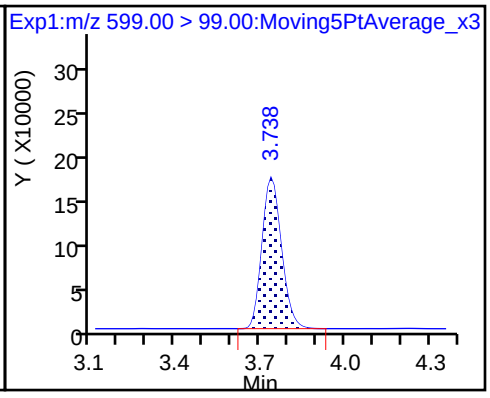
28 N-methyl perfluorooctane sulfonami



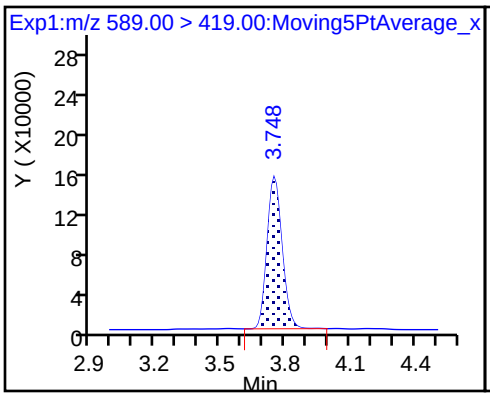
29 Perfluorodecane Sulfonic acid



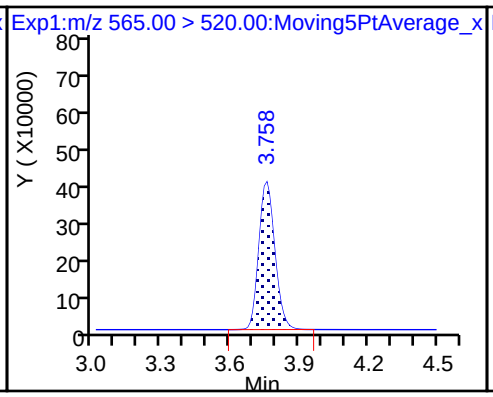
29 Perfluorodecane Sulfonic acid



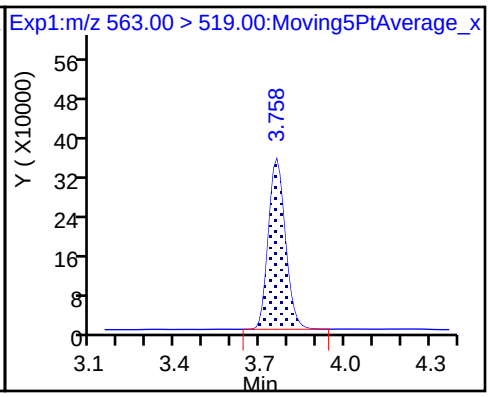
D 32 d5-NEtFOSAA



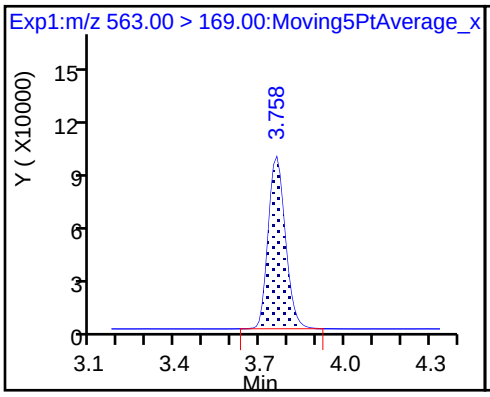
D 30 13C2 PFUnA



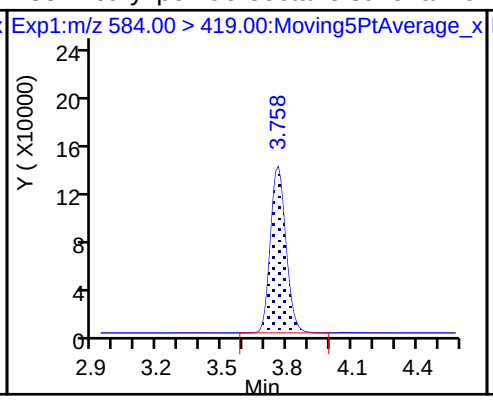
31 Perfluoroundecanoic acid



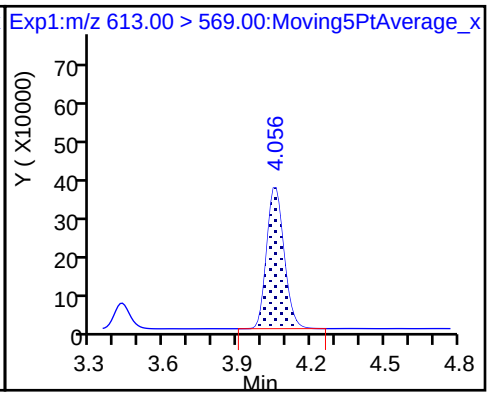
31 Perfluoroundecanoic acid



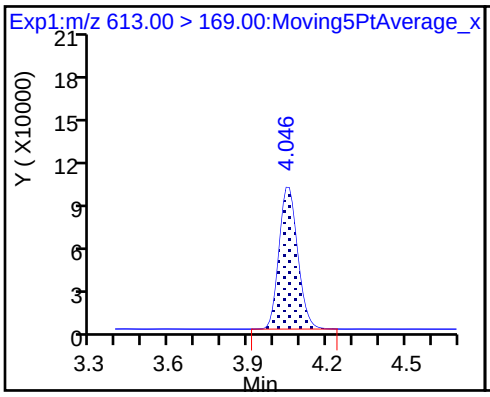
33 N-ethyl perfluorooctane sulfonamid



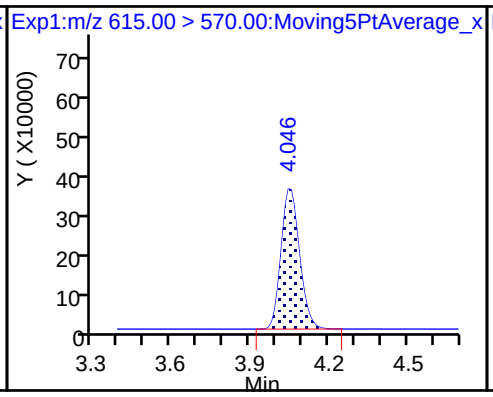
37 Perfluorododecanoic acid



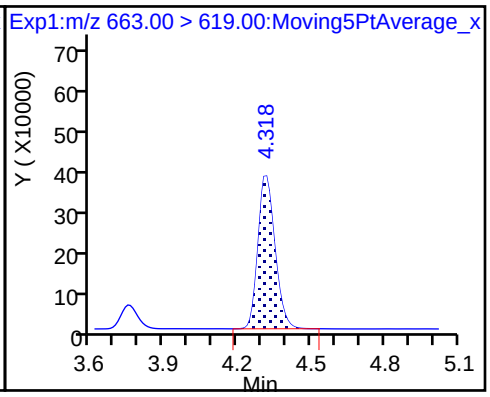
37 Perfluorododecanoic acid



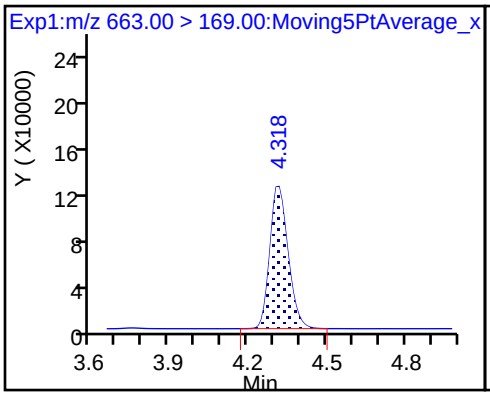
D 36 13C2 PFDoA



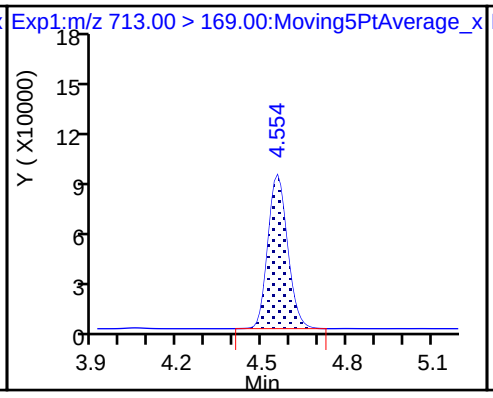
41 Perfluorotridecanoic acid



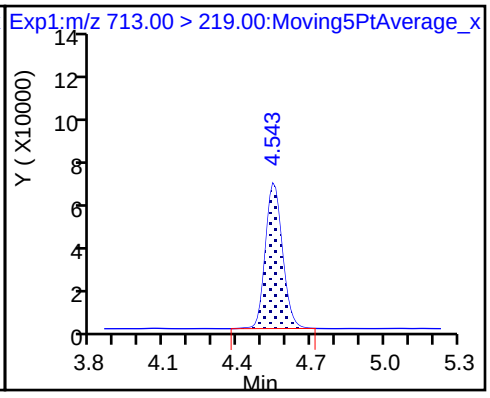
41 Perfluorotridecanoic acid



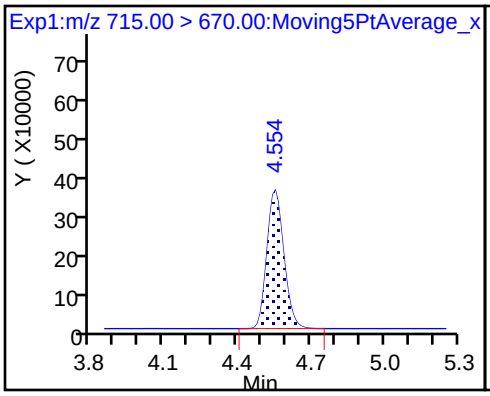
42 Perfluorotetradecanoic acid



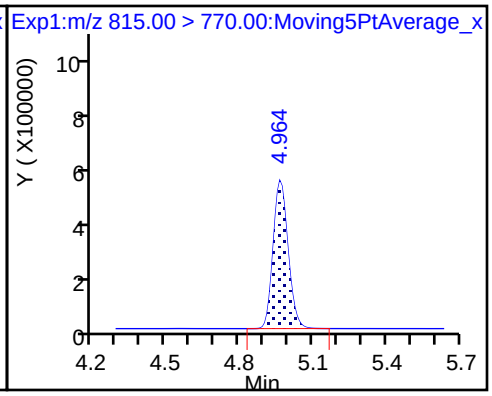
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 320-214176/10 Calibration Date: 03/21/2018 19:26

Instrument ID: A8_N Calib Start Date: 03/21/2018 18:24

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/21/2018 19:11

Lab File ID: 2018.03.21LLICALAX_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9422	0.9615		2.55	2.50	2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.128	1.089		2.42	2.50	-3.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.70	78.20		2.23	2.21	0.6	30.0
4:2 FTS	AveID	16.15	15.34		2.22	2.34	-5.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.022	0.9816		2.40	2.50	-4.0	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.034	1.059		2.56	2.50	2.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.067		2.19	2.28	-4.1	30.0
6:2FTS	AveID	1.744	1.722		2.35	2.38	-1.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.130	1.152		2.55	2.50	2.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.281	1.320		2.45	2.38	3.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.114	1.152		2.39	2.31	3.4	30.0
Perfluorononanoic acid (PFNA)	AveID	0.998	1.042		2.61	2.50	4.5	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9858	1.011		2.56	2.50	2.6	30.0
8:2FTS	AveID	1.276	1.320		2.48	2.40	3.4	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9881	1.017		2.57	2.50	2.9	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.001	1.043		2.61	2.50	4.2	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6800	0.7758		2.75	2.41	14.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9342	0.9386		2.51	2.50	0.5	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8622	0.7832		2.27	2.50	-9.2	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.046	1.118		2.67	2.50	6.9	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.101	1.202		2.73	2.50	9.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2478	0.2294		2.31	2.50	-7.4	30.0
Perfluorononanesulfonic acid	None				10.0	2.40	-100.0*	30.0
Perfluoropentanesulfonic acid	None				10.0	2.35	-100.0*	30.0
13C4 PFBA	Ave	1.266	1.264		2.50	2.50	-0.1	30.0
13C5-PFPeA	Ave	0.8399	0.8702		2.59	2.50	3.6	30.0
13C3-PFBS	Ave	0.0192	0.0199		2.41	2.33	3.6	30.0
13C2 PFHxA	Ave	0.9288	0.9535		2.57	2.50	2.7	30.0
13C4-PFHpA	Ave	0.9164	0.9262		2.53	2.50	1.1	30.0
18O2 PFHxS	Ave	1.130	1.159		2.43	2.37	2.6	30.0
M2-6:2FTS	Ave	0.1900	0.1878		2.35	2.38	-1.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 320-214176/10 Calibration Date: 03/21/2018 19:26

Instrument ID: A8_N Calib Start Date: 03/21/2018 18:24

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/21/2018 19:11

Lab File ID: 2018.03.21LLICALAX_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9374	0.9430		2.52	2.50	0.6	30.0
13C4 PFOS	Ave	0.8225	0.8093		2.35	2.39	-1.6	30.0
13C5 PFNA	Ave	0.8266	0.8343		2.52	2.50	0.9	30.0
13C8 FOSA	Ave	1.109	1.126		2.54	2.50	1.5	30.0
M2-8:2FTS	Ave	0.2565	0.2604		2.43	2.40	1.5	30.0
13C2 PFDA	Ave	0.7245	0.7523		2.60	2.50	3.8	30.0
d3-NMeFOSAA	Ave	0.3814	0.4010		2.63	2.50	5.1	30.0
13C2 PFUnA	Ave	0.6482	0.6709		2.59	2.50	3.5	30.0
d5-NEtFOSAA	Ave	0.4345	0.4611		2.65	2.50	6.1	30.0
13C2 PFDoA	Ave	0.7355	0.7399		2.51	2.50	0.6	30.0
13C2-PFTeDA	Ave	0.8983	0.9540		2.65	2.50	6.2	30.0
13C2-PFHxDA	Ave	1.473	1.524		2.59	2.50	3.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_010.d
Lims ID: ICV Full
Client ID:
Sample Type: ICV
Inject. Date: 21-Mar-2018 19:26:58 ALS Bottle#: 18 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:44:33 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: roycea Date: 22-Mar-2018 08:34:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.447	-0.001	0.537	6375865	2.50		99.9	65785	
2 Perfluorobutyric acid										
212.90 > 169.00	1.452	1.449	0.003	1.004	6130285	2.55			2673	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.710	-0.001	1.000	4780167	2.42			2819	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.710	-0.001	0.634	4387769	2.59		104	120384	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.743	0.001	0.647	93121	2.41		104	803	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.745	-0.001	1.000	6929756	2.23			34258	
298.90 > 99.00	1.744	1.745	-0.001	1.000	2824316		2.45(1.25-3.74)		16599	
D 60 M2-4:2FTS										
329.00 > 81.00	1.955	1.959	-0.004	0.726	625050	NC			8149	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.955	1.962	-0.007	1.000	1436368	2.22			86809	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.998	-0.001	1.000	4719162	2.40			15114	
313.00 > 119.00	1.997	1.998	-0.001	1.000	441716		10.68(5.03-15.10)		13104	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.998	-0.001	0.741	4807774	2.57		103	122947	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.333	-0.005	0.864	4670113	2.53		101	98504	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.335	-0.007	1.000	4946435	2.56			10531	
363.00 > 169.00	2.328	2.335	-0.007	1.000	1933812		2.56(1.13-3.40)		20438	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.346	-0.005	1.000	5687997	2.19			28544	
399.00 > 99.00	2.341	2.346	-0.005	1.000	1847781		3.08(1.50-4.49)		6889	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.869	5529570	2.43		103	78148	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.671	2.672	-0.001	1.000	1549124	2.35			45102	
D 12 M2-6:2FTS										
429.00 > 81.00	2.671	2.672	-0.001	0.991	899400	2.35		98.8	20841	
* 62 13C2-PFOA										
415.00 > 370.00	2.695	2.695	0.0		5042269	2.50			69178	
D 14 13C4 PFOA										
417.00 > 372.00	2.695	2.695	0.0	1.000	4754986	2.52		101	74531	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.695	2.697	-0.002	1.000	5479179	2.55			1995	
413.00 > 169.00	2.695	2.697	-0.002	1.000	2731487		2.01(0.84-2.52)		6729	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.703	2.703	0.0	1.000	5118411	2.45			49555	
449.00 > 99.00	2.703	2.703	0.0	1.000	1344486		3.81(1.94-5.82)		14152	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.068	-0.003	1.137	3900957	2.35		98.4	30995	
D 19 13C5 PFNA										
468.00 > 423.00	3.065	3.070	-0.005	1.137	4206881	2.52		101	69098	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.065	3.070	-0.005	1.000	4349012	2.39			13682	
499.00 > 99.00	3.065	3.070	-0.005	1.000	929853		4.68(2.31-6.93)		10185	
20 Perfluorononanoic acid										
463.00 > 419.00	3.072	3.072	0.0	1.002	4384621	2.61			6586	
463.00 > 169.00	3.072	3.072	0.0	1.002	1021043		4.29(1.90-5.69)		25043	
D 21 13C8 FOSA										
506.00 > 78.00	3.397	3.396	0.001	1.261	5679191	2.54		102	42851	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.397	3.397	0.0	1.000	5742102	2.56			54328	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.424	3.426	-0.002	1.000	1663512	2.48			30818	
D 26 M2-8:2FTS										
529.00 > 81.00	3.424	3.426	-0.002	1.271	1257938	2.43		102	30914	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.433	3.435	-0.002	1.000	3857119	2.57			20699	
513.00 > 169.00	3.433	3.435	-0.002	1.000	642231		6.01(2.36-7.09)		14683	
D 23 13C2 PFDA										
515.00 > 470.00	3.433	3.435	-0.002	1.274	3793489	2.60		104	78039	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.589	3.591	-0.002	1.332	2021939	2.63		105	30702	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.589	3.594	-0.005	1.000	2108804	2.61			12474	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.748	3.749	-0.001	1.000	3054904	2.75			64961	
599.00 > 99.00	3.748	3.749	-0.001	1.000	1042020		2.93(1.39-4.16)		31253	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.758	3.759	-0.001	1.395	2324977	2.65		106	11021	
D 30 13C2 PFUnA										
565.00 > 520.00	3.758	3.768	-0.010	1.395	3383068	2.59		104	54133	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.758	3.768	-0.010	1.000	2182165	2.51			31564	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.769	3.768	0.001	1.003	2649764	2.27			13982	
563.00 > 169.00	3.769	3.768	0.001	1.003	676794		3.92(2.12-6.36)		27181	
D 36 13C2 PFDoA										
615.00 > 570.00	4.056	4.066	-0.010	1.505	3730503	2.51		101	31020	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.056	4.068	-0.012	1.000	4172212	2.67			3940	
613.00 > 169.00	4.056	4.068	-0.012	1.000	959658		4.35(2.13-6.40)		18022	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.329	-0.011	1.000	4483777	2.73			3252	
663.00 > 169.00	4.318	4.329	-0.011	1.000	1408477		3.18(1.25-3.76)		18234	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.564	4.568	-0.004	1.694	4810393	2.65		106	33667	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.564	4.571	-0.007	1.000	1103419	2.31			12823	
713.00 > 219.00	4.554	4.571	-0.017	0.998	846648		1.30(0.71-2.13)		16046	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.981	4.987	-0.006	1.848	7683636	2.59		103	21190	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.981	4.989	-0.008	1.000	7138289	NC			2182	
813.00 > 169.00	4.981	4.989	-0.008	1.000	1127804		6.33(2.86-8.58)		8335	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.344	5.354	-0.010	1.000	7223481	NC			2062	
913.00 > 169.00	5.344	5.354	-0.010	1.000	891804		8.10(3.83-11.48)		5703	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00011 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:44:35 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_010.d

Injection Date: 21-Mar-2018 19:26:58 Instrument ID: A8_N

Lims ID: ICV Full

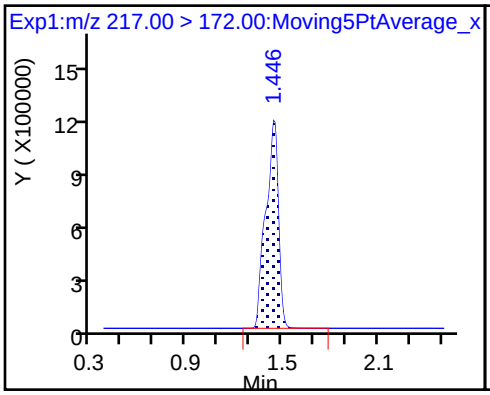
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 10

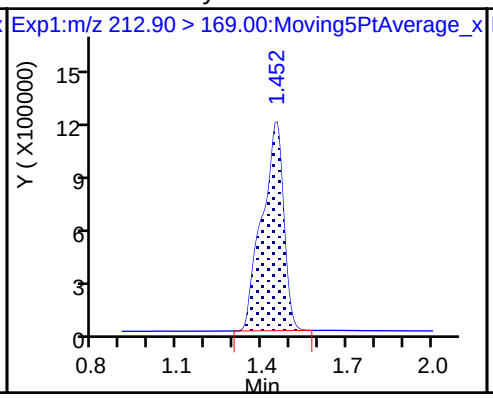
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

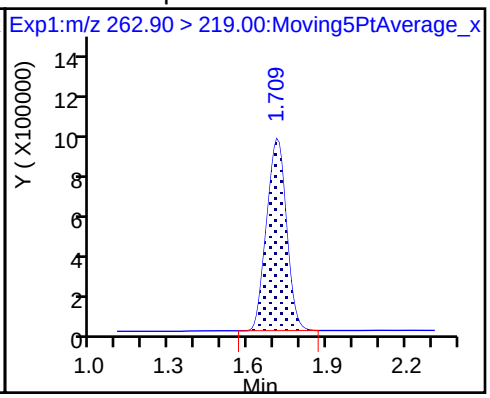
D 1 13C4 PFBA



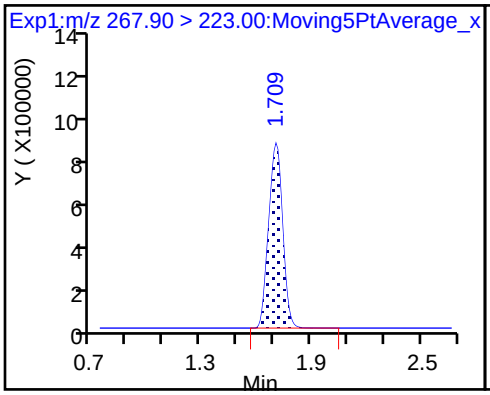
2 Perfluorobutyric acid



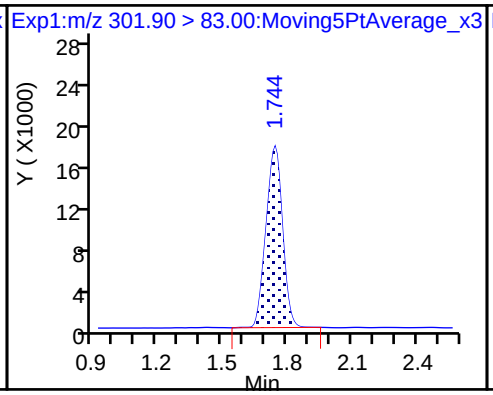
4 Perfluoropentanoic acid



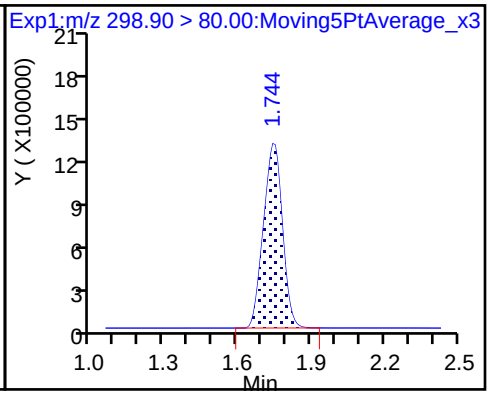
D 3 13C5-PFPeA



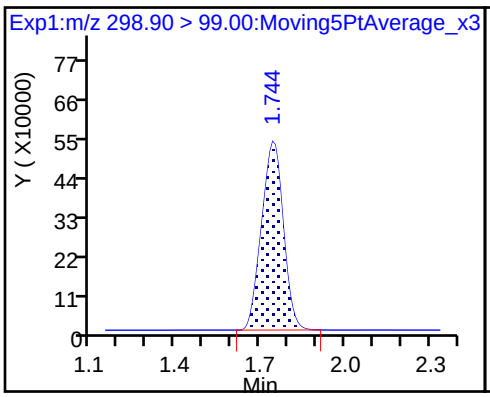
D 47 13C3-PFBS



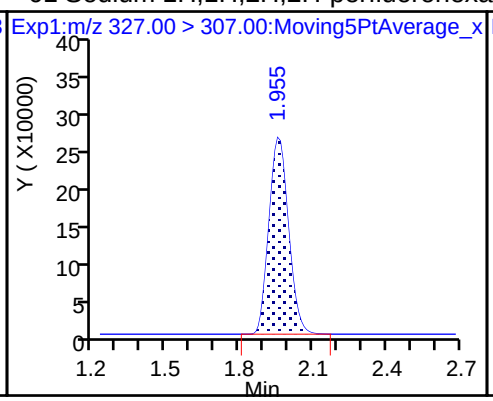
5 Perfluorobutanesulfonic acid



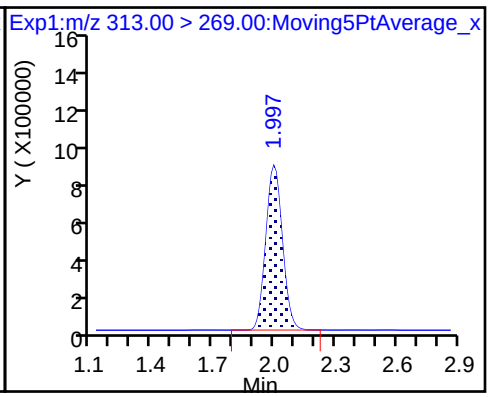
5 Perfluorobutanesulfonic acid



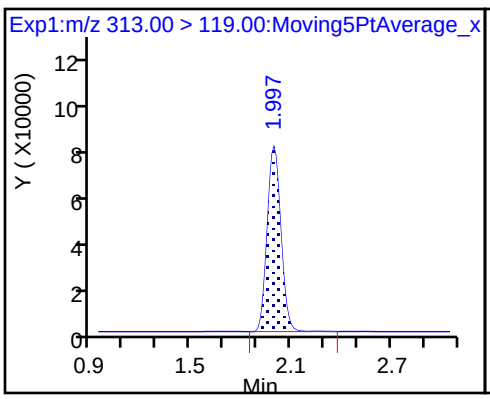
61 Sodium 1H,1H,2H,2H-perfluorohexane



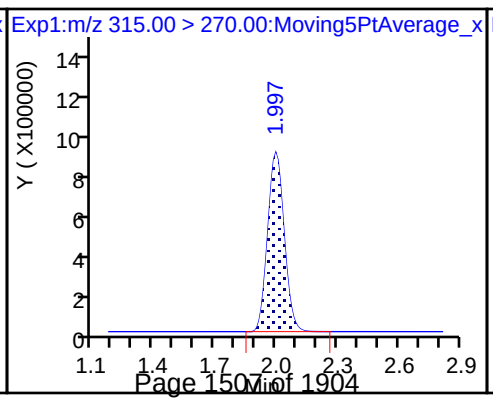
6 Perfluorohexanoic acid



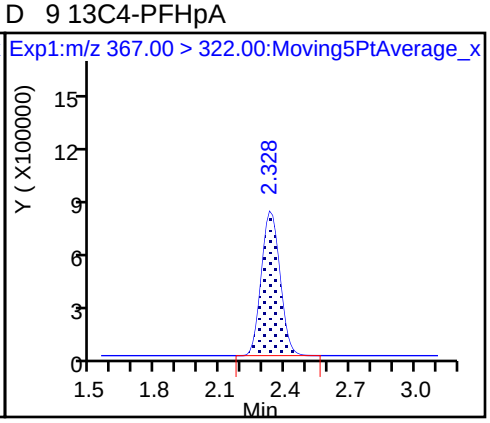
6 Perfluorohexanoic acid



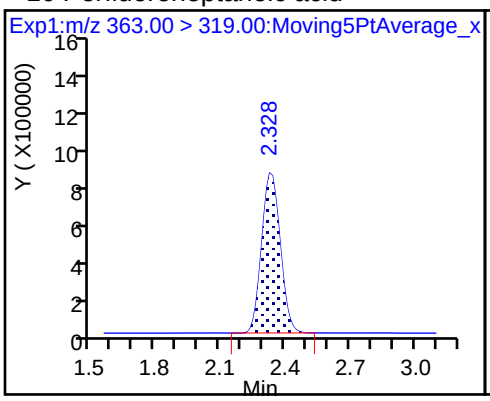
D 7 13C2 PFHxA



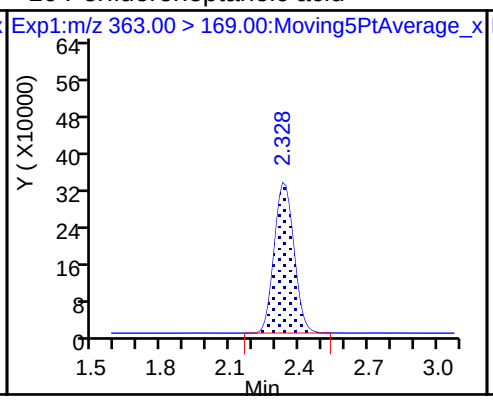
D 9 13C4-PFHpA



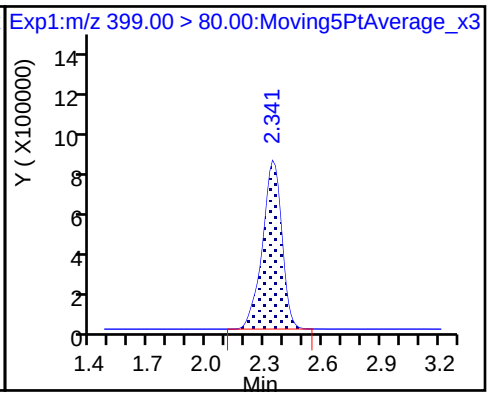
10 Perfluoroheptanoic acid



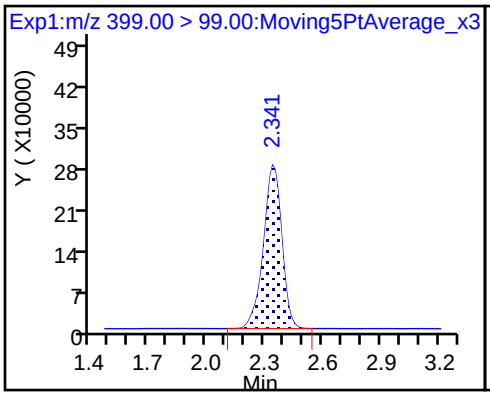
10 Perfluoroheptanoic acid



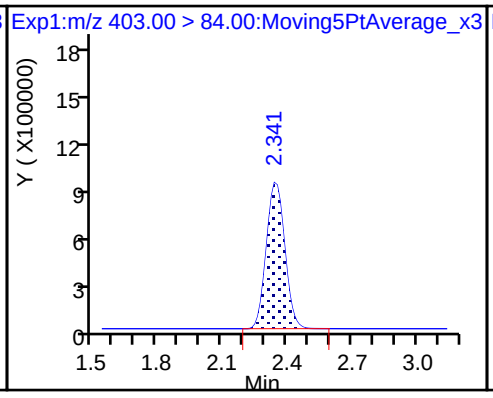
8 Perfluorohexanesulfonic acid



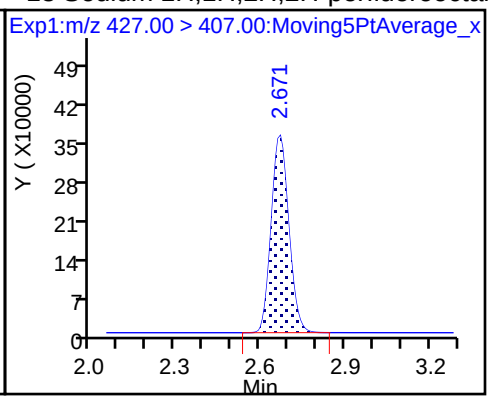
8 Perfluorohexanesulfonic acid



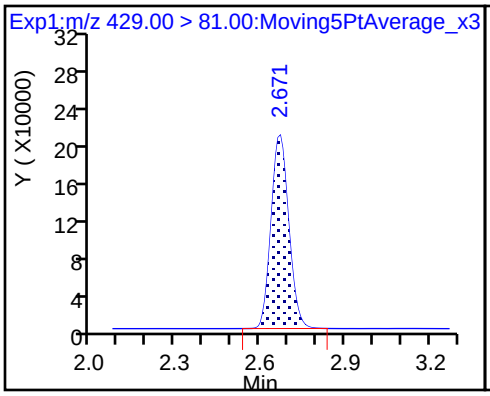
D 11 18O2 PFHxS



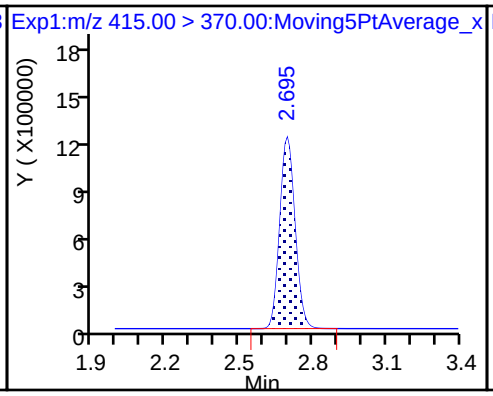
13 Sodium 1H,1H,2H,2H-perfluorooctane



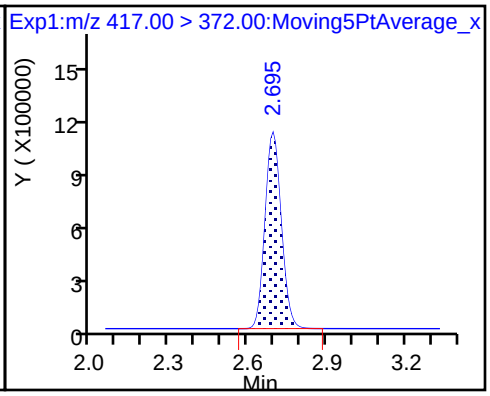
D 12 M2-6:2FTS



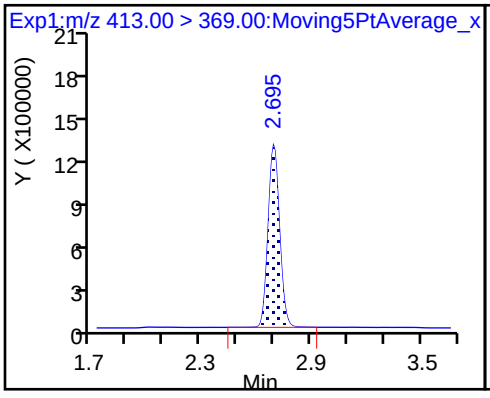
* 62 13C2-PFOA



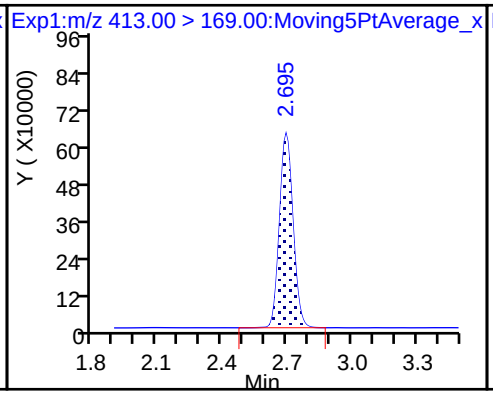
D 14 13C4 PFOA



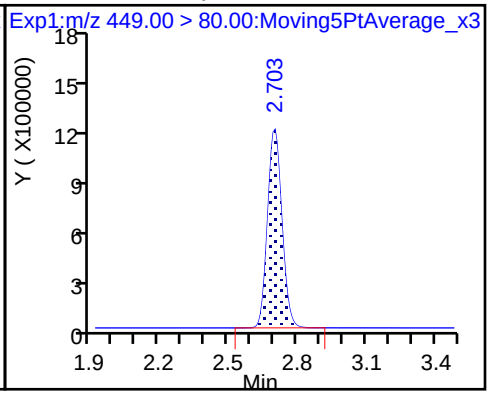
15 Perfluorooctanoic acid



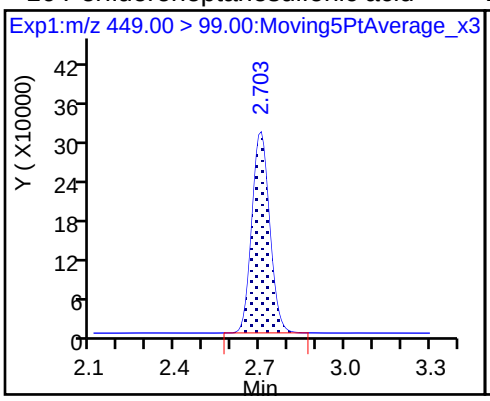
15 Perfluorooctanoic acid



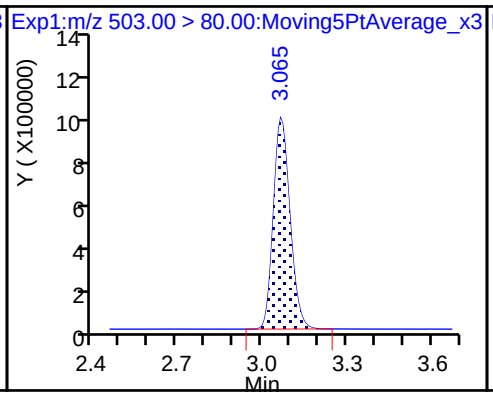
16 Perfluoroheptanesulfonic acid



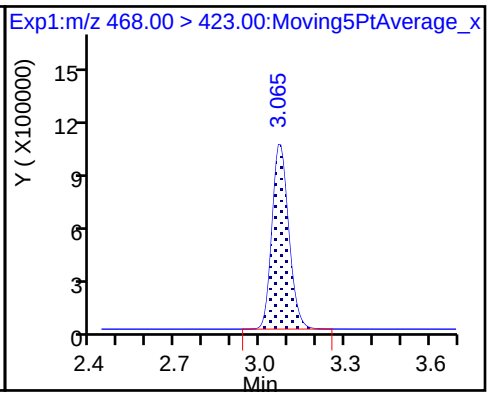
16 Perfluoroheptanesulfonic acid



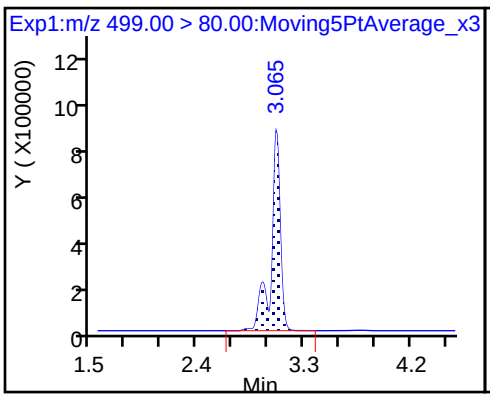
D 18 13C4 PFOS



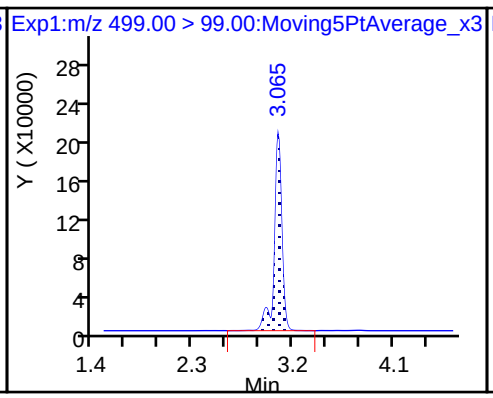
D 19 13C5 PFNA



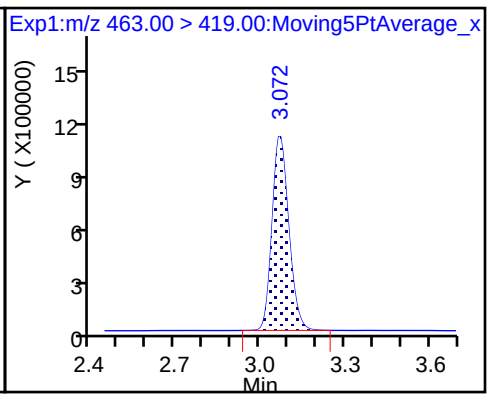
17 Perfluorooctane sulfonic acid



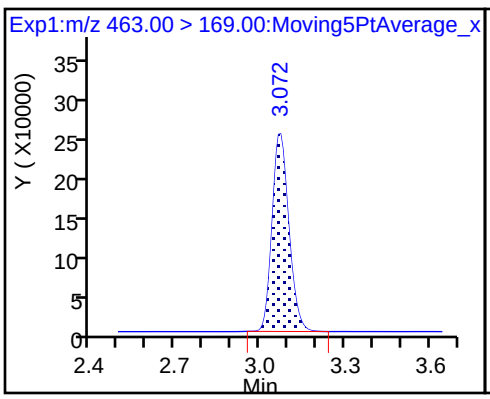
17 Perfluorooctane sulfonic acid



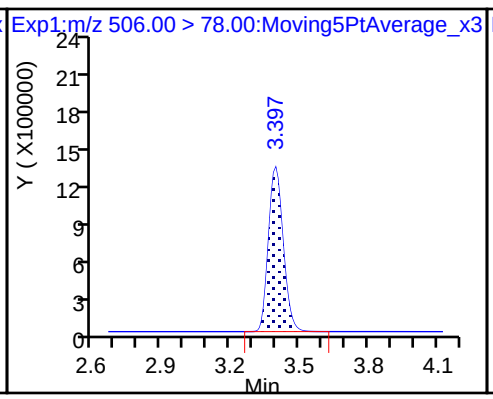
20 Perfluorononanoic acid



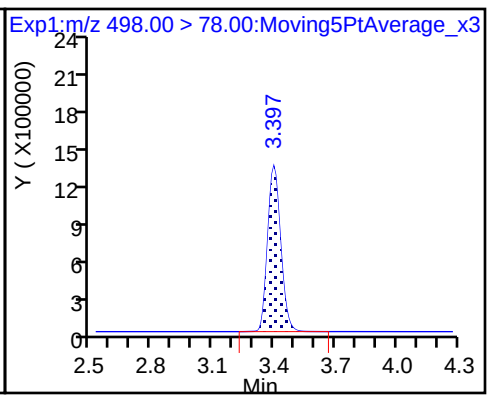
20 Perfluorononanoic acid



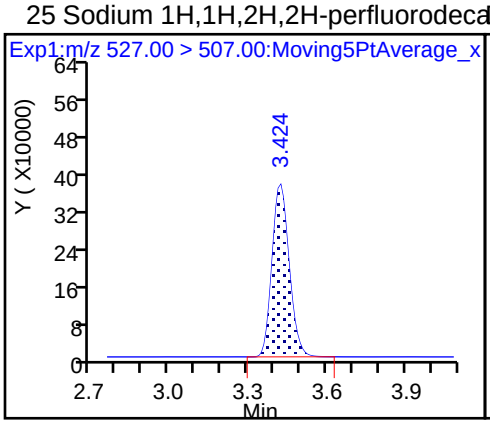
D 21 13C8 FOSA



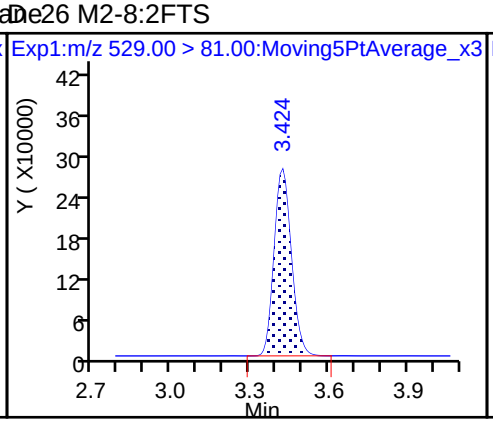
22 Perfluorooctane Sulfonamide



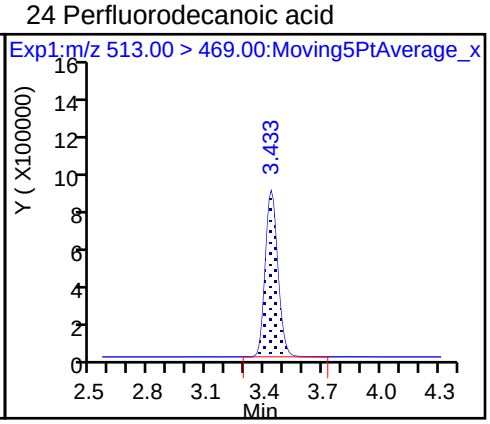
25 Sodium 1H,1H,2H,2H-perfluorodecane



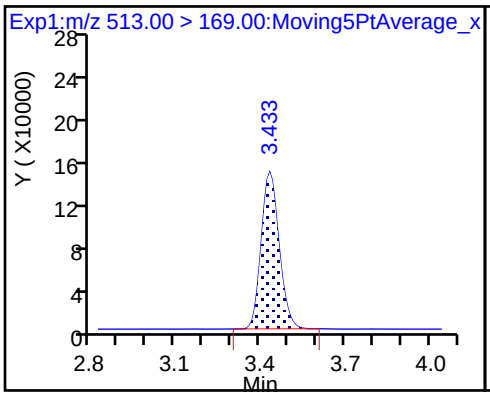
D 26 M2-8:2FTS



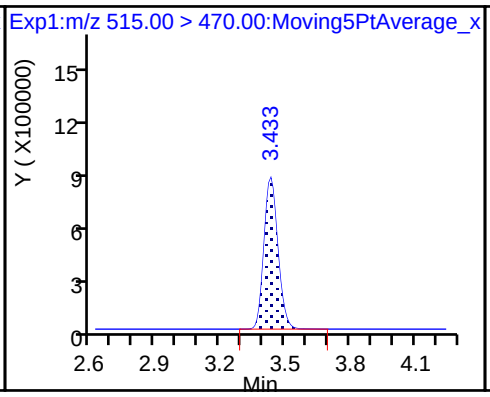
24 Perfluorodecanoic acid



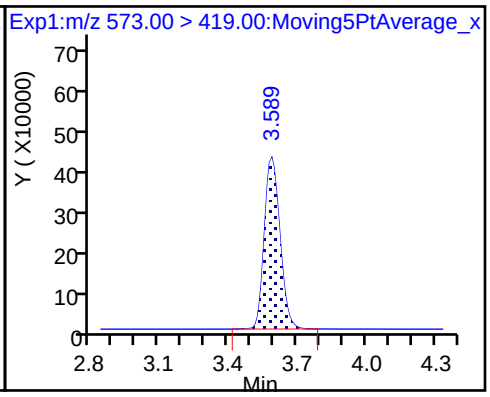
24 Perfluorodecanoic acid



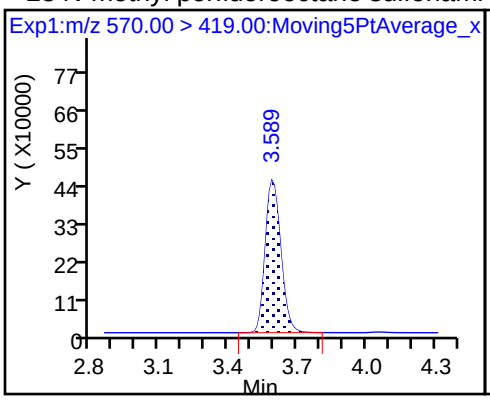
D 23 13C2 PFDA



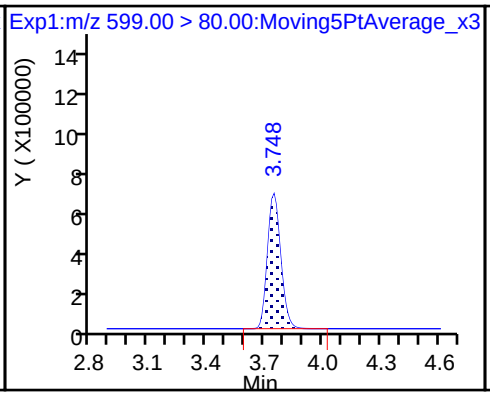
D 27 d3-NMeFOSAA



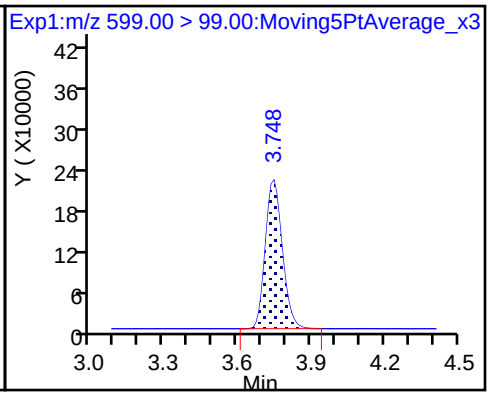
28 N-methyl perfluorooctane sulfonami



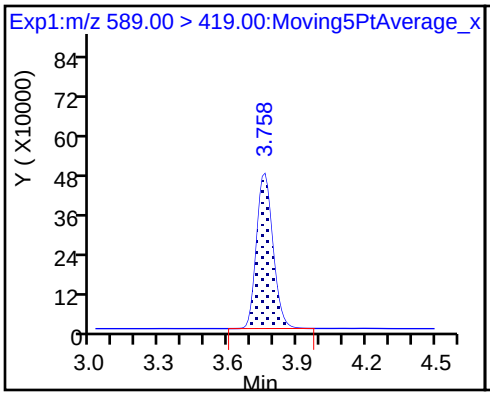
29 Perfluorodecane Sulfonic acid



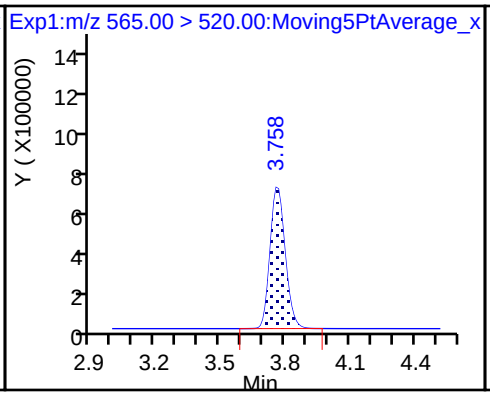
29 Perfluorodecane Sulfonic acid



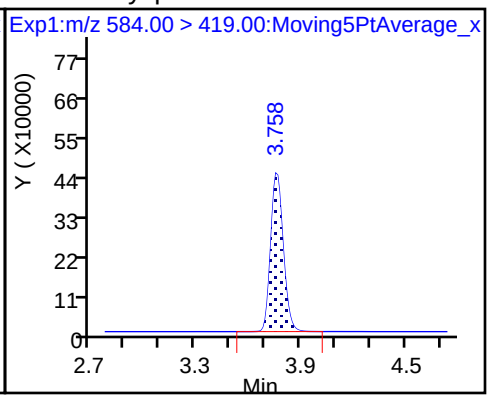
D 32 d5-NEtFOSAA



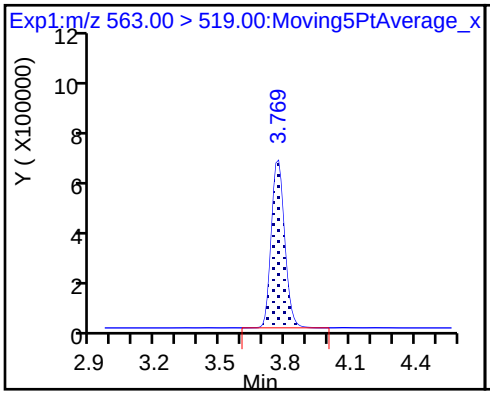
D 30 13C2 PFUnA



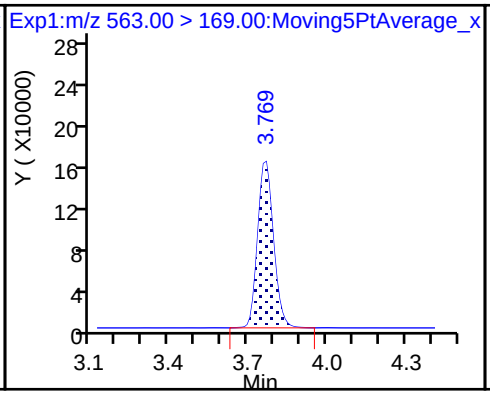
33 N-ethyl perfluorooctane sulfonamid



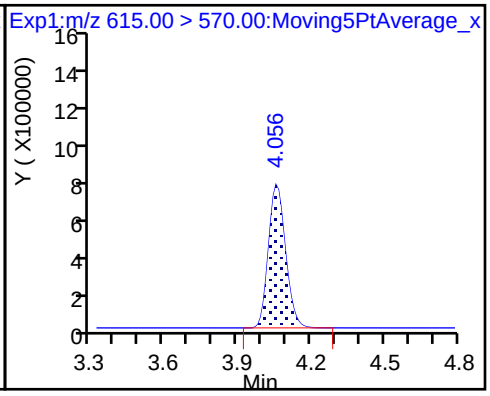
31 Perfluoroundecanoic acid



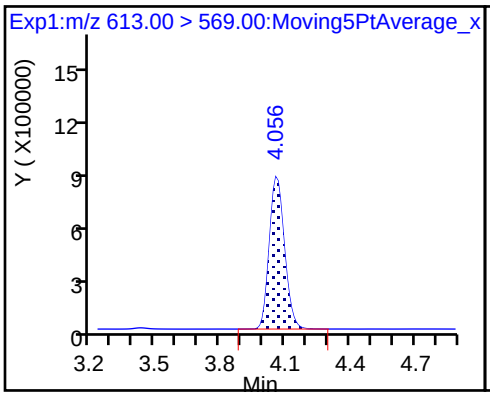
31 Perfluoroundecanoic acid



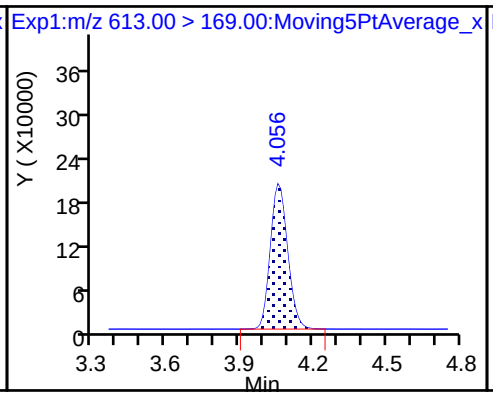
D 36 13C2 PFDoA



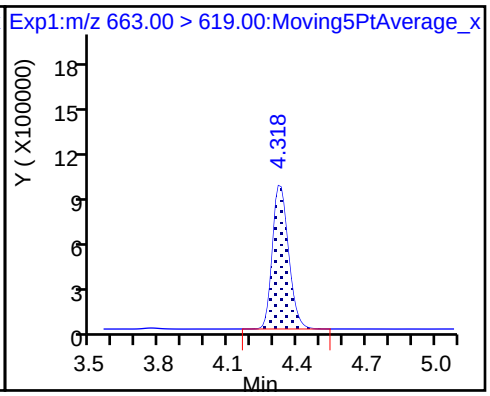
37 Perfluorododecanoic acid



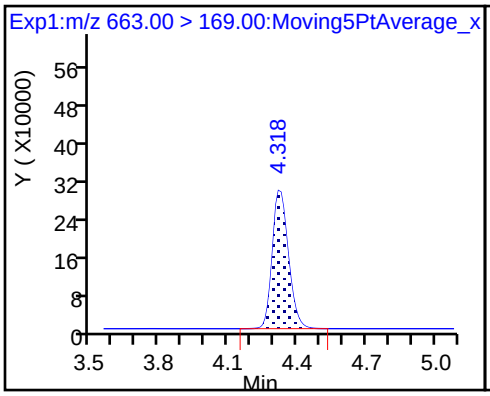
37 Perfluorododecanoic acid



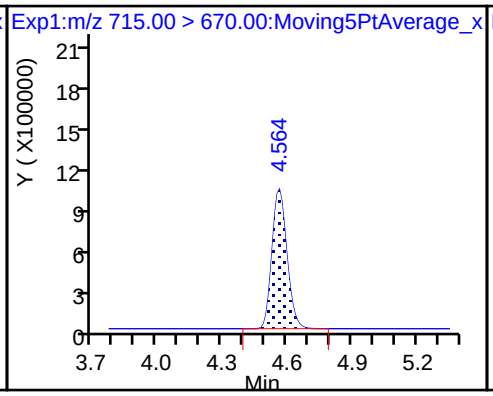
41 Perfluorotridecanoic acid



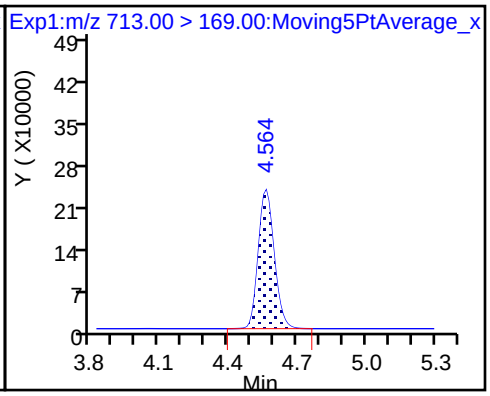
41 Perfluorotridecanoic acid



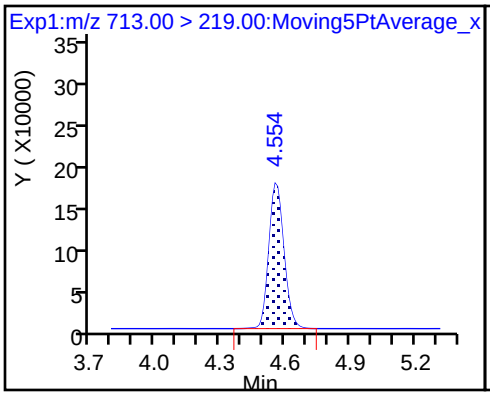
D 43 13C2-PFTeDA



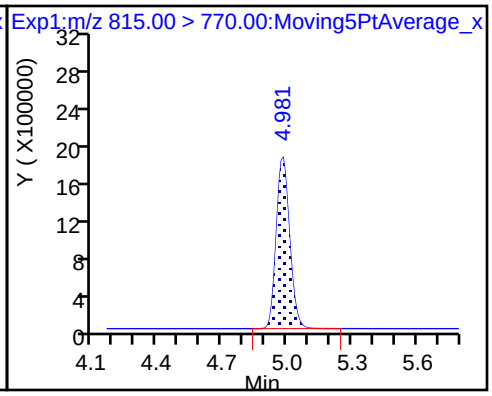
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVL 320-214716/2 Calibration Date: 03/24/2018 19:11

Instrument ID: A8_N Calib Start Date: 03/21/2018 18:24

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/21/2018 19:11

Lab File ID: 2018.03.24LLAA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9422	0.9491		0.0504	0.0500	0.7	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.128	1.198		0.0531	0.0500	6.2	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.70	78.05		0.0444	0.0442	0.4	30.0
4:2 FTS	AveID	16.15	18.41		0.400	0.0467	14.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.022	1.001		0.0490	0.0500	-2.1	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.034	1.058		0.0512	0.0500	2.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.261		0.0516	0.0455	13.3	30.0
6:2FTS	AveID	1.744	8.682		0.236	0.0474	398.0*	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.130	1.190		0.0527	0.0500	5.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.281	1.299		0.0483	0.0476	1.4	30.0
Perfluorononanoic acid (PFNA)	AveID	0.998	1.021		0.0512	0.0500	2.3	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.114	1.066		0.0444	0.0464	-4.3	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9858	1.020		0.0517	0.0500	3.5	30.0
8:2FTS	AveID	1.276	1.172		0.400	0.0479	-8.1	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9881	1.058		0.0535	0.0500	7.1	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.001	0.9524		0.400	0.0500	-4.8	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6800	0.7009		0.0497	0.0482	3.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9342	1.000		0.0535	0.0500	7.1	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8622	0.8874		0.0515	0.0500	2.9	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.046	0.9863		0.0471	0.0500	-5.7	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.101	1.122		0.0510	0.0500	1.9	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2478	0.2417		0.0488	0.0500	-2.4	30.0
13C4 PFBA	Ave	1.266	1.248		2.46	2.50	-1.4	30.0
13C5-PFPeA	Ave	0.8399	0.8255		2.46	2.50	-1.7	30.0
13C3-PFBS	Ave	0.0192	0.0195		2.36	2.33	1.5	30.0
13C2 PFHxA	Ave	0.9288	0.9269		2.49	2.50	-0.2	30.0
13C4-PFHpA	Ave	0.9164	0.9391		2.56	2.50	2.5	30.0
18O2 PFHxS	Ave	1.130	1.175		2.46	2.37	3.9	30.0
M2-6:2FTS	Ave	0.1900	0.2211		2.76	2.38	16.4	30.0
13C4 PFOA	Ave	0.9374	0.9554		2.55	2.50	1.9	30.0
13C4 PFOS	Ave	0.8225	0.8120		2.36	2.39	-1.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVL 320-214716/2 Calibration Date: 03/24/2018 19:11

Instrument ID: A8_N Calib Start Date: 03/21/2018 18:24

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/21/2018 19:11

Lab File ID: 2018.03.24LLAA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.8266	0.7894		2.39	2.50	-4.5	30.0
13C8 FOSA	Ave	1.109	1.129		2.54	2.50	1.8	30.0
M2-8:2FTS	Ave	0.2565	0.2719		2.54	2.40	6.0	30.0
13C2 PFDA	Ave	0.7245	0.7116		2.46	2.50	-1.8	30.0
d3-NMeFOSAA	Ave	0.3814	0.3864		2.53	2.50	1.3	30.0
d5-NEtFOSAA	Ave	0.4345	0.4113		2.37	2.50	-5.3	30.0
13C2 PFUnA	Ave	0.6482	0.5692		2.20	2.50	-12.2	30.0
13C2 PFDoA	Ave	0.7355	0.6253		2.13	2.50	-15.0	30.0
13C2-PFTeDA	Ave	0.8983	0.7988		2.22	2.50	-11.1	30.0
13C2-PFHxDA	Ave	1.473	1.331		2.26	2.50	-9.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_005.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 24-Mar-2018 19:11:10 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:01 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:45:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.459	1.459	0.0	1.000	119857	0.0504		101	44.5	
D 1 13C4 PFBA										
217.00 > 172.00	1.459	1.459	0.0	0.538	6314583	2.46		98.6	120858	
D 3 13C5-PFPeA										
267.90 > 223.00	1.718	1.727	-0.009	0.633	4176119	2.46		98.3	132635	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.727	1.727	0.0	1.005	100025	0.0531		106	43.0	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.762	-0.009	0.646	91555	2.36		102	536	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.762	1.762	0.0	1.005	135849	0.0444		100	601	
298.90 > 99.00	1.762	1.762	0.0	1.005	58148		2.34(1.25-3.74)		273	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.976	1.976	0.0	1.000	33859	0.0532		114	2131	
D 60 M2-4:2FTS										
329.00 > 81.00	1.976	1.987	-0.011	0.729	721184	NC			7767	
D 7 13C2 PFHxA										
315.00 > 270.00	2.008	2.019	-0.011	0.740	4689309	2.49		99.8	104752	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.008	2.019	-0.011	1.000	93869	0.0490		97.9	88.7	
313.00 > 119.00	2.008	2.019	-0.011	1.000	7905		11.87(5.03-15.10)		69.8	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.354	2.354	0.0	1.000	100576	0.0512		102	72.6	
363.00 > 169.00	2.354	2.354	0.0	1.000	40912		2.46(1.13-3.40)		113	
D 9 13C4-PFHpA										
367.00 > 322.00	2.354	2.368	-0.014	0.868	4751056	2.56		102	73516	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.368	2.368	0.0	1.000	136390	0.0516		113	399	
399.00 > 99.00	2.368	2.368	0.0	1.000	41602		3.28(1.50-4.49)		119	
D 11 18O2 PFHxS										
403.00 > 84.00	2.368	2.380	-0.012	0.873	5621459	2.46		104	75156	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.689	2.689	0.0	1.000	184128	0.2360		498	181	
D 12 M2-6:2FTS										
429.00 > 81.00	2.689	2.704	-0.015	0.991	1062586	2.76		116	24858	
* 62 13C2-PFOA										
415.00 > 370.00	2.713	2.713	0.001		5059005	2.50			74591	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.713	2.713	0.001	1.000	115067	0.0527		105	33.3	
413.00 > 169.00	2.713	2.713	0.001	1.000	61572		1.87(0.84-2.52)		230	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.720	2.720	0.0	1.000	101582	0.0483		101	2615	
449.00 > 99.00	2.713	2.720	-0.007	0.997	30391		3.34(1.94-5.82)		364	
D 14 13C4 PFOA										
417.00 > 372.00	2.713	2.728	-0.015	1.000	4833101	2.55		102	75644	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.080	3.088	-0.008	1.000	81298	0.0444		95.7	413	
499.00 > 99.00	3.080	3.088	-0.008	1.000	20987		3.87(2.31-6.93)		157	
20 Perfluorononanoic acid										
463.00 > 419.00	3.080	3.088	-0.008	0.997	81541	0.0512		102	77.9	
463.00 > 169.00	3.088	3.088	0.0	1.000	18553		4.40(1.90-5.69)		442	
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.112	-0.024	1.138	3993467	2.39		95.5	64129	
D 18 13C4 PFOS										
503.00 > 80.00	3.080	3.112	-0.032	1.136	3927098	2.36		98.7	53317	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.408	3.417	-0.009	1.000	116510	0.0517		103	5263	
D 21 13C8 FOSA										
506.00 > 78.00	3.408	3.418	-0.010	1.256	5709941	2.54		102	51482	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.435	3.444	-0.009	1.000	30900	0.0440		91.9	267	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.444	3.453	-0.009	1.000	76166	0.0535		107	388	
513.00 > 169.00	3.444	3.453	-0.009	1.000	12321		6.18(2.36-7.09)		295	
D 26 M2-8:2FTS										
529.00 > 81.00	3.435	3.464	-0.029	1.266	1317775	2.54		106	26638	
D 23 13C2 PFDA										
515.00 > 470.00	3.444	3.473	-0.029	1.270	3600030	2.46		98.2	38603	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.611	3.620	-0.009	1.003	37232	0.0476		95.2	309	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.601	3.633	-0.032	1.327	1954646	2.53		101	38312	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.759	3.769	-0.010	1.000	55510	0.0497		103	1996	
599.00 > 99.00	3.759	3.769	-0.010	1.000	20526		2.70(1.39-4.16)		439	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.779	3.789	-0.010	1.003	41622	0.0535		107	1641	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.779	3.789	-0.010	1.000	51103	0.0515		103	231	
563.00 > 169.00	3.779	3.789	-0.010	1.000	11634		4.39(2.12-6.36)		616	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.769	3.804	-0.035	1.389	2080575	2.37		94.7	8236	
D 30 13C2 PFUnA										
565.00 > 520.00	3.779	3.815	-0.036	1.393	2879501	2.20		87.8	60254	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.078	4.077	0.001	1.000	62396	0.0471		94.3	47.3	
613.00 > 169.00	4.068	4.077	-0.009	0.997	14886		4.19(2.13-6.40)		258	
D 36 13C2 PFDoA										
615.00 > 570.00	4.078	4.105	-0.027	1.503	3163299	2.13		85.0	17618	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.339	4.350	-0.011	1.000	70994	0.0510		102	34.2	
663.00 > 169.00	4.339	4.350	-0.011	1.000	23771		2.99(1.25-3.76)		295	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.575	4.585	-0.010	0.998	19537	0.0488		97.6	262	
713.00 > 219.00	4.575	4.585	-0.010	0.998	14405		1.36(0.71-2.13)		302	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.585	4.613	-0.028	1.690	4041051	2.22		88.9	20928	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.008	5.008	0.0	1.000	177716	NC			46.0	
813.00 > 169.00	5.008	5.008	0.0	1.000	30850		5.76(2.86-8.58)		305	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.008	5.049	-0.041	1.846	6732171	2.26		90.4	14334	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.377	5.371	0.006	1.000	129697	NC			28.9	
913.00 > 169.00	5.371	5.371	0.0	0.999	16749		7.74(3.83-11.48)		245	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL2_00004 Amount Added: 1.00 Units: mL

Report Date: 25-Mar-2018 10:51:03 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_005.d

Injection Date: 24-Mar-2018 19:11:10 Instrument ID: A8_N

Lims ID: CCVL

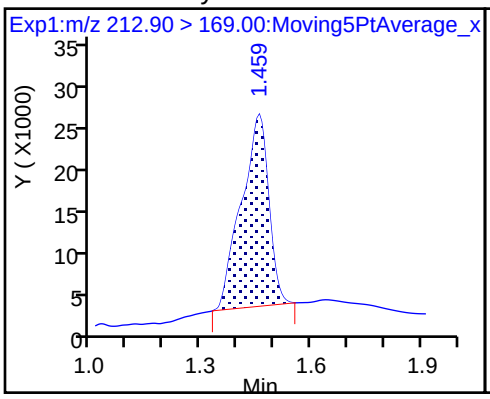
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2

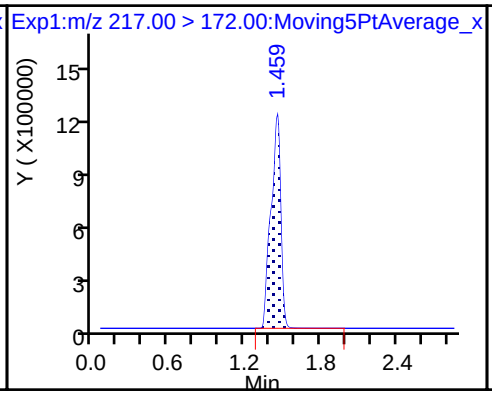
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

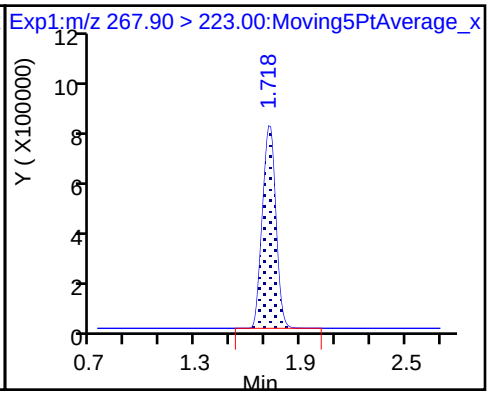
2 Perfluorobutyric acid



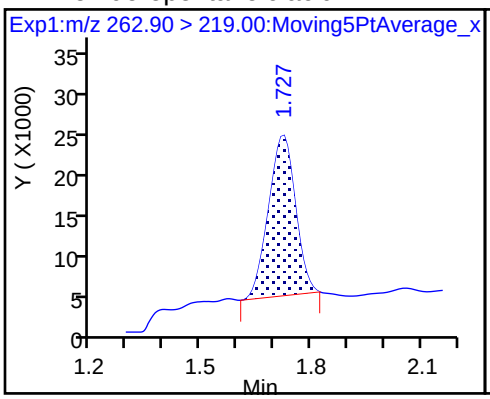
D 1 13C4 PFBA



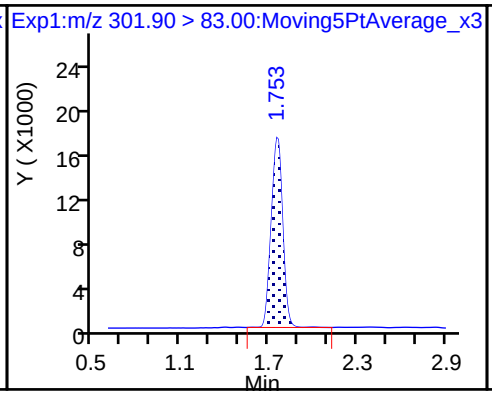
D 3 13C5-PFPeA



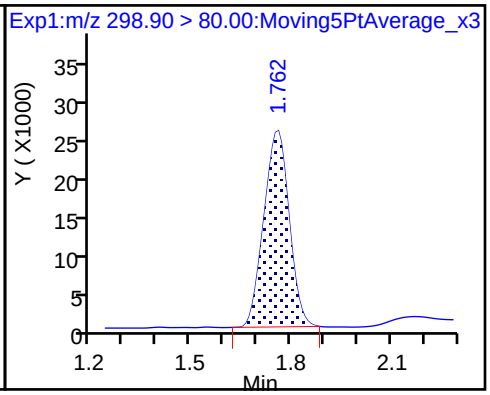
4 Perfluoropentanoic acid



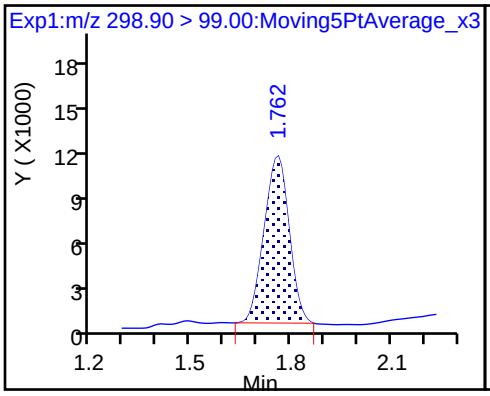
D 47 13C3-PFBS



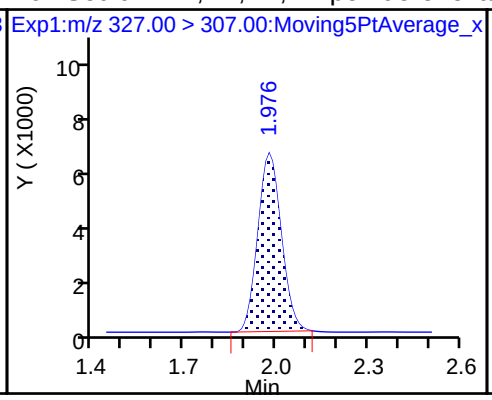
5 Perfluorobutanesulfonic acid



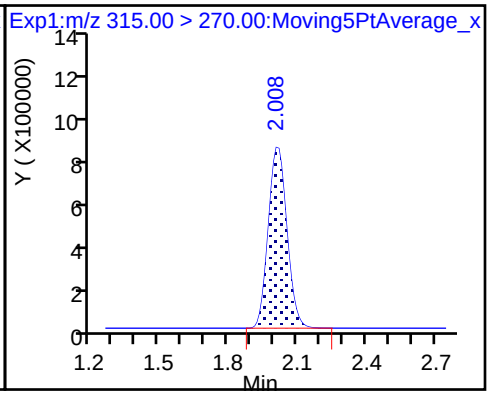
5 Perfluorobutanesulfonic acid



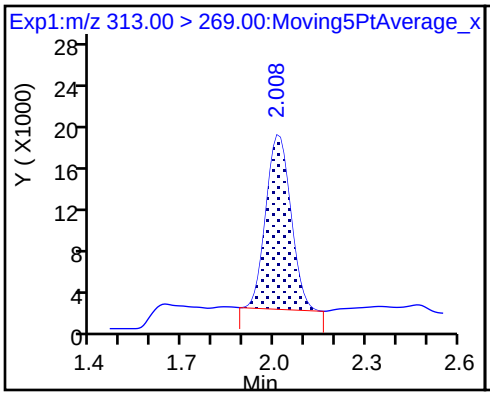
61 Sodium 1H,1H,2H,2H-perfluorohexa



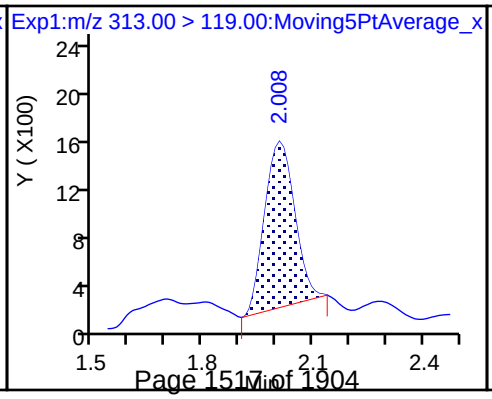
De 7 13C2 PFHxA



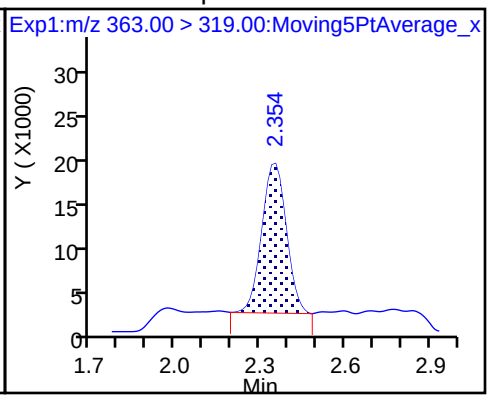
6 Perfluorohexanoic acid



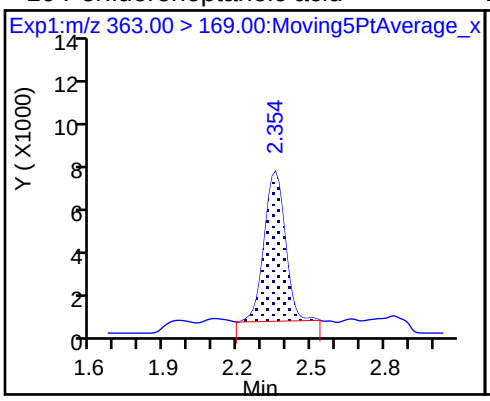
6 Perfluorohexanoic acid



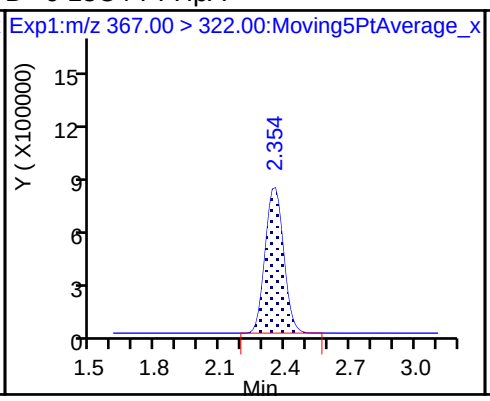
10 Perfluoroheptanoic acid



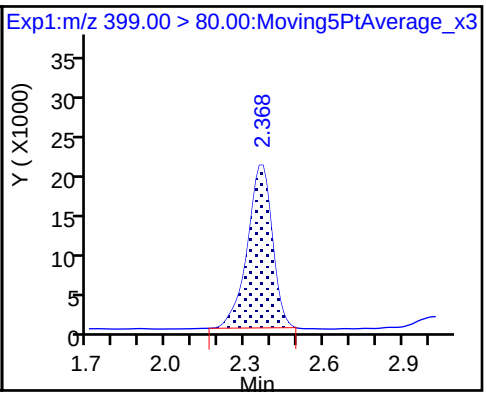
10 Perfluoroheptanoic acid



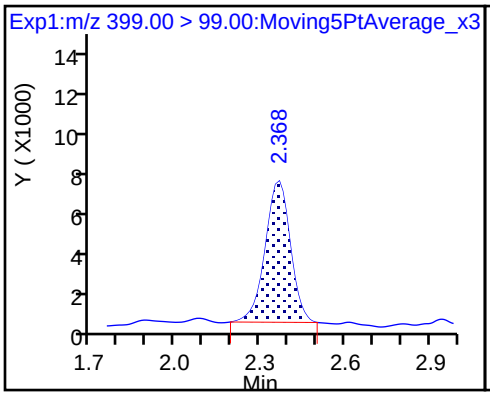
D 9 13C4-PFHpA



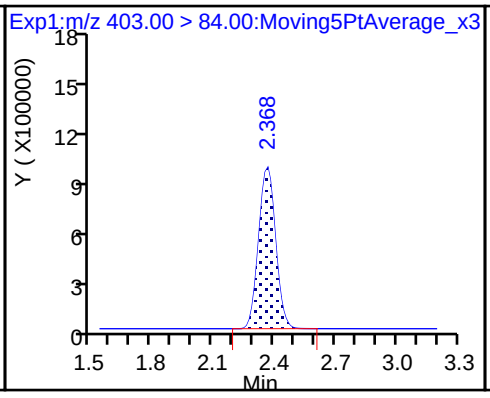
8 Perfluorohexanesulfonic acid



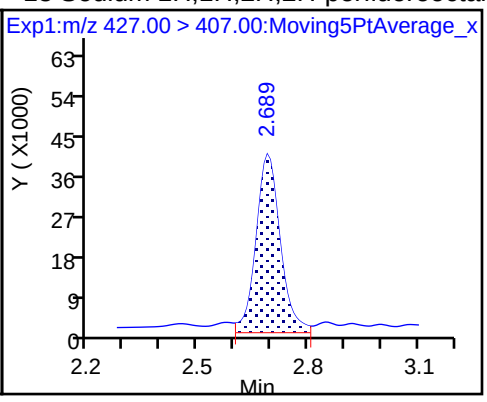
8 Perfluorohexanesulfonic acid



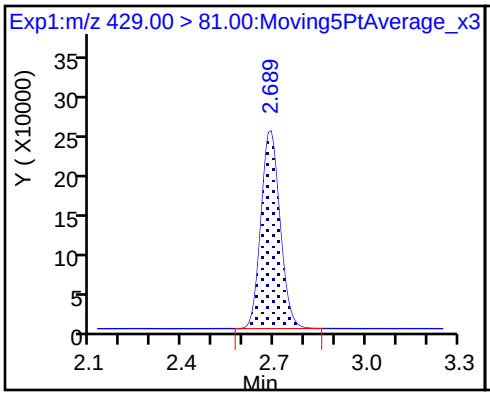
D 11 18O2 PFHxS



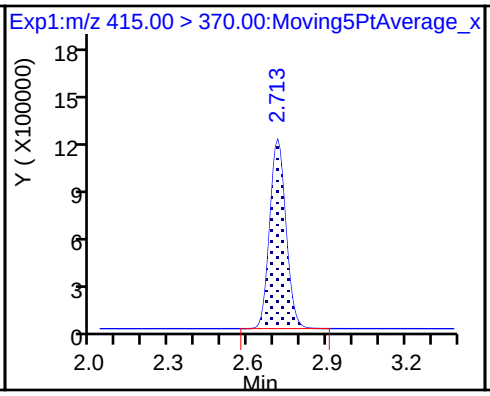
13 Sodium 1H,1H,2H,2H-perfluorooctane



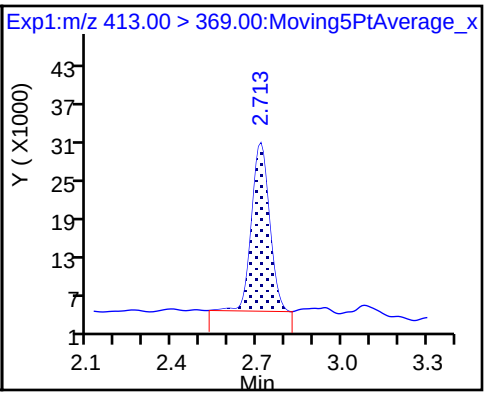
D 12 M2-6:2FTS



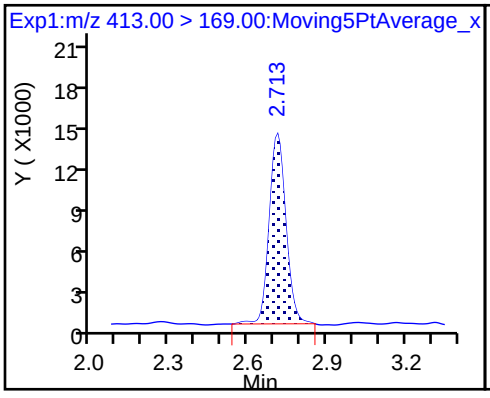
* 62 13C2-PFOA



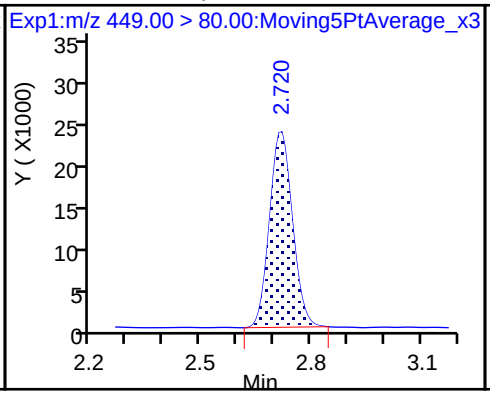
15 Perfluorooctanoic acid



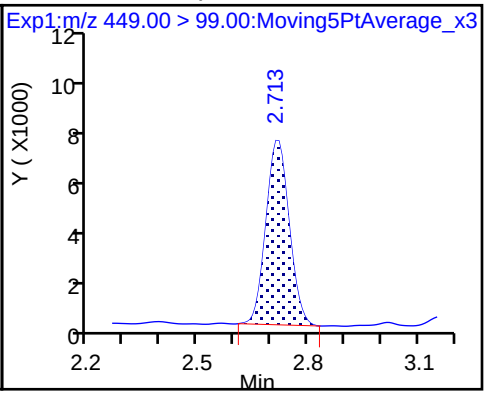
15 Perfluorooctanoic acid



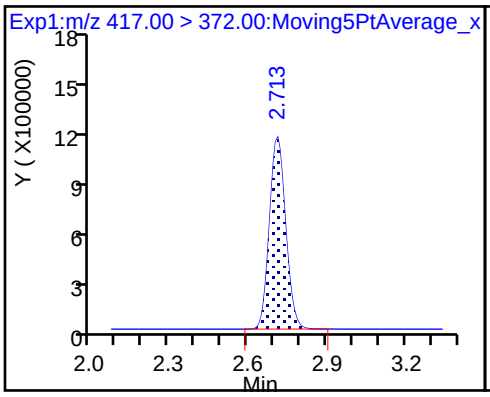
16 Perfluoroheptanesulfonic acid



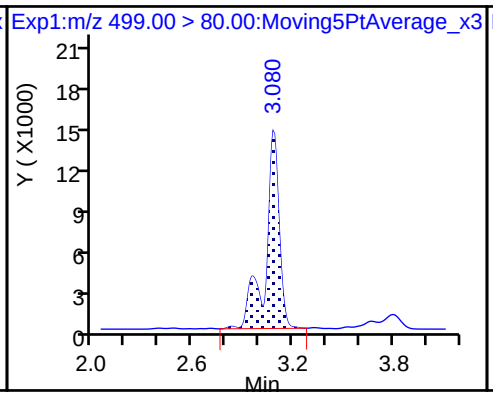
16 Perfluoroheptanesulfonic acid



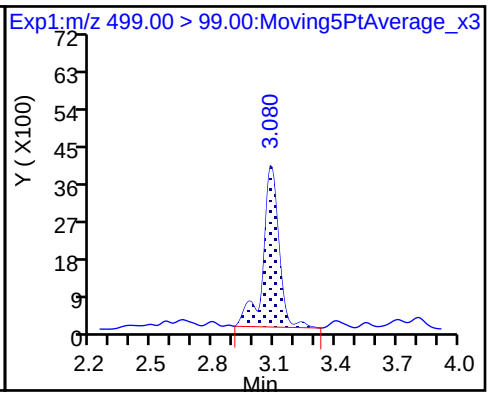
D 14 13C4 PFOA



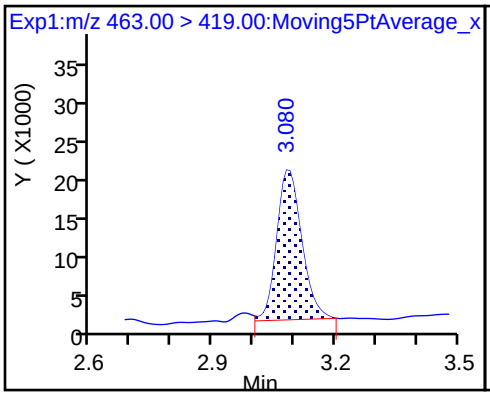
17 Perfluorooctane sulfonic acid



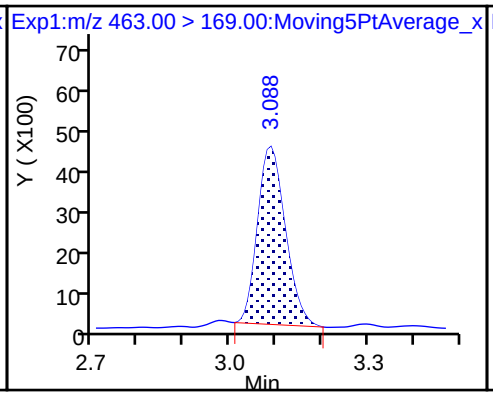
17 Perfluorooctane sulfonic acid



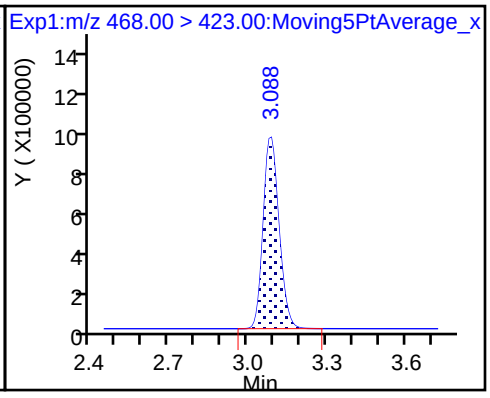
20 Perfluorononanoic acid



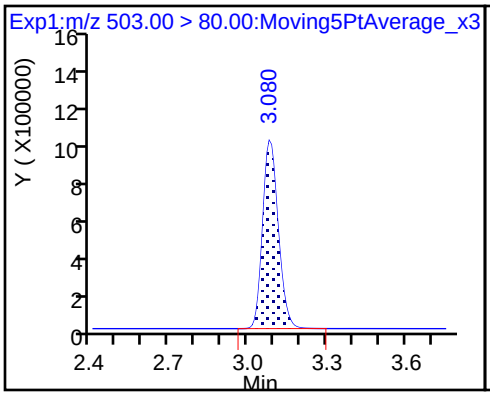
20 Perfluorononanoic acid



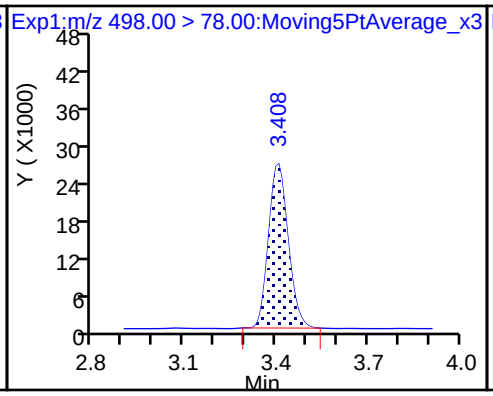
D 19 13C5 PFNA



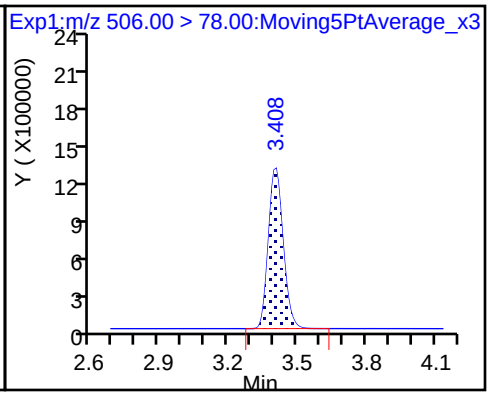
D 18 13C4 PFOS



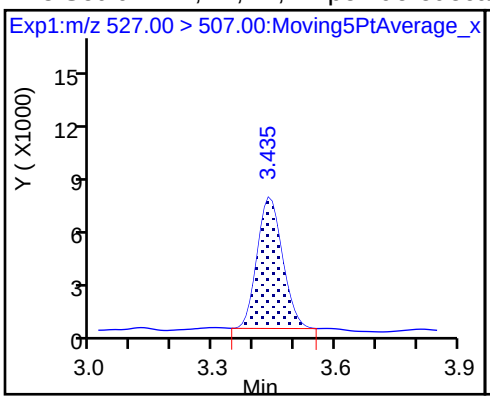
22 Perfluorooctane Sulfonamide



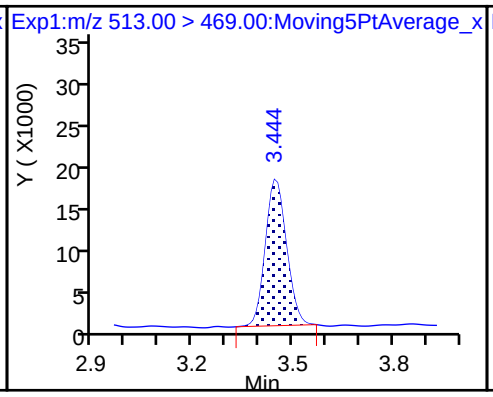
D 21 13C8 FOSA



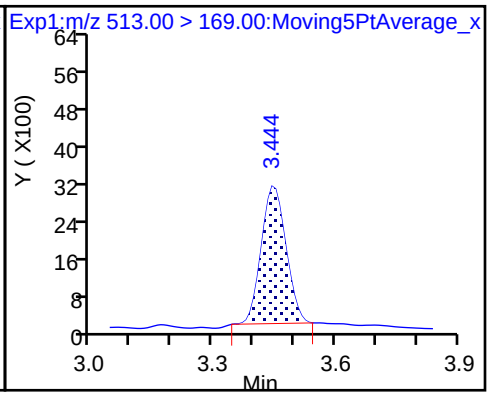
25 Sodium 1H,1H,2H,2H-perfluorodecane



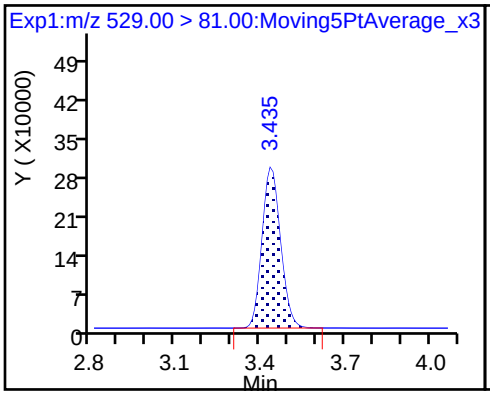
24 Perfluorodecanoic acid



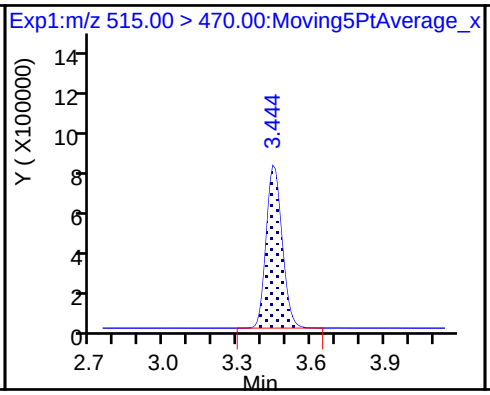
24 Perfluorodecanoic acid



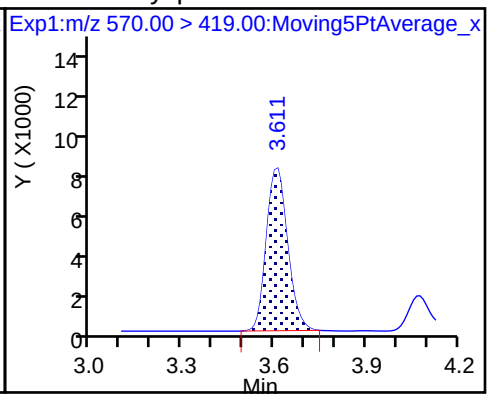
D 26 M2-8:2FTS



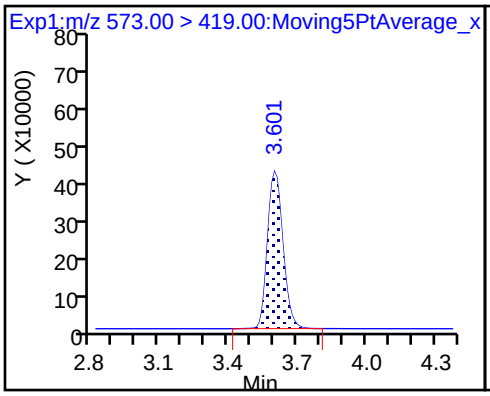
D 23 13C2 PFDA



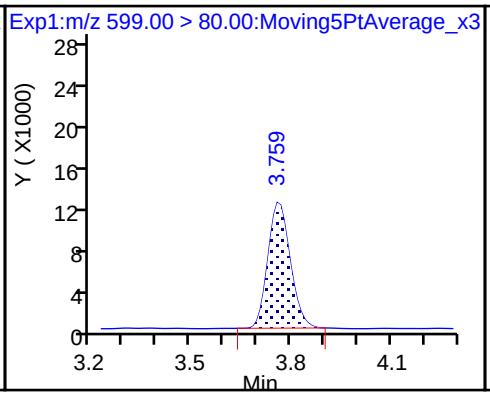
28 N-methyl perfluorooctane sulfonami



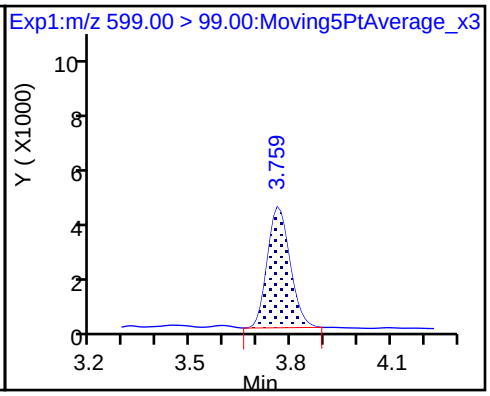
D 27 d3-NMeFOSAA



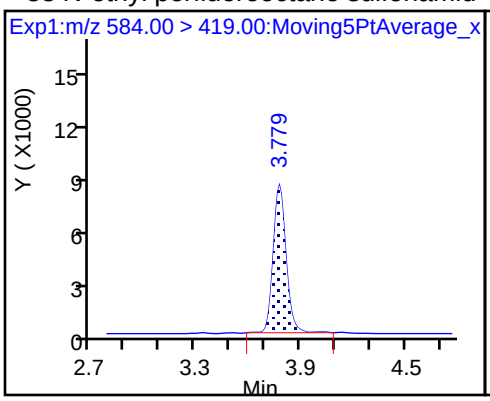
29 Perfluorodecane Sulfonic acid



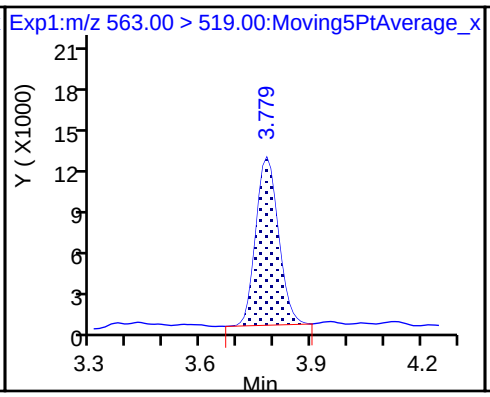
29 Perfluorodecane Sulfonic acid



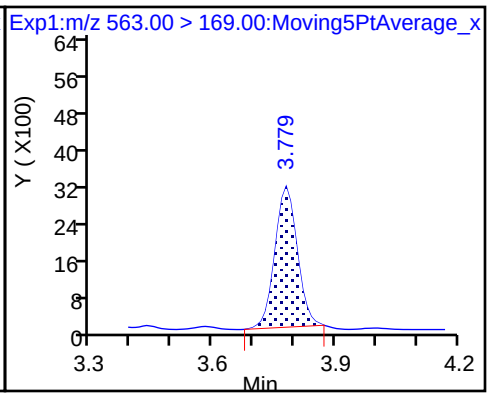
33 N-ethyl perfluorooctane sulfonamid



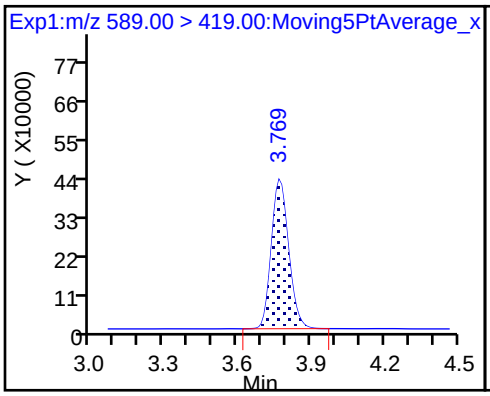
31 Perfluoroundecanoic acid



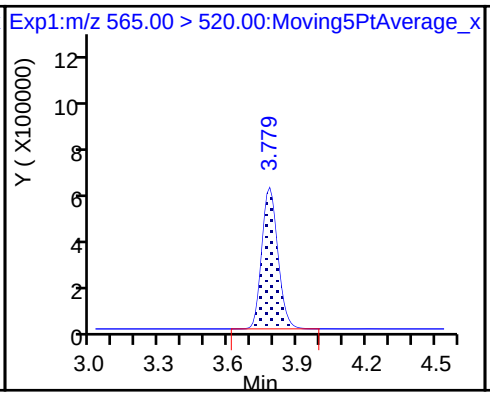
31 Perfluoroundecanoic acid



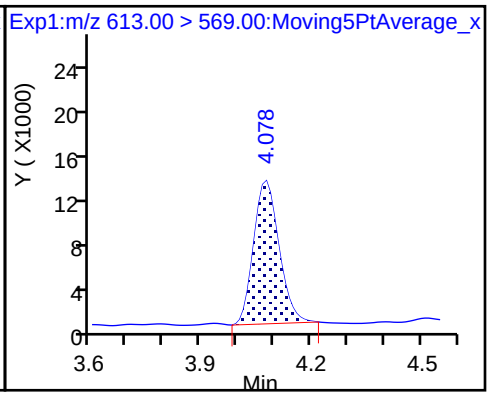
D 32 d5-NEtFOSAA



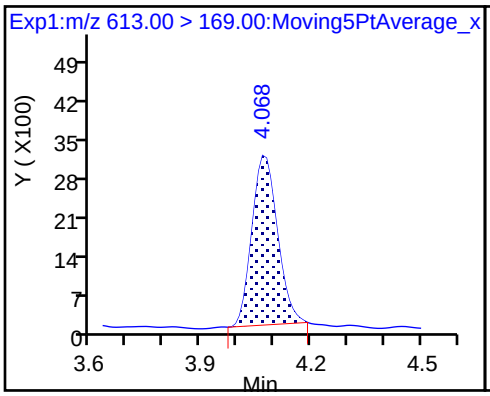
D 30 13C2 PFUnA



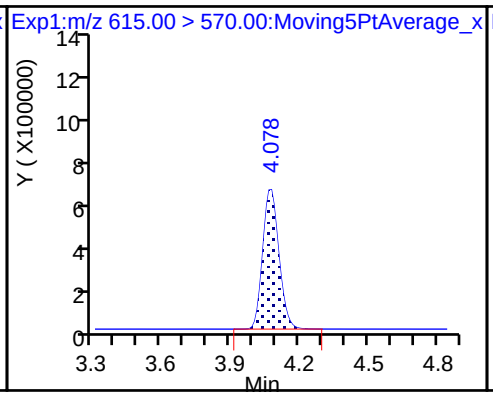
37 Perfluorododecanoic acid



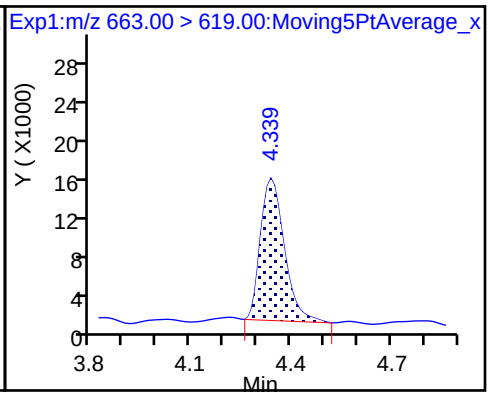
37 Perfluorododecanoic acid



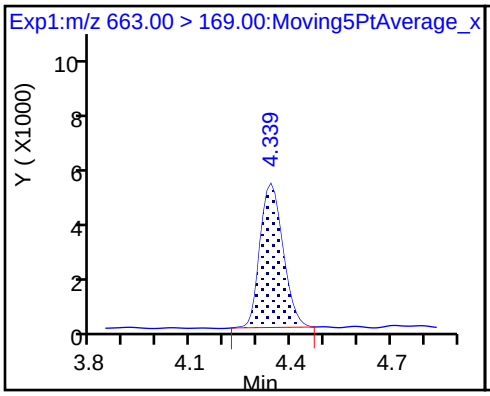
D 36 13C2 PFDoA



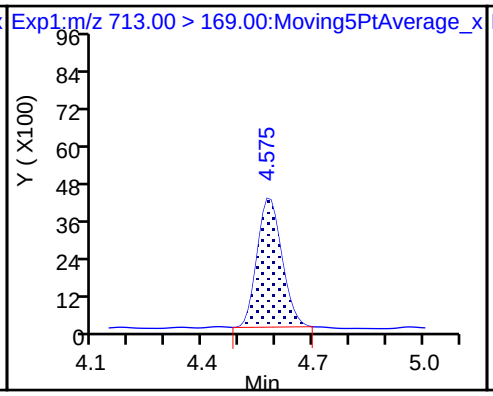
41 Perfluorotridecanoic acid



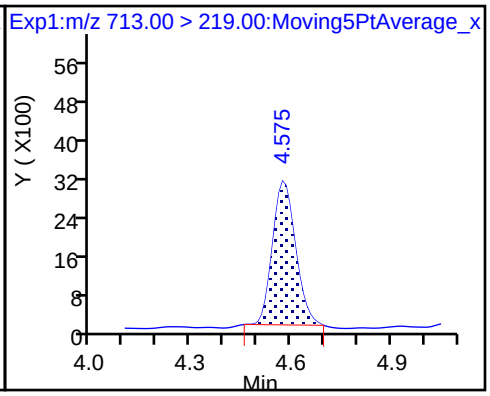
41 Perfluorotridecanoic acid



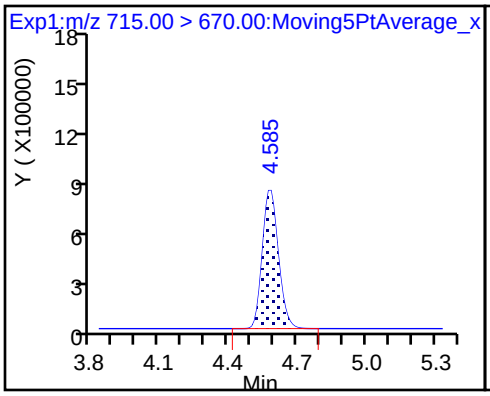
42 Perfluorotetradecanoic acid



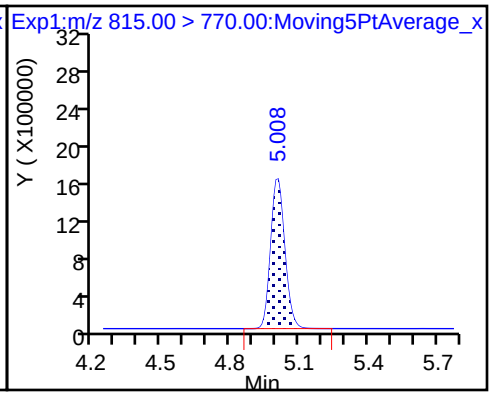
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-214716/3 Calibration Date: 03/24/2018 19:18

Instrument ID: A8_N Calib Start Date: 03/21/2018 18:24

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/21/2018 19:11

Lab File ID: 2018.03.24LLAA_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9422	0.9059		0.961	1.00	-3.9	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.128	1.086		0.963	1.00	-3.7	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.70	78.87		0.897	0.884	1.5	30.0
4:2 FTS	AveID	16.15	15.99		0.925	0.934	-1.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.022	1.022		1.00	1.00	0.0	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.034	1.074		1.04	1.00	3.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.075		0.879	0.910	-3.4	30.0
6:2FTS	AveID	1.744	1.890		1.03	0.948	8.4	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.130	1.099		0.972	1.00	-2.8	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.281	1.287		0.957	0.952	0.5	30.0
Perfluorononanoic acid (PFNA)	AveID	0.998	0.9685		0.971	1.00	-2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.114	1.070		0.891	0.928	-4.0	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9858	0.9825		0.997	1.00	-0.3	30.0
8:2FTS	AveID	1.276	1.228		0.922	0.958	-3.8	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9881	0.9612		0.973	1.00	-2.7	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.001	0.9512		0.950	1.00	-5.0	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6800	0.6878		0.975	0.964	1.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9342	0.9021		0.966	1.00	-3.4	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8622	0.7897		0.916	1.00	-8.4	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.046	1.048		1.00	1.00	0.1	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.101	1.134		1.03	1.00	3.0	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2478	0.2408		0.972	1.00	-2.8	30.0
13C4 PFBA	Ave	1.266	1.303		2.57	2.50	2.9	30.0
13C5-PFPeA	Ave	0.8399	0.8889		2.65	2.50	5.8	30.0
13C3-PFBS	Ave	0.0192	0.0197		2.39	2.33	3.0	30.0
13C2 PFHxA	Ave	0.9288	0.9341		2.51	2.50	0.6	30.0
13C4-PFHpA	Ave	0.9164	0.9161		2.50	2.50	-0.0	30.0
18O2 PFHxS	Ave	1.130	1.155		2.42	2.37	2.2	30.0
M2-6:2FTS	Ave	0.1900	0.2423		3.03	2.38	27.6	30.0
13C4 PFOA	Ave	0.9374	0.9346		2.49	2.50	-0.3	30.0
13C4 PFOS	Ave	0.8225	0.8369		2.43	2.39	1.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-214716/3 Calibration Date: 03/24/2018 19:18

Instrument ID: A8_N Calib Start Date: 03/21/2018 18:24

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/21/2018 19:11

Lab File ID: 2018.03.24LLAA_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.8266	0.8424		2.55	2.50	1.9	30.0
13C8 FOSA	Ave	1.109	1.181		2.66	2.50	6.5	30.0
M2-8:2FTS	Ave	0.2565	0.2802		2.62	2.40	9.2	30.0
13C2 PFDA	Ave	0.7245	0.7105		2.45	2.50	-1.9	30.0
d3-NMeFOSAA	Ave	0.3814	0.3894		2.55	2.50	2.1	30.0
13C2 PFUnA	Ave	0.6482	0.5768		2.22	2.50	-11.0	30.0
d5-NEtFOSAA	Ave	0.4345	0.4079		2.35	2.50	-6.1	30.0
13C2 PFDoA	Ave	0.7355	0.5996		2.04	2.50	-18.5	30.0
13C2-PFTeDA	Ave	0.8983	0.7932		2.21	2.50	-11.7	30.0
13C2-PFHxDA	Ave	1.473	1.335		2.27	2.50	-9.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_006.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 24-Mar-2018 19:18:58 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:45:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.462	1.462	0.0	1.000	2345679	0.9614		96.1	1162	
D 1 13C4 PFBA										
217.00 > 172.00	1.462	1.459	0.003	0.539	6473641	2.57		103	103394	
D 3 13C5-PFPeA										
267.90 > 223.00	1.723	1.727	-0.004	0.635	4416320	2.65		106	144641	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.723	1.723	0.0	1.000	1918589	0.9632		96.3	853	
D 47 13C3-PFBS										
301.90 > 83.00	1.758	1.762	-0.004	0.648	91196	2.39		103	541	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.767	1.767	0.0	1.005	2734656	0.8972		101	11299	
298.90 > 99.00	1.758	1.767	-0.009	1.000	1118218		2.45(1.25-3.74)		5012	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.981	1.981	0.0	1.000	585872	0.9247		99.0	26617	
D 60 M2-4:2FTS										
329.00 > 81.00	1.981	1.987	-0.006	0.730	686488	NC			7027	
D 7 13C2 PFHxA										
315.00 > 270.00	2.014	2.019	-0.005	0.742	4640868	2.51		101	139701	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.014	2.014	0.0	1.000	1897810	1.00		100	2288	
313.00 > 119.00	2.014	2.014	0.0	1.000	173694		10.93(5.03-15.10)		1955	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.348	2.348	0.0	1.000	1955340	1.04		104	1541	
363.00 > 169.00	2.348	2.348	0.0	1.000	769739		2.54(1.13-3.40)		1906	
D 9 13C4-PFHpA										
367.00 > 322.00	2.348	2.368	-0.020	0.865	4551606	2.50		100.0	78548	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.361	2.361	0.0	0.995	2245959	0.8790		96.6	5203	
399.00 > 99.00	2.361	2.361	0.0	0.995	762371		2.95(1.50-4.49)		2314	
D 11 18O2 PFHxS										
403.00 > 84.00	2.373	2.380	-0.007	0.874	5429318	2.42		102	59597	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.691	2.691	0.0	1.000	862927	1.03		108	804	
D 12 M2-6:2FTS										
429.00 > 81.00	2.691	2.704	-0.013	0.991	1143709	3.03		128	27288	
* 62 13C2-PFOA										
415.00 > 370.00	2.714	2.714	0.0		4968245	2.50			64930	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.714	2.714	0.0	1.000	2040436	0.9725		97.2	703	
413.00 > 169.00	2.714	2.714	0.0	1.000	1087799		1.88(0.84-2.52)		4499	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.722	2.722	0.0	1.000	2038329	0.9566		100	26708	
449.00 > 99.00	2.722	2.722	0.0	1.000	550342		3.70(1.94-5.82)		5269	
D 14 13C4 PFOA										
417.00 > 372.00	2.714	2.728	-0.014	1.000	4643285	2.49		99.7	72307	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.090	3.090	0.0	1.000	1650915	0.8912		96.0	8815	
499.00 > 99.00	3.090	3.090	0.0	1.000	364347		4.53(2.31-6.93)		12588	
20 Perfluorononanoic acid										
463.00 > 419.00	3.090	3.090	0.0	1.000	1621490	0.9709		97.1	1759	
463.00 > 169.00	3.090	3.090	0.0	1.000	407533		3.98(1.90-5.69)		9105	
D 19 13C5 PFNA										
468.00 > 423.00	3.090	3.112	-0.022	1.138	4185442	2.55		102	85270	
D 18 13C4 PFOS										
503.00 > 80.00	3.090	3.112	-0.022	1.138	3974716	2.43		102	46245	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.411	3.411	0.0	1.000	2306172	1.00		99.7	43525	
D 21 13C8 FOSA										
506.00 > 78.00	3.411	3.418	-0.007	1.256	5867865	2.66		106	74479	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.447	3.447	0.0	1.000	655207	0.9220		96.2	6025	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.456	3.456	0.0	1.000	1357172	0.9728		97.3	7075	
513.00 > 169.00	3.456	3.456	0.0	1.000	247606		5.48(2.36-7.09)		5591	
D 26 M2-8:2FTS										
529.00 > 81.00	3.447	3.464	-0.017	1.270	1333529	2.62		109	24653	
D 23 13C2 PFDA										
515.00 > 470.00	3.456	3.473	-0.017	1.273	3530012	2.45		98.1	43886	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.615	3.615	0.0	1.000	736086	0.9504		95.0	5343	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.615	3.633	-0.018	1.332	1934720	2.55		102	45599	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.774	3.774	0.0	1.000	1102639	0.9750		101	32924	
599.00 > 99.00	3.764	3.774	-0.010	0.997	366903		3.01(1.39-4.16)		6338	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.784	3.784	0.0	1.000	731197	0.9656		96.6	18767	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.784	3.784	0.0	1.000	905139	0.9159		91.6	4043	
563.00 > 169.00	3.784	3.784	0.0	1.000	232866		3.89(2.12-6.36)		7998	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.784	3.804	-0.020	1.394	2026446	2.35		93.9	6967	
D 30 13C2 PFUnA										
565.00 > 520.00	3.784	3.815	-0.031	1.394	2865470	2.22		89.0	59710	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.084	4.084	0.0	1.000	1248434	1.00		100	980	
613.00 > 169.00	4.084	4.084	0.0	1.000	322573		3.87(2.13-6.40)		4832	
D 36 13C2 PFDoA										
615.00 > 570.00	4.084	4.105	-0.021	1.504	2978875	2.04		81.5	17320	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.347	4.347	0.0	1.000	1351192	1.03		103	667	
663.00 > 169.00	4.347	4.347	0.0	1.000	441372		3.06(1.25-3.76)		5044	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.592	4.592	0.0	1.000	379549	0.9718		97.2	4396	
713.00 > 219.00	4.582	4.592	-0.010	0.998	280417		1.35(0.71-2.13)		4822	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.592	4.613	-0.021	1.692	3940563	2.21		88.3	23478	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.013	5.013	0.0	1.000	2486419	NC			603	
813.00 > 169.00	5.013	5.013	0.0	1.000	435772		5.71(2.86-8.58)		3786	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.013	5.049	-0.036	1.847	6631032	2.27		90.6	14528	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.380	5.380	0.0	1.000	2596271	NC			560	
913.00 > 169.00	5.380	5.380	0.0	1.000	350696		7.40(3.83-11.48)		3297	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 25-Mar-2018 10:51:06 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_006.d

Injection Date: 24-Mar-2018 19:18:58 Instrument ID: A8_N

Lims ID: CCV L4

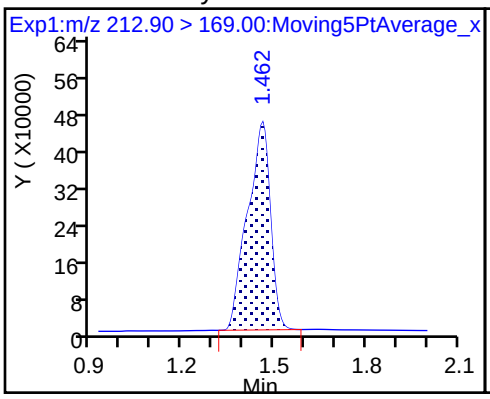
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3

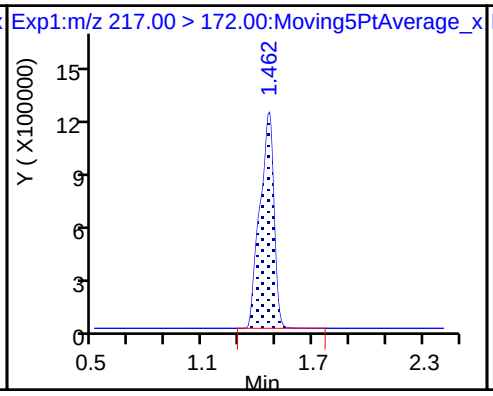
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

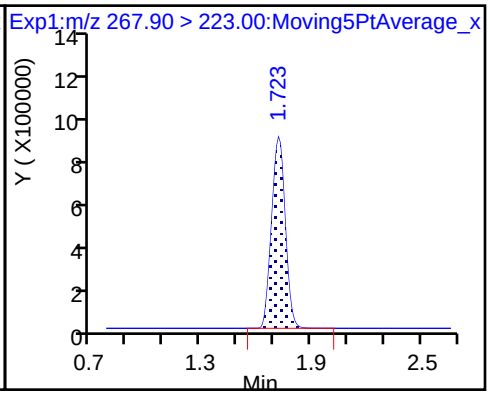
2 Perfluorobutyric acid



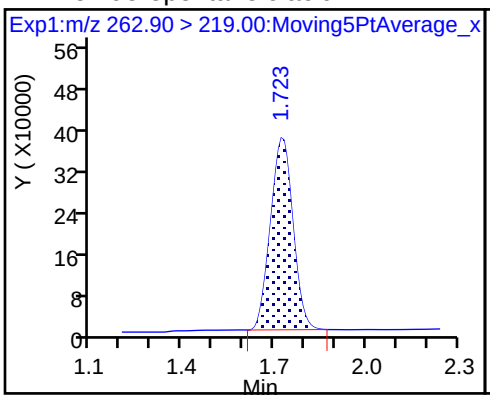
D 1 13C4 PFBA



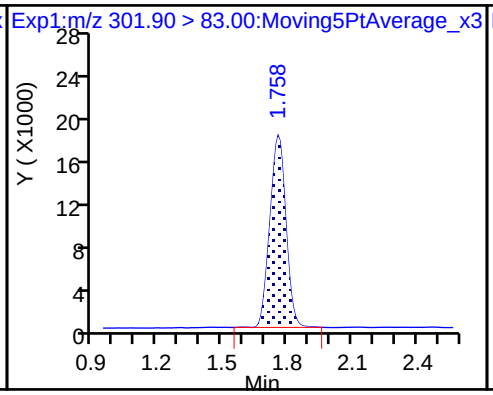
D 3 13C5-PFPeA



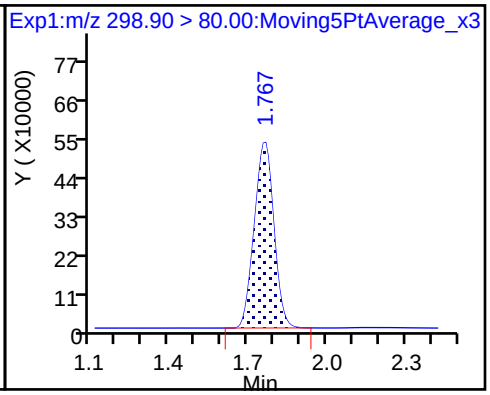
4 Perfluoropentanoic acid



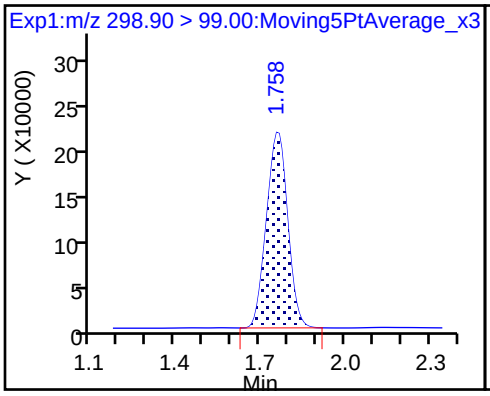
D 47 13C3-PFBS



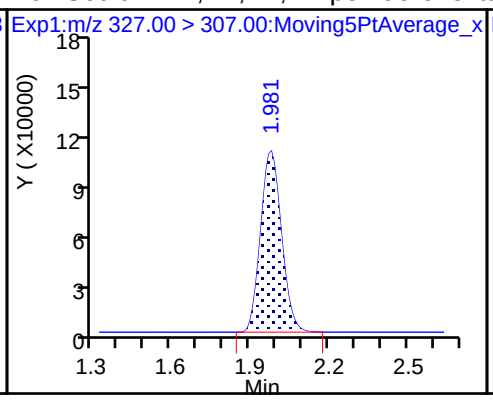
5 Perfluorobutanesulfonic acid



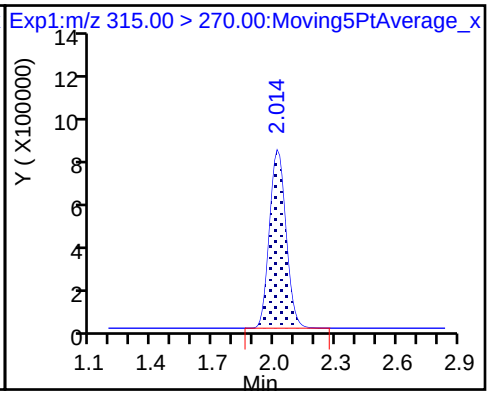
5 Perfluorobutanesulfonic acid



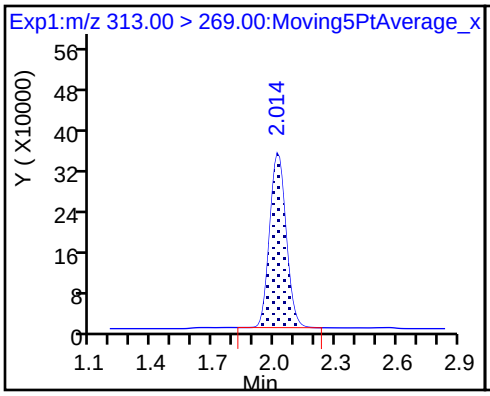
61 Sodium 1H,1H,2H,2H-perfluorohexa



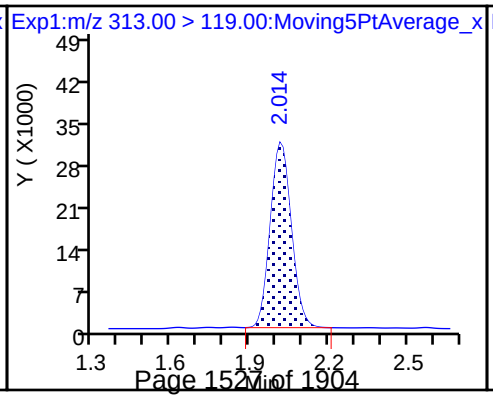
D 7 13C2 PFHxA



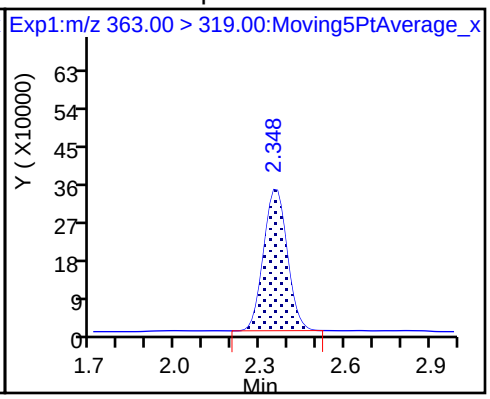
6 Perfluorohexanoic acid



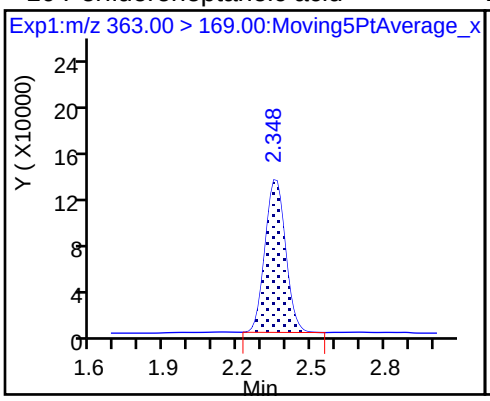
6 Perfluorohexanoic acid



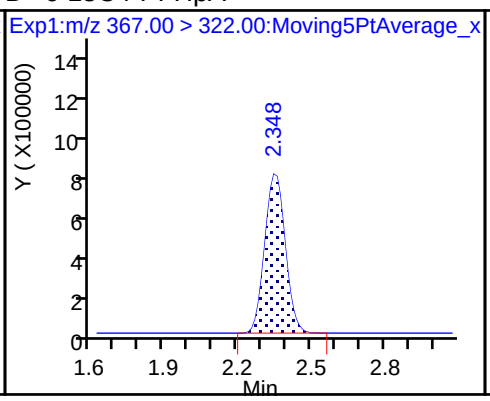
10 Perfluoroheptanoic acid



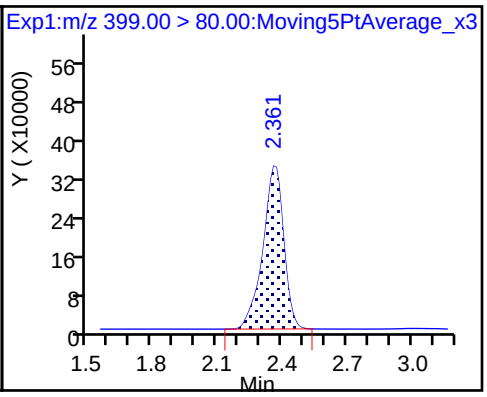
10 Perfluoroheptanoic acid



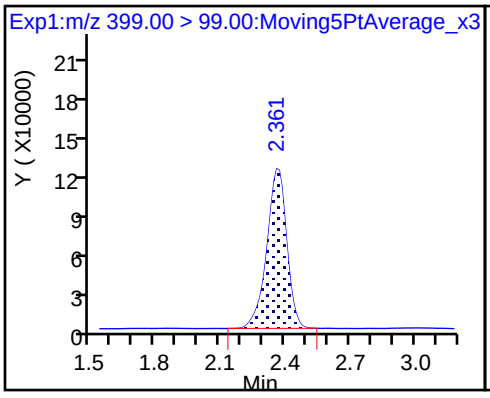
D 9 13C4-PFHpA



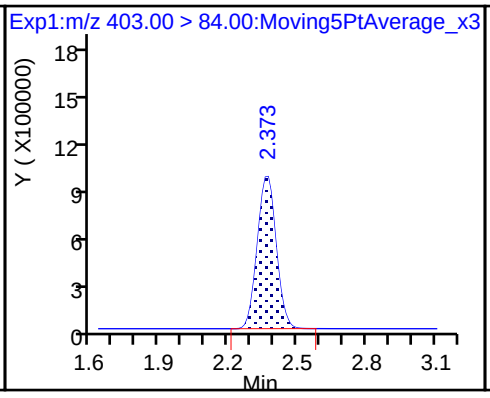
8 Perfluorohexanesulfonic acid



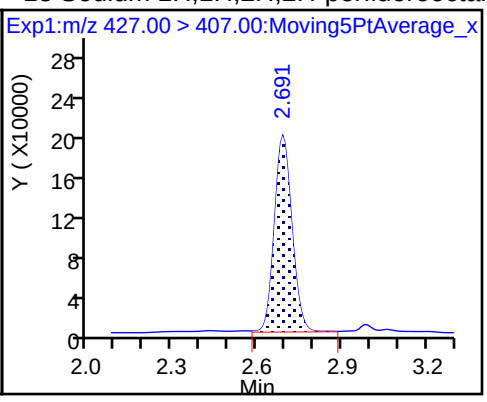
8 Perfluorohexanesulfonic acid



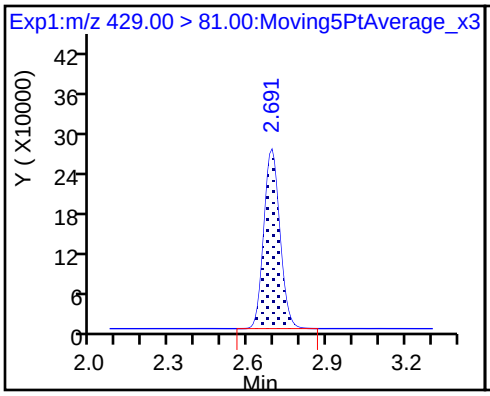
D 11 18O2 PFHxS



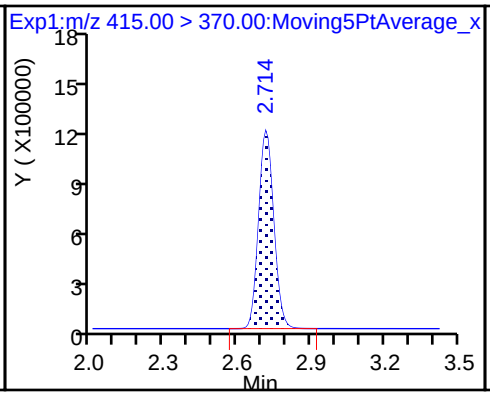
13 Sodium 1H,1H,2H,2H-perfluorooctane



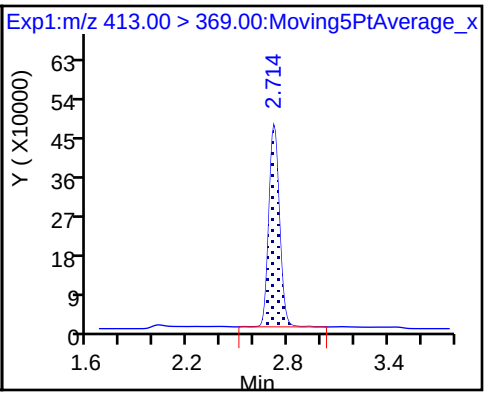
D 12 M2-6:2FTS



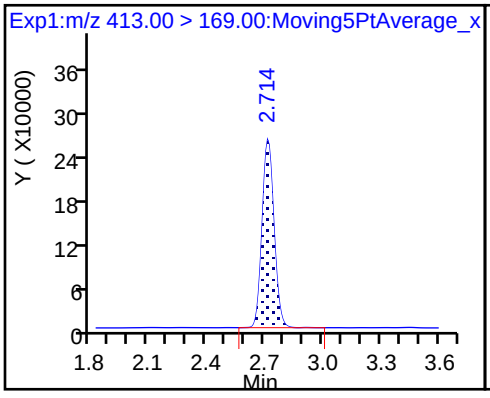
* 62 13C2-PFOA



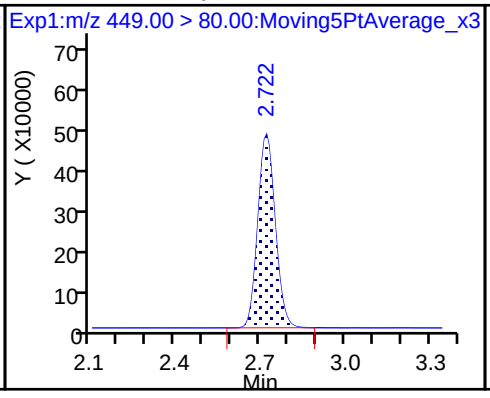
15 Perfluorooctanoic acid



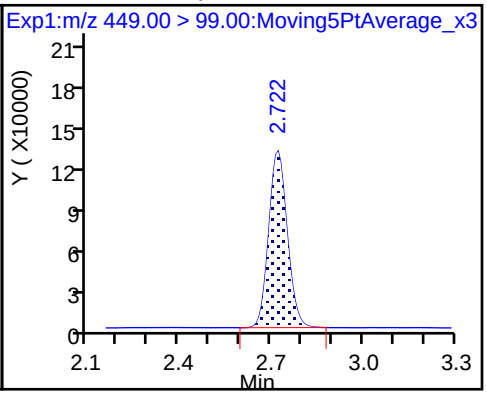
15 Perfluorooctanoic acid



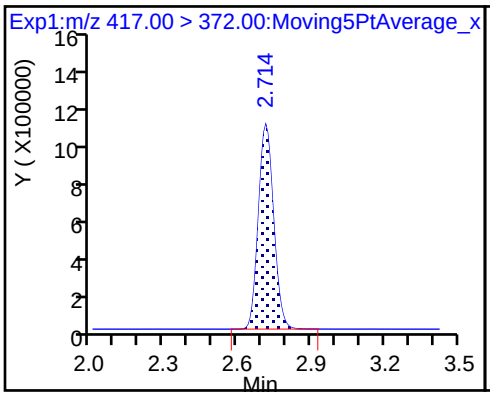
16 Perfluoroheptanesulfonic acid



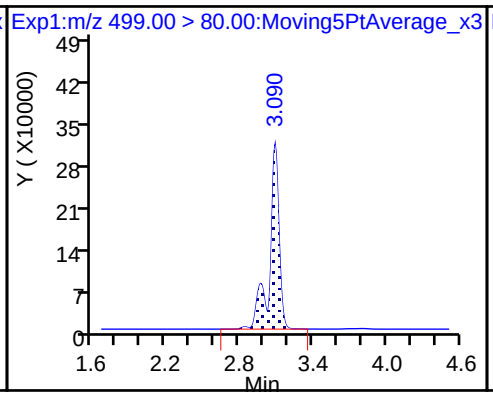
16 Perfluoroheptanesulfonic acid



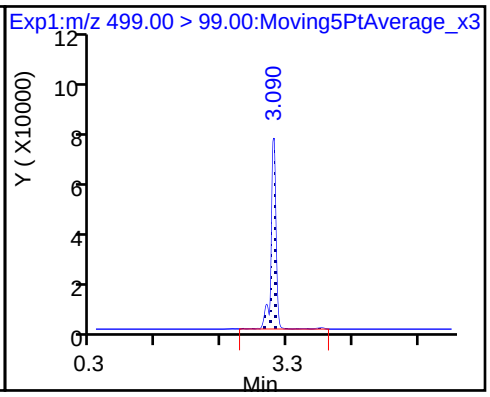
D 14 13C4 PFOA



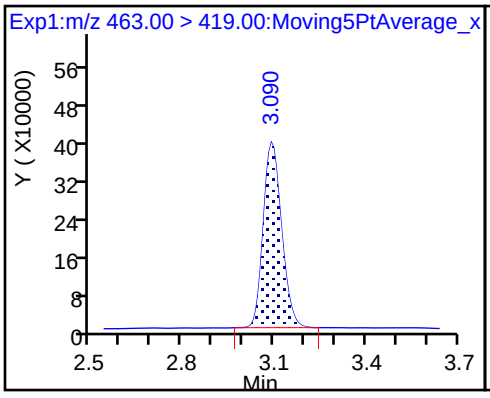
17 Perfluorooctane sulfonic acid



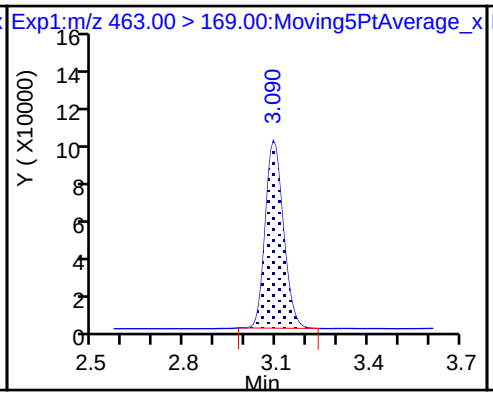
17 Perfluorooctane sulfonic acid



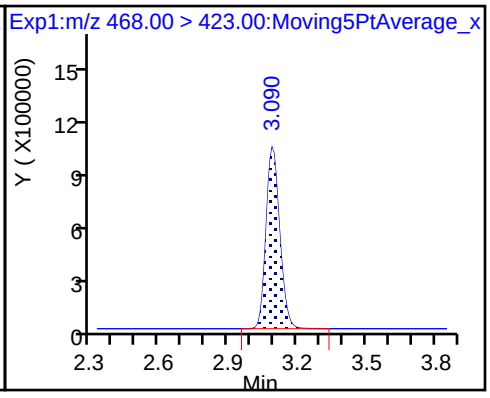
20 Perfluorononanoic acid



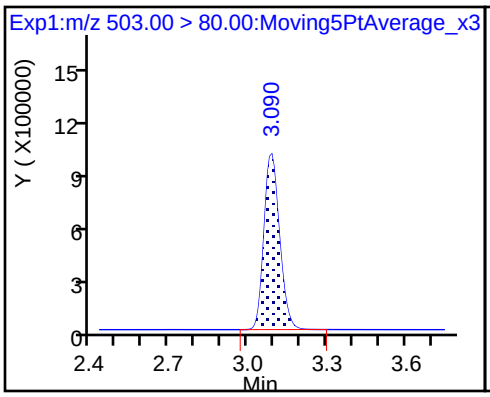
20 Perfluorononanoic acid



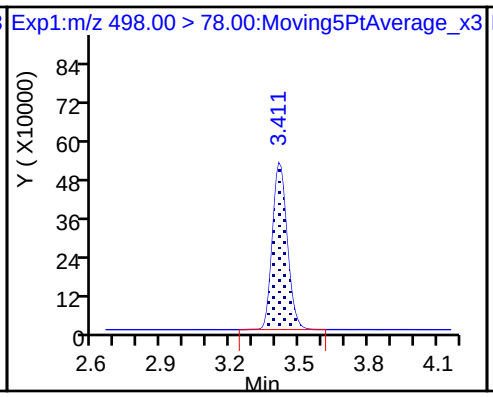
D 19 13C5 PFNA



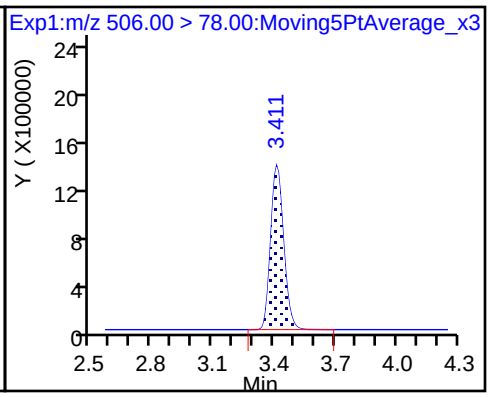
D 18 13C4 PFOS



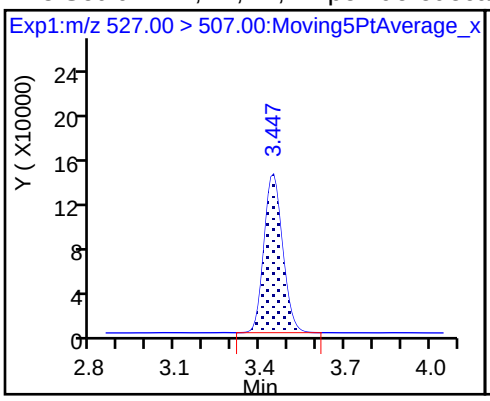
22 Perfluorooctane Sulfonamide



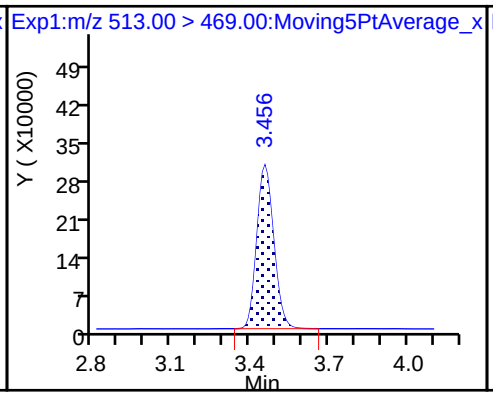
D 21 13C8 FOSA



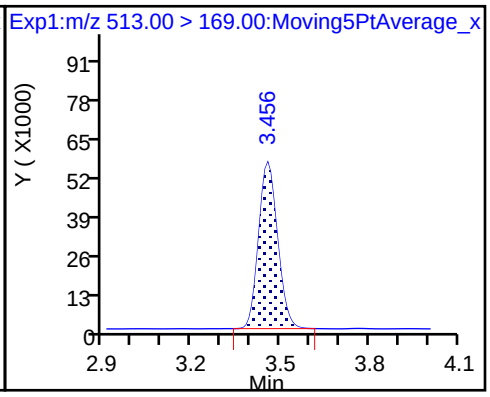
25 Sodium 1H,1H,2H,2H-perfluorodecane



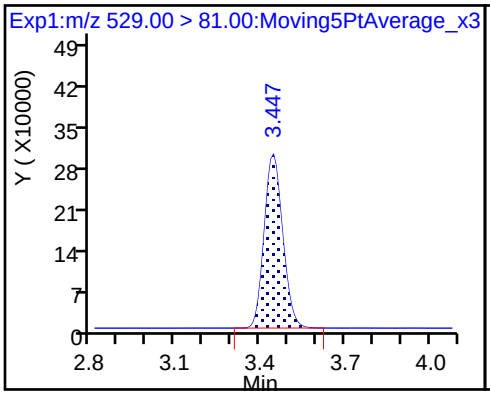
24 Perfluorodecanoic acid



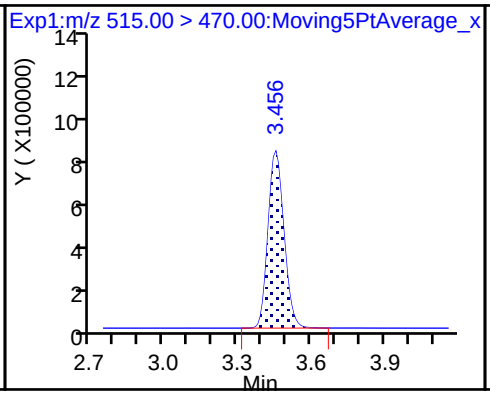
24 Perfluorodecanoic acid



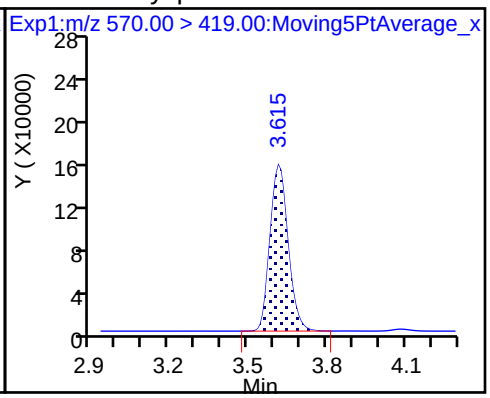
D 26 M2-8:2FTS



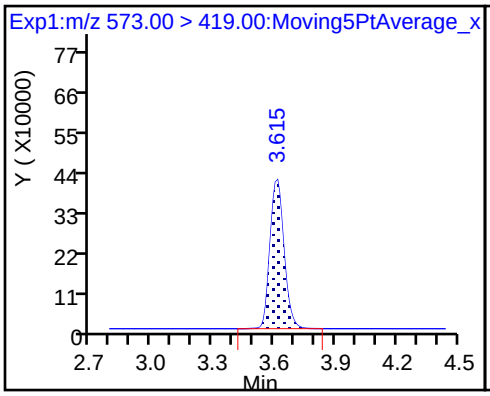
D 23 13C2 PFDA



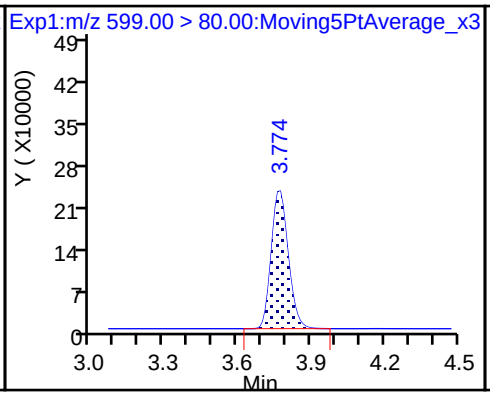
28 N-methyl perfluorooctane sulfonami



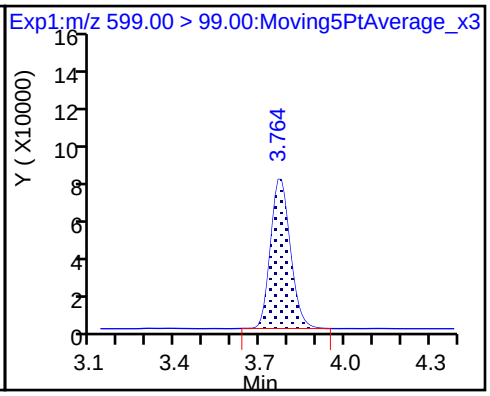
D 27 d3-NMeFOSAA



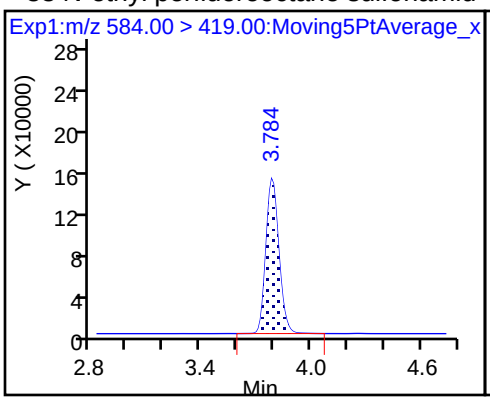
29 Perfluorodecane Sulfonic acid



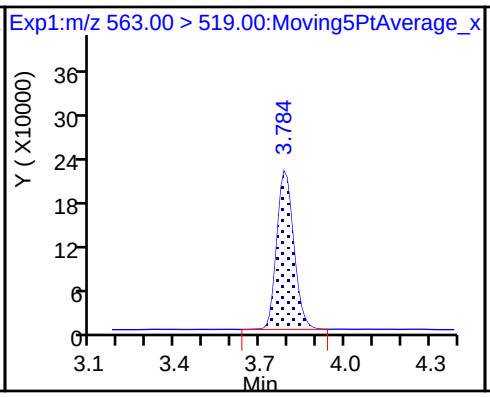
29 Perfluorodecane Sulfonic acid



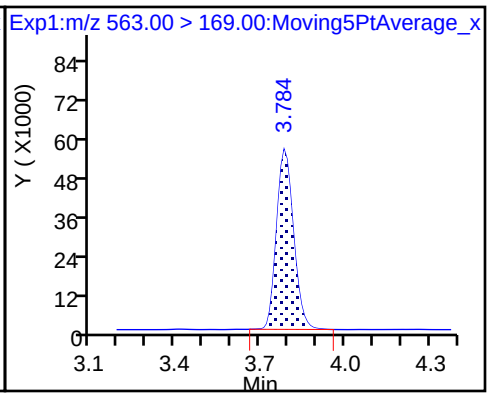
33 N-ethyl perfluorooctane sulfonamid



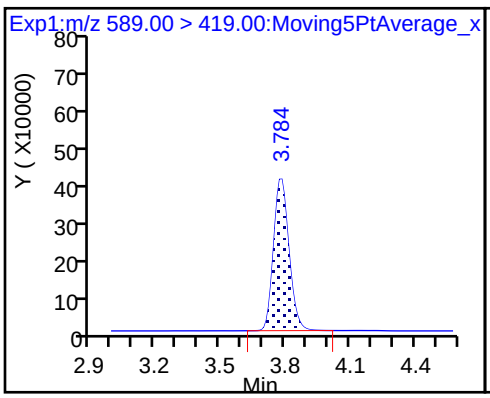
31 Perfluoroundecanoic acid



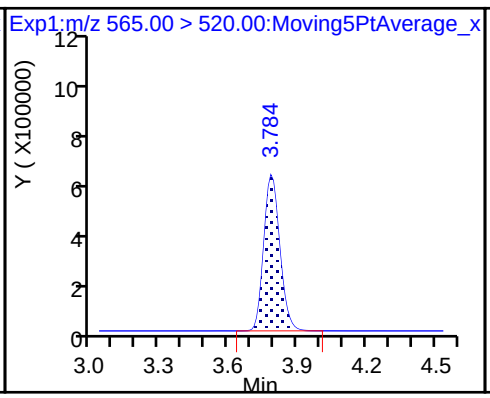
31 Perfluoroundecanoic acid



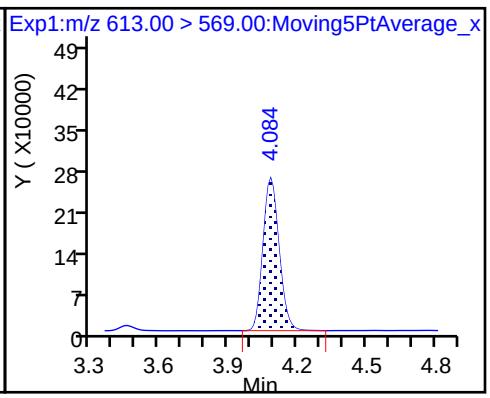
D 32 d5-NEtFOSAA



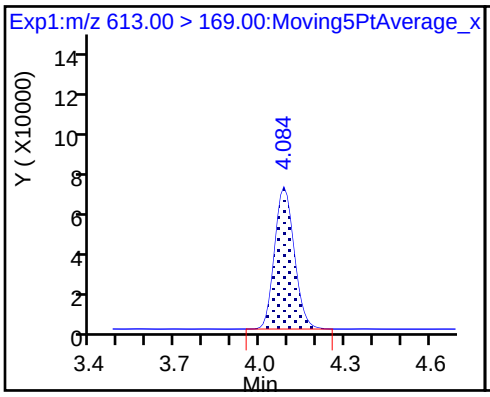
D 30 13C2 PFUnA



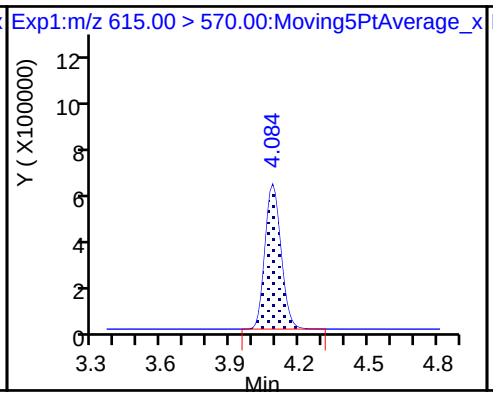
37 Perfluorododecanoic acid



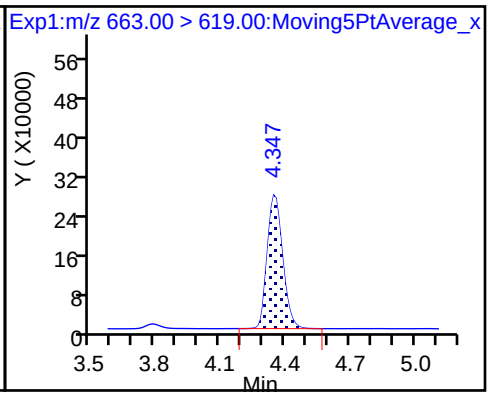
37 Perfluorododecanoic acid



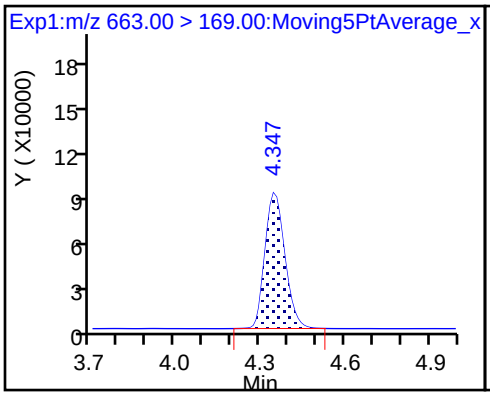
D 36 13C2 PFDoA



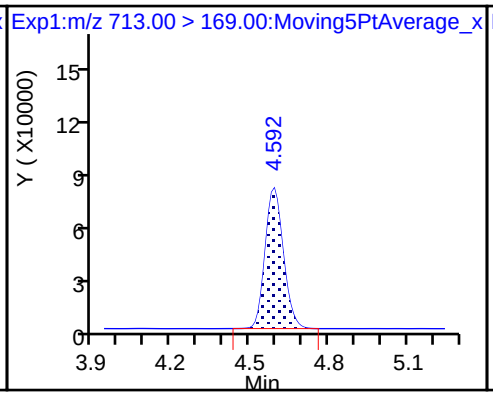
41 Perfluorotridecanoic acid



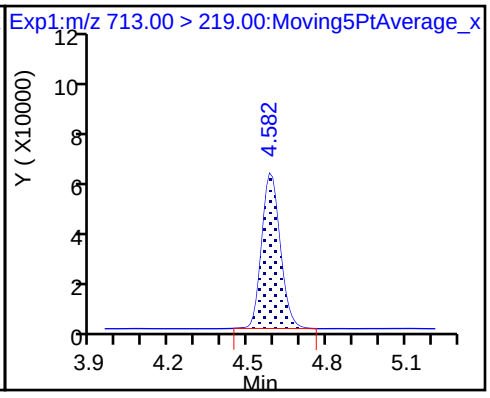
41 Perfluorotridecanoic acid



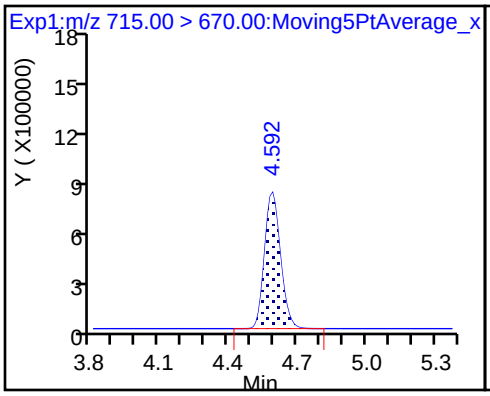
42 Perfluorotetradecanoic acid



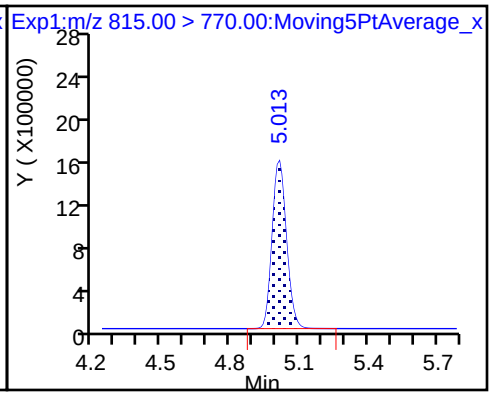
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-214716/15 Calibration Date: 03/24/2018 20:45

Instrument ID: A8_N Calib Start Date: 03/21/2018 18:24

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/21/2018 19:11

Lab File ID: 2018.03.24LLAA_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9422	0.9532		2.53	2.50	1.2	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.128	1.176		2.61	2.50	4.3	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.70	80.25		2.28	2.21	3.3	30.0
4:2 FTS	AveID	16.15	17.20		2.49	2.34	6.5	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.022	1.019		2.49	2.50	-0.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.034	1.139		2.75	2.50	10.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.054		2.15	2.28	-5.3	30.0
6:2FTS	AveID	1.744	2.126		2.89	2.37	22.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.281	1.350		2.51	2.38	5.3	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.130	1.166		2.58	2.50	3.2	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.114	1.150		2.40	2.32	3.2	30.0
Perfluorononanoic acid (PFNA)	AveID	0.998	1.014		2.54	2.50	1.6	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9858	1.029		2.61	2.50	4.4	30.0
8:2FTS	AveID	1.276	1.282		2.41	2.40	0.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9881	0.9742		2.46	2.50	-1.4	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.001	1.066		2.66	2.50	6.5	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6800	0.7332		2.60	2.41	7.8	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9342	0.9690		2.59	2.50	3.7	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8622	0.8514		2.47	2.50	-1.2	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.046	1.073		2.56	2.50	2.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.101	1.173		2.66	2.50	6.6	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2478	0.2553		2.58	2.50	3.0	30.0
13C4 PFBA	Ave	1.266	1.240		2.45	2.50	-2.1	30.0
13C5-PFPeA	Ave	0.8399	0.8192		2.44	2.50	-2.5	30.0
13C3-PFBS	Ave	0.0192	0.0197		2.39	2.33	2.8	30.0
13C2 PFHxA	Ave	0.9288	0.9332		2.51	2.50	0.5	30.0
13C4-PFHpA	Ave	0.9164	0.8834		2.41	2.50	-3.6	30.0
18O2 PFHxS	Ave	1.130	1.169		2.45	2.37	3.4	30.0
M2-6:2FTS	Ave	0.1900	0.2170		2.71	2.38	14.2	30.0
13C4 PFOA	Ave	0.9374	0.9020		2.41	2.50	-3.8	30.0
13C4 PFOS	Ave	0.8225	0.7984		2.32	2.39	-2.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-214716/15 Calibration Date: 03/24/2018 20:45

Instrument ID: A8_N Calib Start Date: 03/21/2018 18:24

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/21/2018 19:11

Lab File ID: 2018.03.24LLAA_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.8266	0.8151		2.47	2.50	-1.4	30.0
13C8 FOSA	Ave	1.109	1.129		2.55	2.50	1.8	30.0
M2-8:2FTS	Ave	0.2565	0.2650		2.47	2.40	3.3	30.0
13C2 PFDA	Ave	0.7245	0.7096		2.45	2.50	-2.1	30.0
d3-NMeFOSAA	Ave	0.3814	0.3688		2.42	2.50	-3.3	30.0
d5-NEtFOSAA	Ave	0.4345	0.4050		2.33	2.50	-6.8	30.0
13C2 PFUnA	Ave	0.6482	0.5716		2.20	2.50	-11.8	30.0
13C2 PFDoA	Ave	0.7355	0.5910		2.01	2.50	-19.6	30.0
13C2-PFTeDA	Ave	0.8983	0.7539		2.10	2.50	-16.1	30.0
13C2-PFHxDA	Ave	1.473	1.247		2.12	2.50	-15.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_017.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 24-Mar-2018 20:45:11 ALS Bottle#: 14 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:21 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:50:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.450	1.459	-0.009	0.536	5896839	2.45		97.9	92472	
2 Perfluorobutyric acid										
212.90 > 169.00	1.456	1.456	0.0	1.004	5620968	2.53		101	3172	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.723	1.723	0.0	1.005	4581771	2.61		104	2026	
D 3 13C5-PFPeA										
267.90 > 223.00	1.714	1.727	-0.013	0.633	3896905	2.44		97.5	124714	
D 47 13C3-PFBS										
301.90 > 83.00	1.749	1.762	-0.013	0.646	87177	2.39		103	468	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.758	1.758	0.0	1.005	6650150	2.28		103	23883	
298.90 > 99.00	1.758	1.758	0.0	1.005	2696613		2.47(1.25-3.74)		13126	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.971	1.971	0.0	1.000	1505856	2.49		106	69151	
D 60 M2-4:2FTS										
329.00 > 81.00	1.971	1.987	-0.016	0.728	661927	NC			8062	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.014	2.014	0.0	1.000	4523728	2.49		99.7	5022	
313.00 > 119.00	2.014	2.014	0.0	1.000	402040		11.25(5.03-15.10)		4432	
D 7 13C2 PFHxA										
315.00 > 270.00	2.014	2.019	-0.005	0.744	4439440	2.51		100	158695	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.349	2.349	0.0	1.000	4784970	2.75		110	3747	
363.00 > 169.00	2.349	2.349	0.0	1.000	1787948		2.68(1.13-3.40)		4788	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.362	2.362	0.0	1.000	5332169	2.15		94.7	10826	
399.00 > 99.00	2.362	2.362	0.0	1.000	1767561		3.02(1.50-4.49)		4176	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 9 13C4-PFHpA										
367.00 > 322.00	2.349	2.368	-0.019	0.868	4202572	2.41		96.4	72478	
D 11 18O2 PFHxS										
403.00 > 84.00	2.362	2.380	-0.018	0.872	5261387	2.45		103	71051	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.684	2.684	0.0	1.000	2080423	2.89		122	2959	
D 12 M2-6:2FTS										
429.00 > 81.00	2.684	2.704	-0.020	0.991	980469	2.71		114	20794	
* 62 13C2-PFOA										
415.00 > 370.00	2.707	2.707	0.0		4757103	2.50			57793	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.715	2.715	0.0	1.003	5001438	2.58		103	1478	
413.00 > 169.00	2.715	2.715	0.0	1.003	2601091		1.92(0.84-2.52)		8364	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.715	2.715	0.0	1.000	4879345	2.51		105	70962	
449.00 > 99.00	2.715	2.715	0.0	1.000	1263253		3.86(1.94-5.82)		13365	
D 14 13C4 PFOA										
417.00 > 372.00	2.707	2.728	-0.021	1.000	4290711	2.41		96.2	83047	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.082	3.082	0.0	1.000	4053508	2.40		103	14606	
499.00 > 99.00	3.090	3.082	0.008	1.003	883366		4.59(2.31-6.93)		7492	
20 Perfluorononanoic acid										
463.00 > 419.00	3.090	3.090	0.0	1.000	3930570	2.54		102	4145	
463.00 > 169.00	3.090	3.090	0.0	1.000	1009581		3.89(1.90-5.69)		16073	
D 19 13C5 PFNA										
468.00 > 423.00	3.090	3.112	-0.022	1.141	3877465	2.47		98.6	58125	
D 18 13C4 PFOS										
503.00 > 80.00	3.082	3.112	-0.030	1.138	3630720	2.32		97.1	46308	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.410	3.410	0.0	1.000	5527178	2.61		104	73910	
D 21 13C8 FOSA										
506.00 > 78.00	3.410	3.418	-0.008	1.259	5372815	2.55		102	48968	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.437	3.437	0.0	1.000	1548438	2.41		100	17869	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.455	3.455	0.0	1.003	3288670	2.46		98.6	14905	
513.00 > 169.00	3.455	3.455	0.0	1.003	590841		5.57(2.36-7.09)		2099	
D 26 M2-8:2FTS										
529.00 > 81.00	3.437	3.464	-0.027	1.270	1207629	2.47		103	38391	
D 23 13C2 PFDA										
515.00 > 470.00	3.446	3.473	-0.027	1.273	3375718	2.45		97.9	53455	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.615	3.615	0.0	1.003	1870690	2.66		107	15947	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.604	3.633	-0.029	1.331	1754321	2.42		96.7	33833	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.762	3.762	0.0	1.000	2684132	2.60		108	70546	
599.00 > 99.00	3.762	3.762	0.0	1.000	894751		3.00(1.39-4.16)		26818	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.783	3.783	0.0	1.003	1866693	2.59		104	27496	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.783	3.783	0.0	1.000	2315252	2.47		98.8	13663	
563.00 > 169.00	3.783	3.783	0.0	1.000	589432		3.93(2.12-6.36)		15773	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.772	3.804	-0.032	1.393	1926506	2.33		93.2	6963	
D 30 13C2 PFUnA										
565.00 > 520.00	3.783	3.815	-0.032	1.397	2719213	2.20		88.2	63091	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.079	4.079	0.0	1.000	3016681	2.56		103	2519	
613.00 > 169.00	4.079	4.079	0.0	1.000	771720		3.91(2.13-6.40)		11502	
D 36 13C2 PFDoA										
615.00 > 570.00	4.079	4.105	-0.026	1.507	2811384	2.01		80.4	17755	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.340	4.340	0.0	1.000	3297687	2.66		107	1721	
663.00 > 169.00	4.340	4.340	0.0	1.000	1043390		3.16(1.25-3.76)		15322	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.585	4.585	0.0	1.000	915694	2.58		103	11093	
713.00 > 219.00	4.575	4.585	-0.010	0.998	678810		1.35(0.71-2.13)		10868	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.585	4.613	-0.028	1.694	3586553	2.10		83.9	21219	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.999	4.999	0.0	1.000	5825377	NC			1491	
813.00 > 169.00	4.999	4.999	0.0	1.000	984636		5.92(2.86-8.58)		6276	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.999	5.049	-0.050	1.847	5930573	2.12		84.7	14314	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.366	5.366	0.0	1.000	5950594	NC			1221	
913.00 > 169.00	5.366	5.366	0.0	1.000	754928		7.88(3.83-11.48)		5465	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004 Amount Added: 1.00 Units: mL

Report Date: 25-Mar-2018 10:51:22 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_017.d

Injection Date: 24-Mar-2018 20:45:11 Instrument ID: A8_N

Lims ID: CCV L5

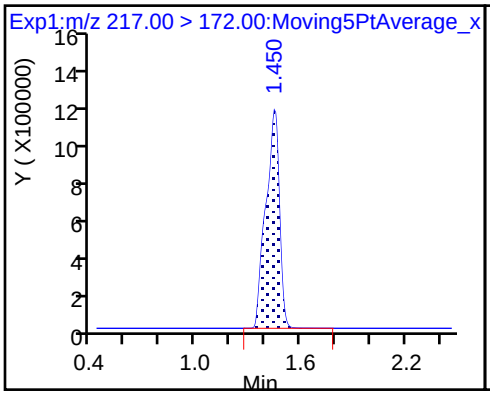
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 15

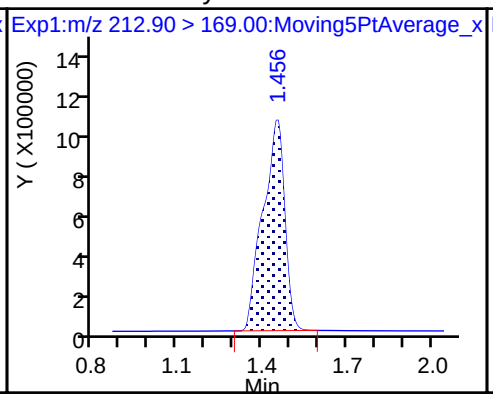
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

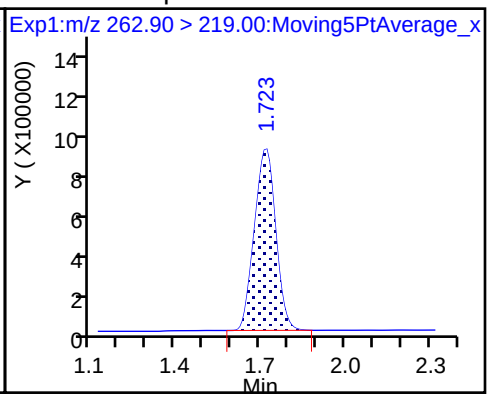
D 1 13C4 PFBA



2 Perfluorobutyric acid



4 Perfluoropentanoic acid



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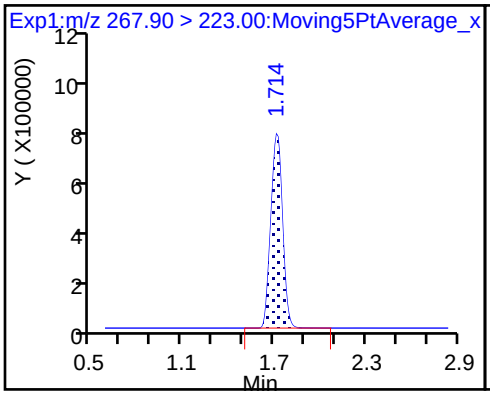
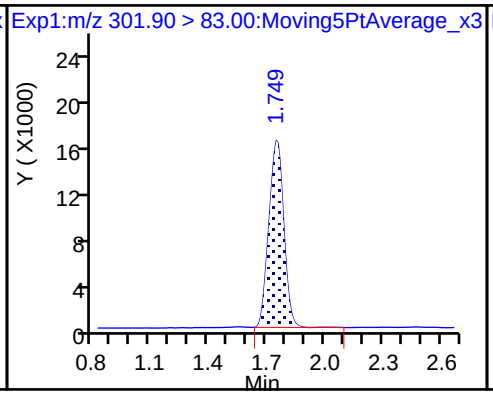
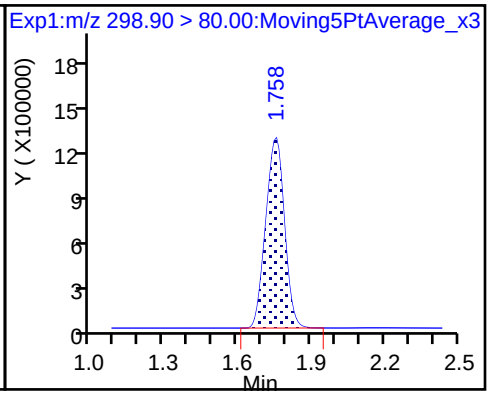


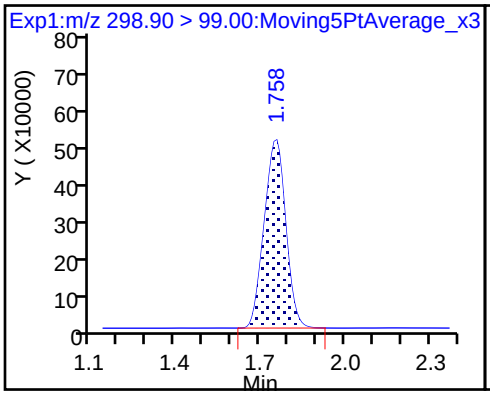
D 47 13C3-PFBS



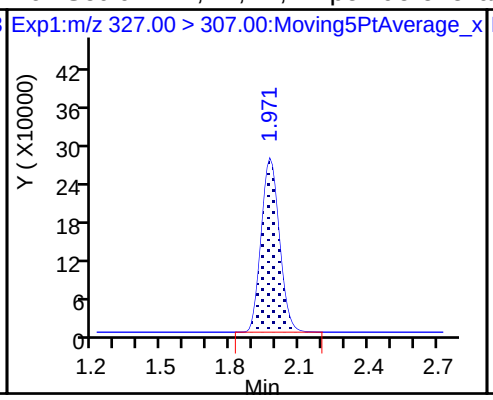
5 Perfluorobutanesulfonic acid



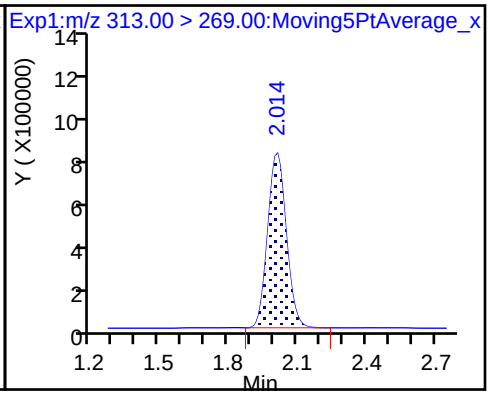
5 Perfluorobutanesulfonic acid



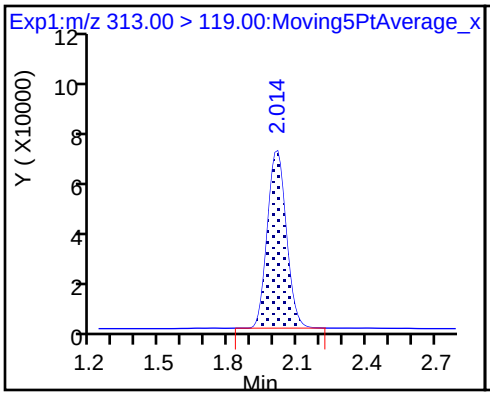
61 Sodium 1H,1H,2H,2H-perfluorohexane



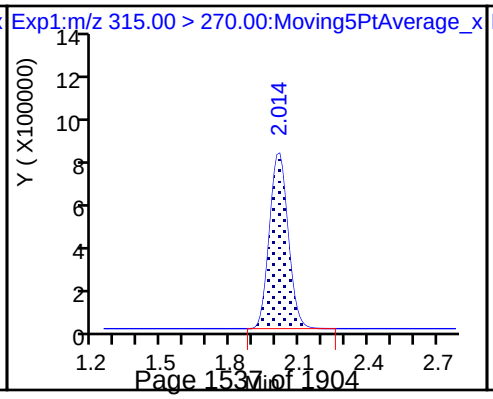
6 Perfluorohexanoic acid



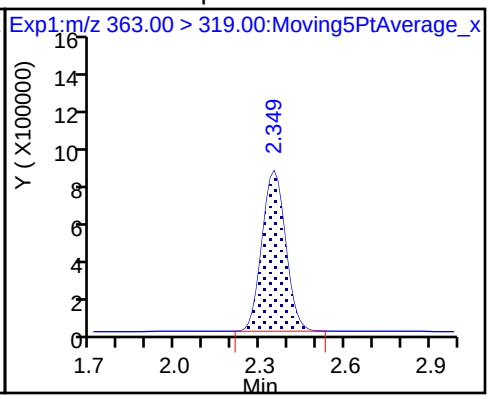
6 Perfluorohexanoic acid



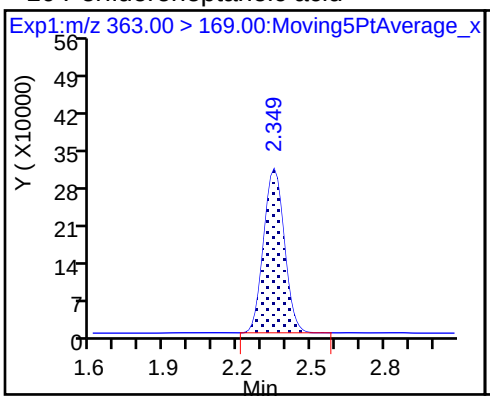
D 7 13C2 PFHxA



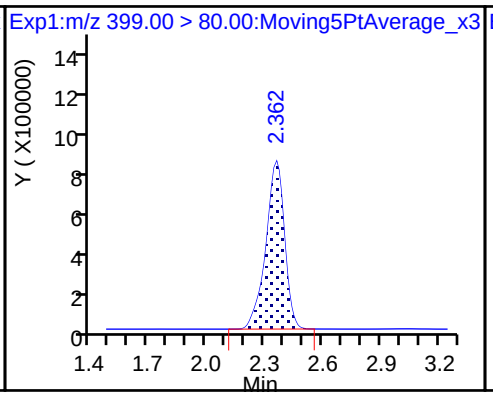
10 Perfluoroheptanoic acid



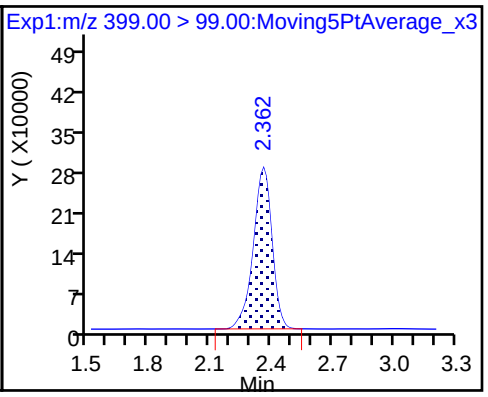
10 Perfluoroheptanoic acid



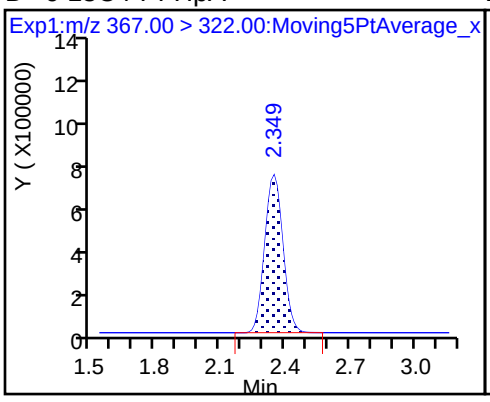
8 Perfluorohexanesulfonic acid



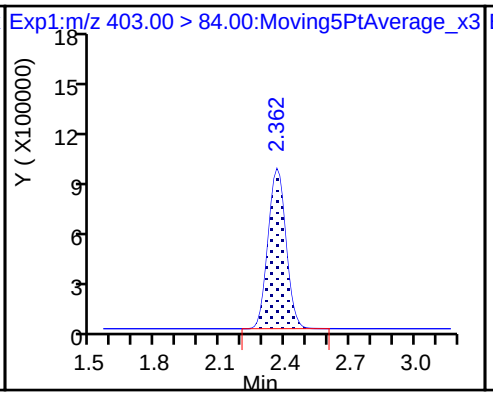
8 Perfluorohexanesulfonic acid



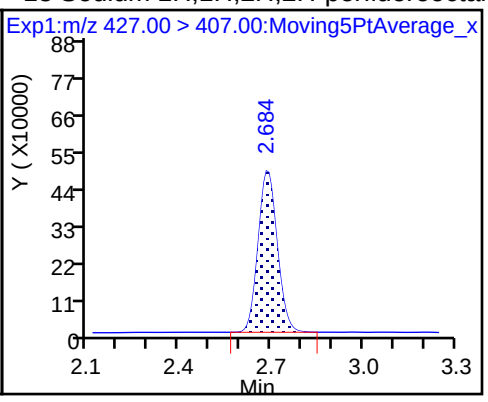
D 9 13C4-PFHpA



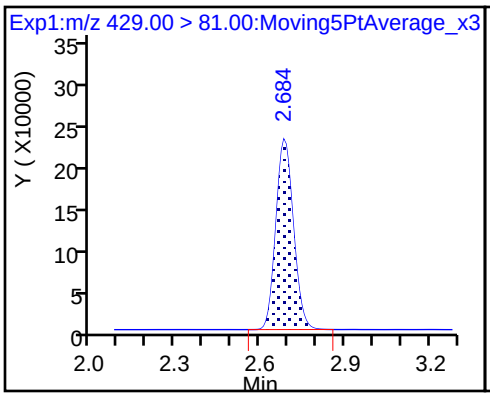
D 11 18O2 PFHxS



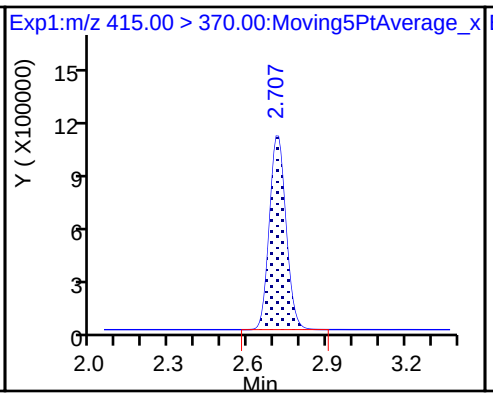
13 Sodium 1H,1H,2H,2H-perfluorooctane



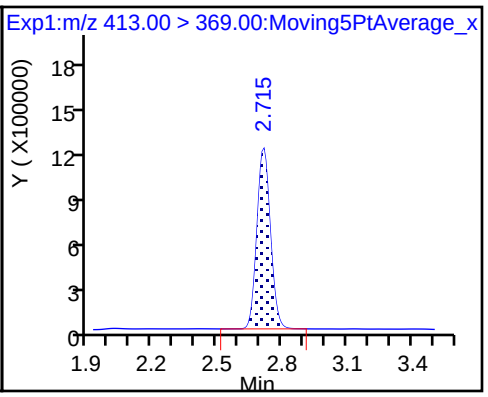
D 12 M2-6:2FTS



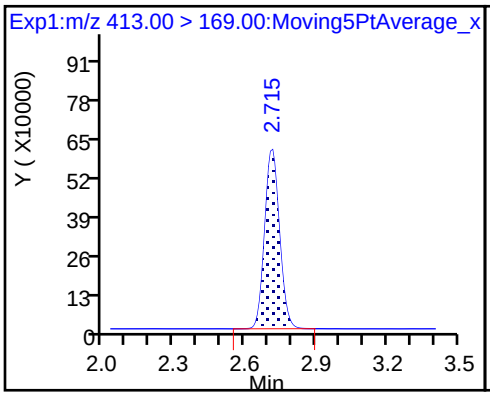
* 62 13C2-PFOA



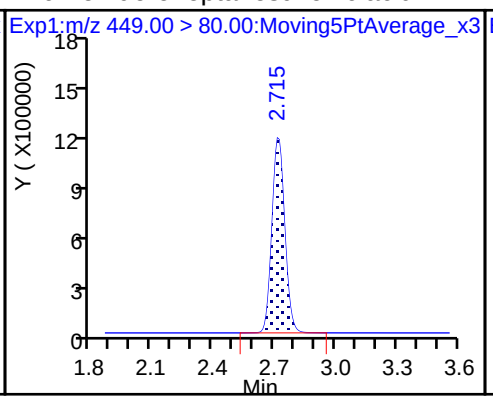
15 Perfluorooctanoic acid



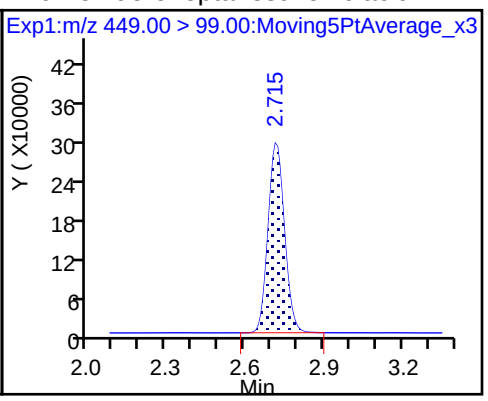
15 Perfluorooctanoic acid



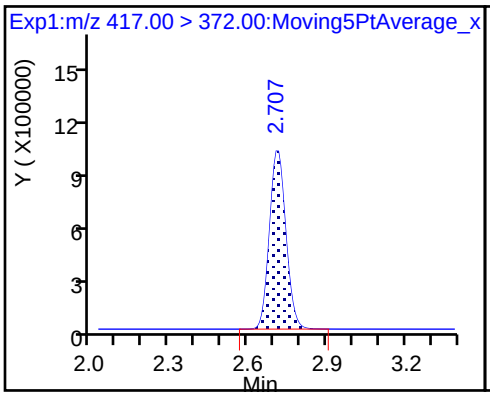
16 Perfluoroheptanesulfonic acid



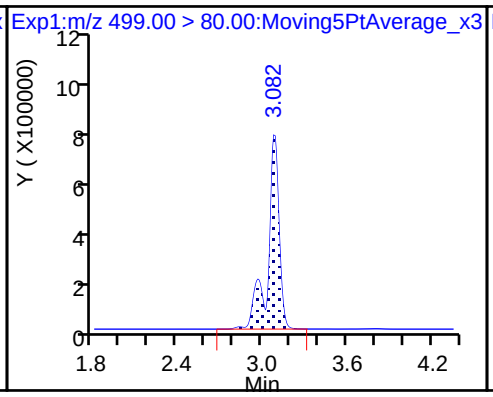
16 Perfluoroheptanesulfonic acid



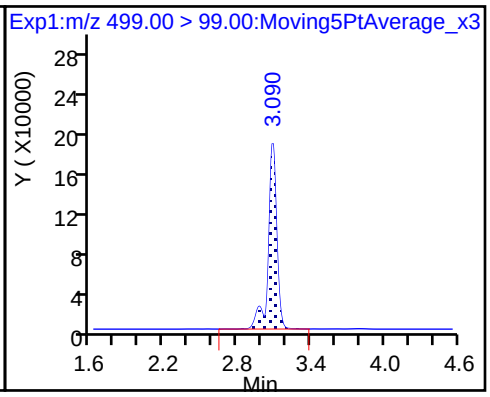
D 14 13C4 PFOA



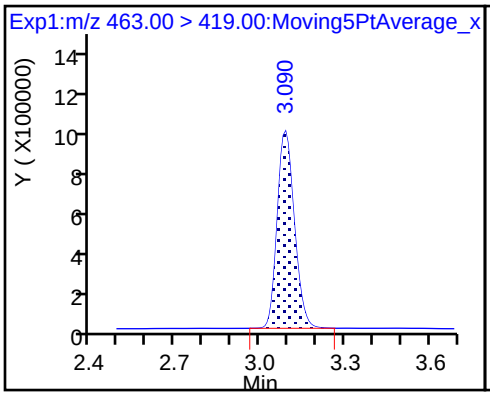
17 Perfluorooctane sulfonic acid



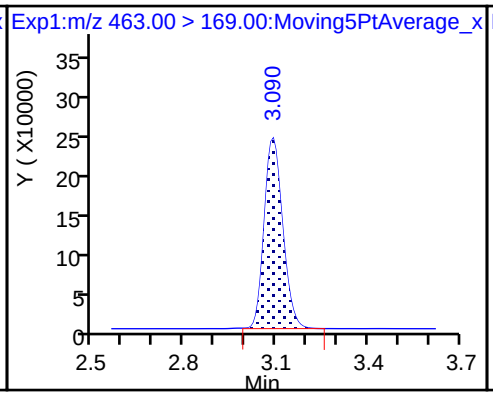
17 Perfluorooctane sulfonic acid



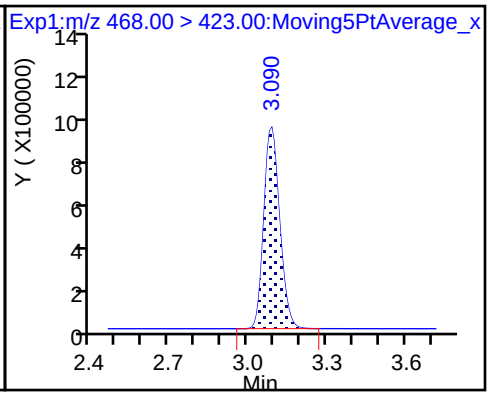
20 Perfluorononanoic acid



20 Perfluorononanoic acid



D 19 13C5 PFNA



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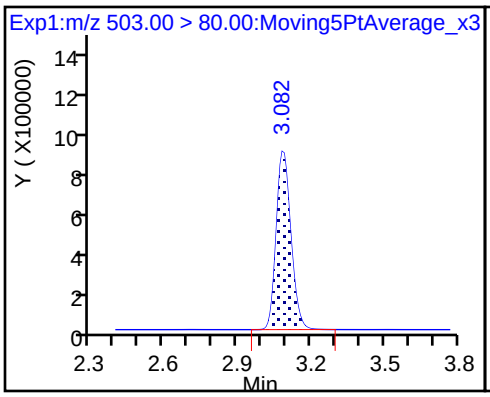
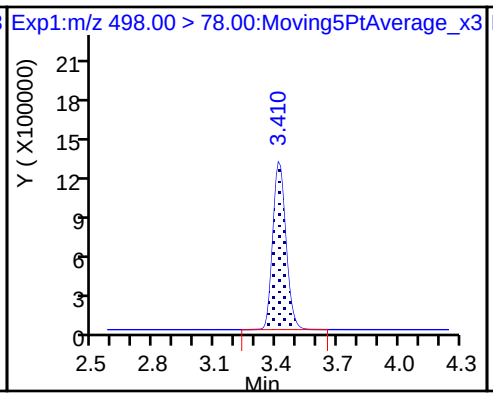
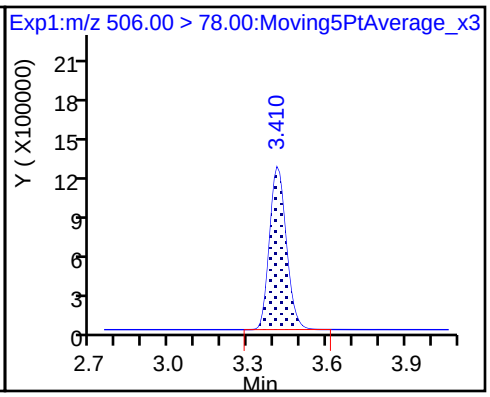


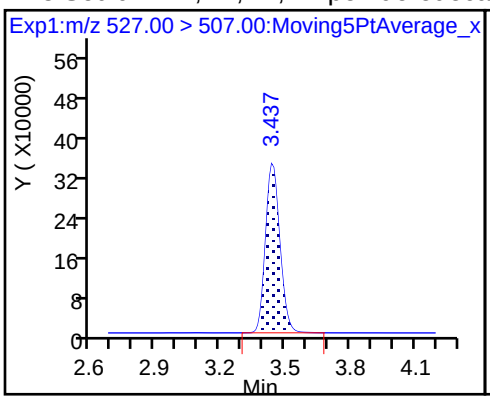
22 Perfluorooctane Sulfonamide



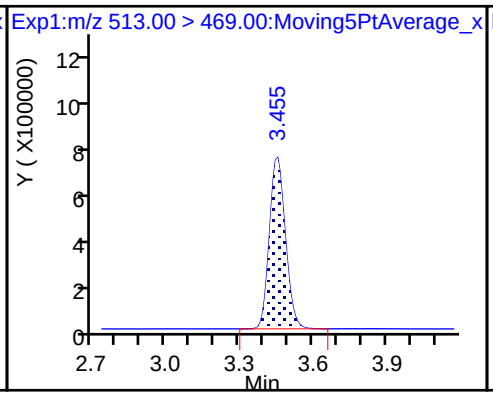
D 21 13C8 FOSA



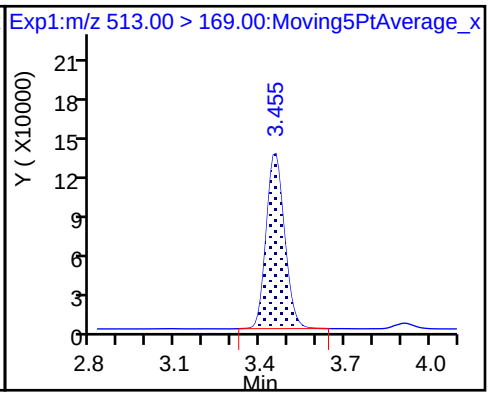
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid



24 Perfluorodecanoic acid



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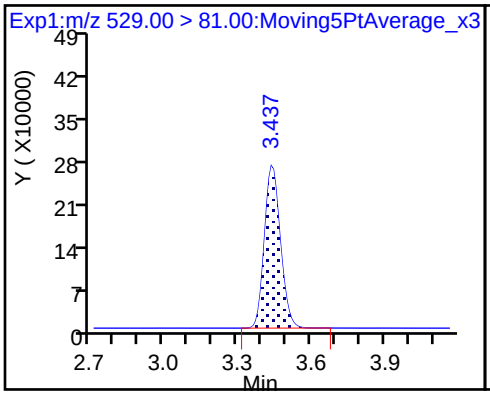

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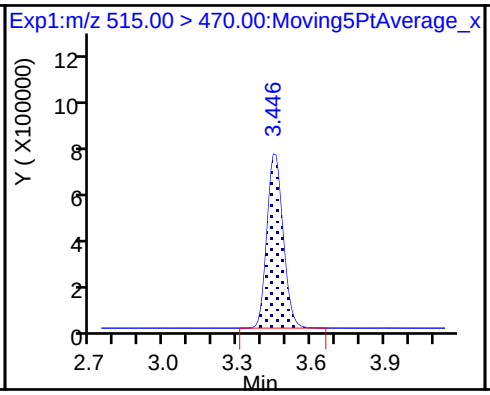
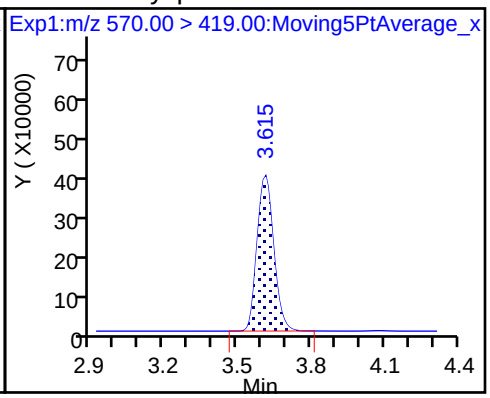
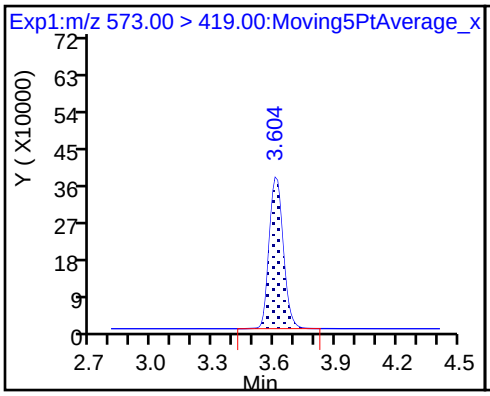


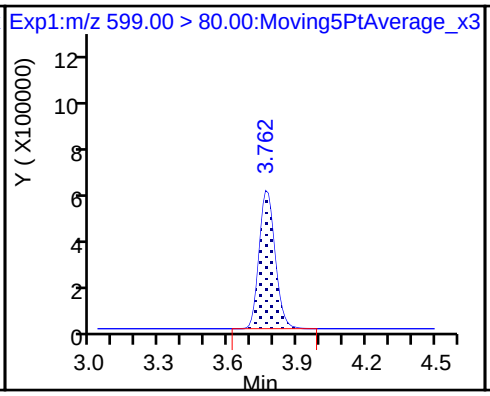
28 N-methyl perfluorooctane sulfonami



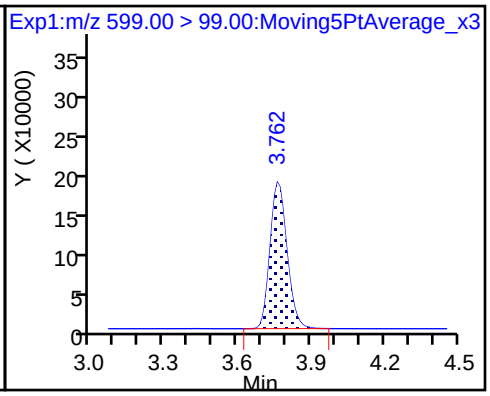
D 27 d3-NMeFOSAA



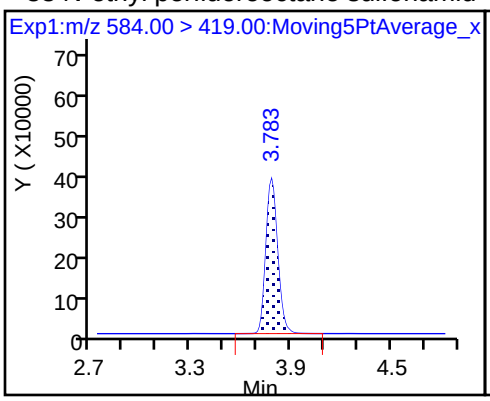
29 Perfluorodecane Sulfonic acid



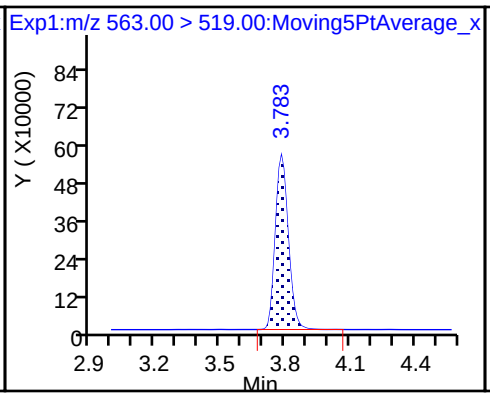
29 Perfluorodecane Sulfonic acid



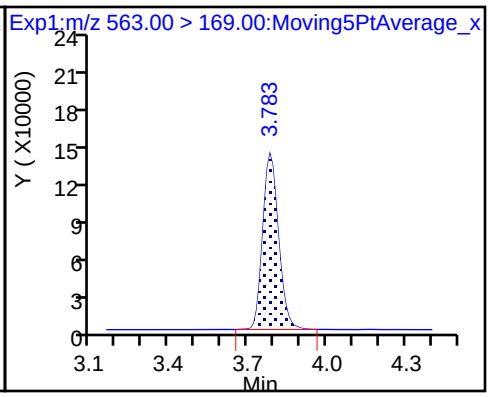
33 N-ethyl perfluorooctane sulfonamid



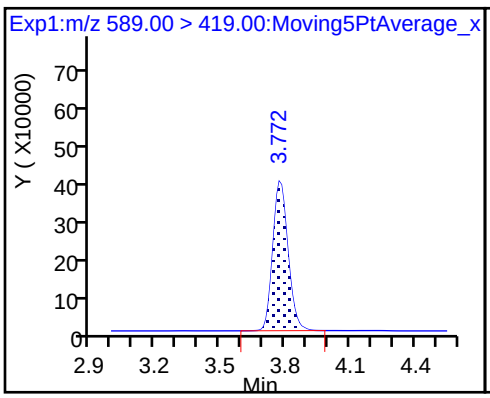
31 Perfluoroundecanoic acid



31 Perfluoroundecanoic acid



D 32 d5-NEtFOSAA



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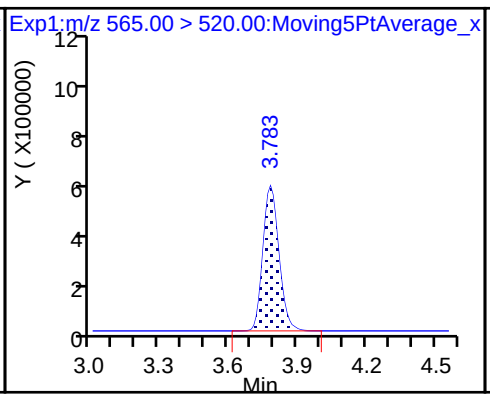
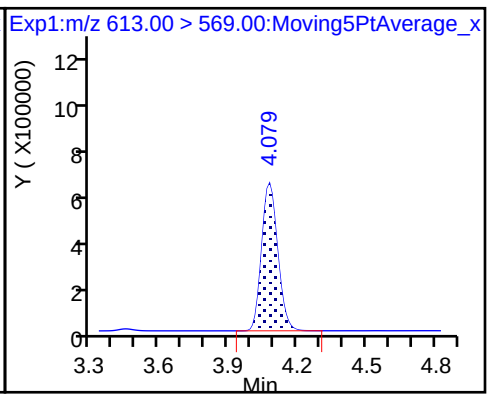
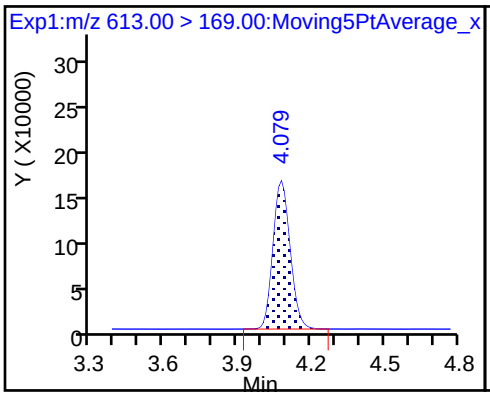


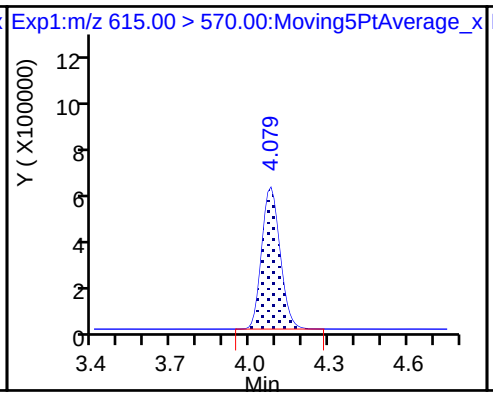
37 Perfluorododecanoic acid



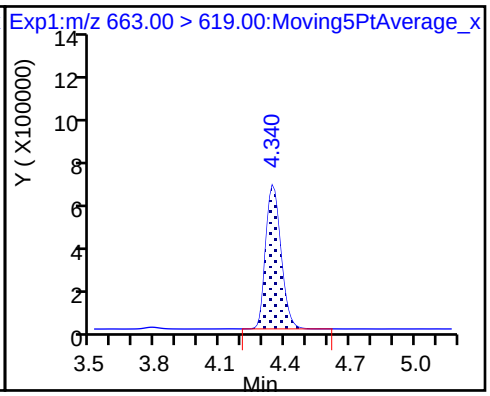
37 Perfluorododecanoic acid



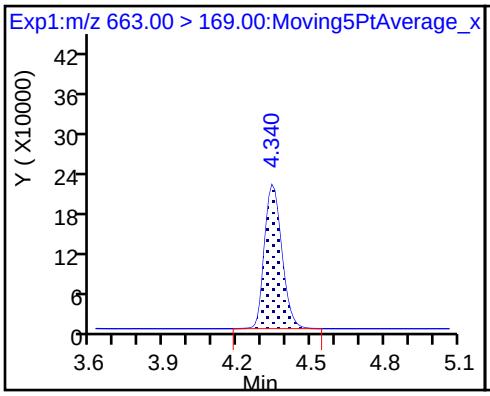
D 36 13C2 PFDoA



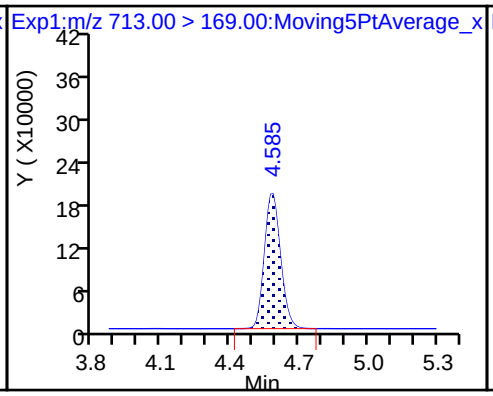
41 Perfluorotridecanoic acid



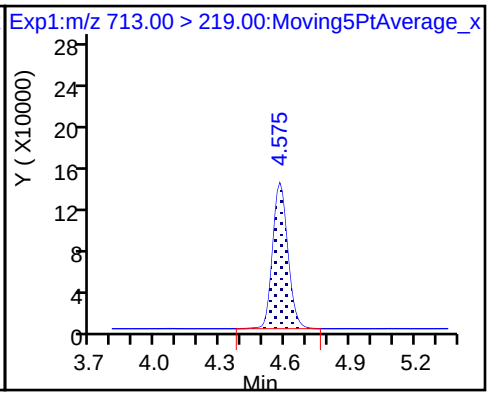
41 Perfluorotridecanoic acid



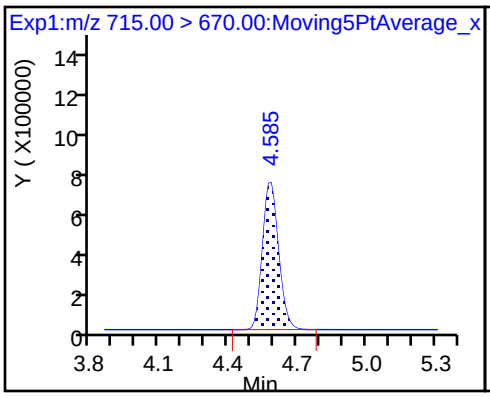
42 Perfluorotetradecanoic acid



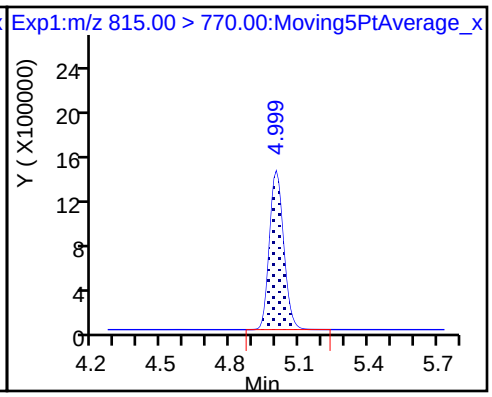
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 320-215538/10 Calibration Date: 03/29/2018 18:29

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.03.29A_ICALB_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9242	0.9691		2.62	2.50	4.9	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.197	1.180		2.46	2.50	-1.5	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	78.89	83.68		2.35	2.21	6.1	30.0
4:2 FTS	AveID	17.26	17.19		2.33	2.34	-0.4	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.023	0.9907		2.42	2.50	-3.2	30.0
Perfluoropentanesulfonic acid	AveID	71.20	73.94		2.44	2.35	3.9	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.087	1.115		2.57	2.50	2.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.117	1.043		2.13	2.28	-6.6	30.0
6:2FTS	AveID	1.868	1.701		2.16	2.38	-8.9	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.133		2.39	2.50	-4.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.333	1.324		2.36	2.38	-0.7	30.0
Perfluorononanoic acid (PFNA)	AveID	1.029	1.006		2.44	2.50	-2.2	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.143	1.095		2.22	2.31	-4.2	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9877	1.023		2.59	2.50	3.6	30.0
Perfluorononanesulfonic acid	AveID	0.8018	0.7863		2.35	2.40	-1.9	30.0
8:2FTS	AveID	1.349	1.180		2.10	2.40	-12.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9893	1.006		2.54	2.50	1.7	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.054	1.003		2.38	2.50	-4.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6938	0.6843		2.38	2.41	-1.4	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9171	0.9283		2.53	2.50	1.2	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8023	0.7388		2.30	2.50	-7.9	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.081	1.021		2.36	2.50	-5.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.156	1.208		2.61	2.50	4.5	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2497	0.2605		2.61	2.50	4.3	30.0
13C4 PFBA	Ave	1.382	1.385		2.51	2.50	0.2	30.0
13C5-PFPeA	Ave	0.8994	0.9172		2.55	2.50	2.0	30.0
13C3-PFBS	Ave	0.0206	0.0204		2.31	2.33	-0.8	30.0
13C2 PFHxA	Ave	0.9916	1.056		2.66	2.50	6.5	30.0
13C4-PFHpA	Ave	0.9533	0.9410		2.47	2.50	-1.3	30.0
18O2 PFHxS	Ave	1.189	1.232		2.45	2.37	3.6	30.0
M2-6:2FTS	Ave	0.2203	0.2135		2.30	2.38	-3.1	30.0

FORM VII EPA 537 (Mod)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: ICV 320-215538/10 Calibration Date: 03/29/2018 18:29

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.03.29A_ICALB_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9372	0.9746		2.60	2.50	4.0	30.0
13C4 PFOS	Ave	0.8257	0.8710		2.52	2.39	5.5	30.0
13C5 PFNA	Ave	0.7930	0.8274		2.61	2.50	4.3	30.0
13C8 FOSA	Ave	1.166	1.176		2.52	2.50	0.8	30.0
M2-8:2FTS	Ave	0.2562	0.2837		2.65	2.40	10.7	30.0
13C2 PFDA	Ave	0.6698	0.6846		2.56	2.50	2.2	30.0
d3-NMeFOSAA	Ave	0.3583	0.3650		2.55	2.50	1.9	30.0
13C2 PFUnA	Ave	0.5468	0.5737		2.62	2.50	4.9	30.0
d5-NEtFOSAA	Ave	0.3760	0.3766		2.50	2.50	0.2	30.0
13C2 PFDoA	Ave	0.6087	0.6206		2.55	2.50	2.0	30.0
13C2-PFTeDA	Ave	0.7733	0.8183		2.65	2.50	5.8	30.0
13C2-PFHxDA	Ave	1.194	1.281		2.68	2.50	7.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_010.d
Lims ID: ICV Full
Client ID:
Sample Type: ICV
Inject. Date: 29-Mar-2018 18:29:58 ALS Bottle#: 18 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:48:50 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.436	0.0	1.000	5866875	2.51		100	35721	
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.437	-0.001	1.000	5685461	2.62			3043	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.702	0.001	0.557	3884836	2.55		102	94661	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.706	-0.003	1.000	4582257	2.46			1820	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.738	0.001	1.000	80528	2.31		99.2	536	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.739	1.742	-0.003	1.000	6412695	2.35			4490	
298.90 > 99.00	1.739	1.742	-0.003	1.000	2635203		2.43(1.25-3.74)		4150	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.955	-0.006	1.000	610659	NC			9238	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.949	1.955	-0.006	1.000	1391984	2.33			62713	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.991	0.003	1.000	4471659	2.66		106	132095	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.992	0.001	1.000	4430163	2.42			6896	
313.00 > 119.00	1.993	1.992	0.001	1.000	399932		11.08(5.03-15.10)		5086	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.013	0.003	1.000	6018666	2.44			131994	
349.00 > 99.00	2.016	2.013	0.003	1.000	2182963		2.76(1.36-4.07)		38268	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.092	0.003	1.005	681292	NC			6377	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.083	2.092	-0.009	1.000	234699	NC			3552	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 9 13C4-PFHpA										
367.00 > 322.00	2.320	2.326	-0.006	1.000	3985700	2.47		98.7	93843	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.320	2.327	-0.007	1.000	4445785	2.57			4554	
363.00 > 169.00	2.320	2.327	-0.007	1.000	1739491		2.56(1.13-3.40)		4797	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.333	2.339	-0.006	1.000	4962874	2.13			20045	
399.00 > 99.00	2.333	2.339	-0.006	1.000	1688661		2.94(1.50-4.49)		8480	
D 11 18O2 PFHxS										
403.00 > 84.00	2.333	2.340	-0.007	1.000	4936288	2.45		104	91363	
65 Adona										
377.00 > 251.00	2.360	2.372	-0.012	1.000	12726761	NC			119055	
377.00 > 85.00	2.360	2.372	-0.012	1.000	7744083		1.64(0.84-2.53)		72762	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.661	2.664	-0.003	1.000	1461178	2.16			9796	
D 12 M2-6:2FTS										
429.00 > 81.00	2.661	2.664	-0.003	1.000	859005	2.30		96.9	20963	
D 14 13C4 PFOA										
417.00 > 372.00	2.683	2.688	-0.005	1.000	4128027	2.60		104	78774	
* 62 13C2-PFOA										
415.00 > 370.00	2.683	2.689	-0.006		4235745	2.50			87767	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.683	2.690	-0.007	1.000	4677462	2.39			1552	
413.00 > 169.00	2.683	2.690	-0.007	1.000	2409069		1.94(0.84-2.52)		9212	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.691	2.695	-0.004	1.000	4639777	2.36			56672	
449.00 > 99.00	2.691	2.695	-0.004	1.000	1202717		3.86(1.94-5.82)		21160	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.057	3.060	-0.003	1.000	3737562	2.22			8787	
499.00 > 99.00	3.057	3.060	-0.003	1.000	720418		5.19(2.31-6.93)		464	
D 18 13C4 PFOS										
503.00 > 80.00	3.057	3.060	-0.003	1.000	3526996	2.52		105	40641	
D 19 13C5 PFNA										
468.00 > 423.00	3.057	3.061	-0.004	1.000	3504658	2.61		104	83145	
20 Perfluorononanoic acid										
463.00 > 419.00	3.057	3.064	-0.007	1.000	3526566	2.44			4049	
463.00 > 169.00	3.057	3.064	-0.007	1.000	859845		4.10(1.90-5.69)		29311	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.264	3.272	-0.008	1.000	6249227	NC			55847	
D 21 13C8 FOSA										
506.00 > 78.00	3.385	3.388	-0.003	1.000	4980134	2.52		101	55607	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.385	3.389	-0.004	1.000	5095974	2.59			40050	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.404	3.409	-0.005	1.000	2784756	2.35			74221	
549.00 > 99.00	3.404	3.409	-0.005	1.000	999926		2.78(1.33-3.97)		29756	
D 26 M2-8:2FTS										
529.00 > 81.00	3.404	3.413	-0.009	1.000	1151010	2.65		111	29973	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.413	3.415	-0.002	1.003	1361017	2.10			12730	
D 23 13C2 PFDA										
515.00 > 470.00	3.423	3.423	0.0	1.000	2899919	2.56		102	40184	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.423	3.427	-0.004	1.000	2916936	2.54			14399	
513.00 > 169.00	3.423	3.427	-0.004	1.000	530427		5.50(2.36-7.09)		18164	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.572	3.578	-0.006	1.000	1546192	2.55		102	51215	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.572	3.581	-0.009	1.000	1550394	2.38			12123	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.737	3.738	-0.001	1.000	2436159	2.38			46929	
599.00 > 99.00	3.726	3.738	-0.012	0.997	816763		2.98(1.39-4.16)		17405	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.748	3.749	-0.001	1.000	1595099	2.50		100	4398	
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.753	-0.005	1.000	2429894	2.62		105	67252	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.748	3.755	-0.007	1.000	1480729	2.53			28105	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.748	3.755	-0.007	1.000	1795273	2.30			7420	
563.00 > 169.00	3.748	3.755	-0.007	1.000	481282		3.73(2.12-6.36)		11523	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.905	3.910	-0.005	1.000	9889084	NC			180484	
D 36 13C2 PFDoA										
615.00 > 570.00	4.048	4.052	-0.004	1.000	2628521	2.55		102	23455	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.048	4.052	-0.004	1.000	2683041	2.36			2117	
613.00 > 169.00	4.048	4.052	-0.004	1.000	683577		3.93(2.13-6.40)		12213	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.316	-0.009	1.000	3176156	2.61			1265	
663.00 > 169.00	4.307	4.316	-0.009	1.000	1022977		3.10(1.25-3.76)		16879	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.552	4.558	-0.006	1.000	902844	2.61			12080	
713.00 > 219.00	4.552	4.558	-0.006	1.000	595672		1.52(0.71-2.13)		13000	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.552	4.558	-0.006	1.000	3466082	2.65		106	20467	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.974	4.977	-0.003	1.000	5424012	2.68		107	13917	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.974	4.977	-0.003	1.000	4954065	NC			1097	
813.00 > 169.00	4.974	4.977	-0.003	1.000	839472		5.90(2.86-8.58)		5486	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.335	5.344	-0.009	1.000	5746232	NC			862	
913.00 > 169.00	5.335	5.344	-0.009	1.000	687269		8.36(3.83-11.48)		5386	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00011 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:48:56 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_010.d

Injection Date: 29-Mar-2018 18:29:58 Instrument ID: A8_N

Lims ID: ICV Full

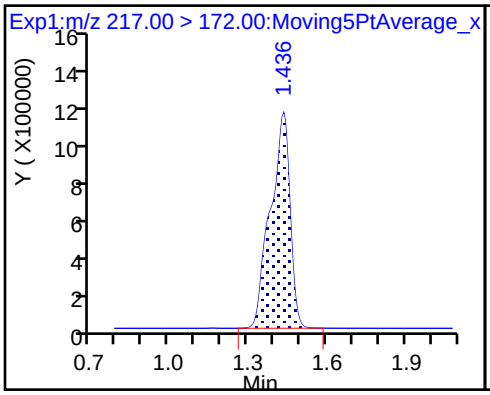
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 10

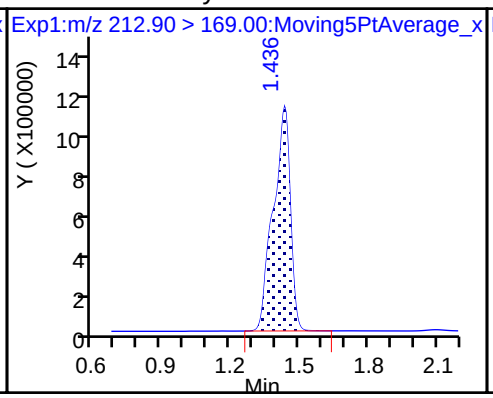
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

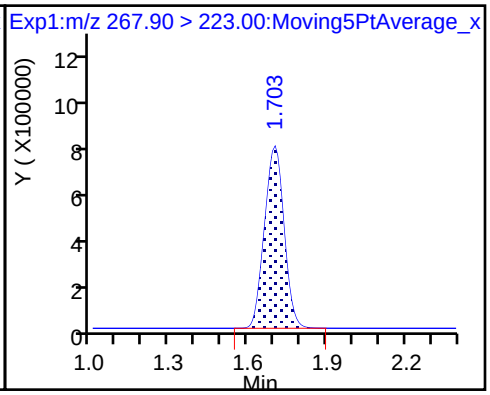
D 1 13C4 PFBA



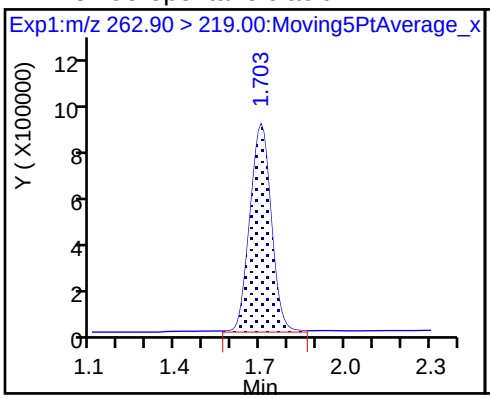
2 Perfluorobutyric acid



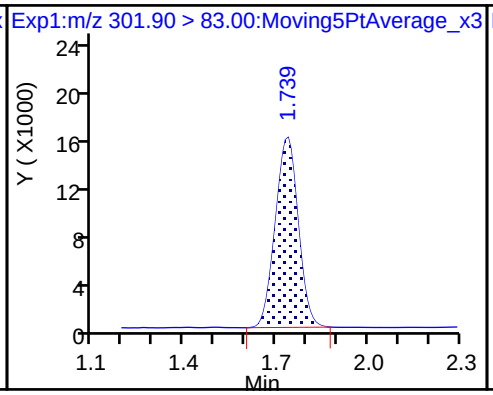
D 3 13C5-PFPeA



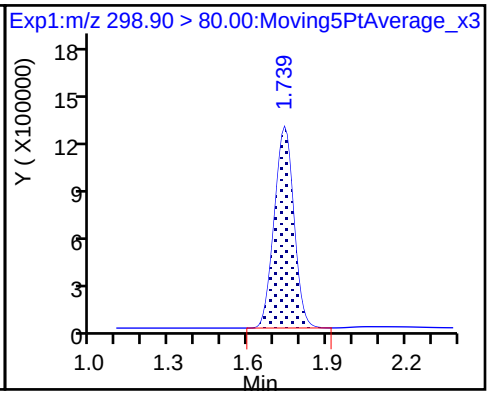
4 Perfluoropentanoic acid



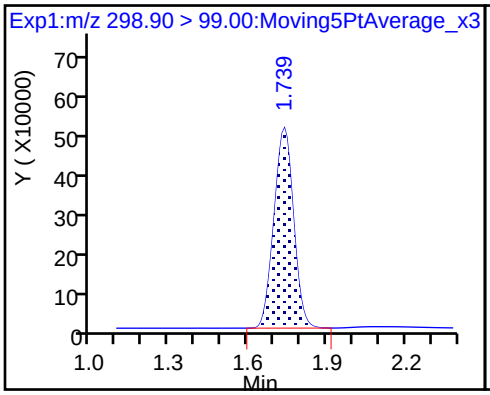
D 47 13C3-PFBS



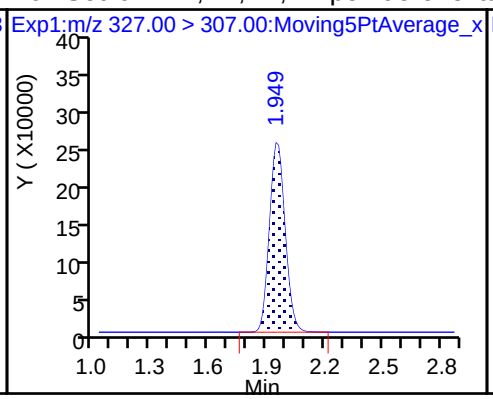
5 Perfluorobutanesulfonic acid



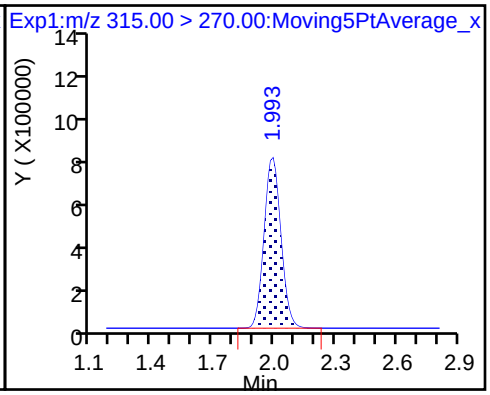
5 Perfluorobutanesulfonic acid



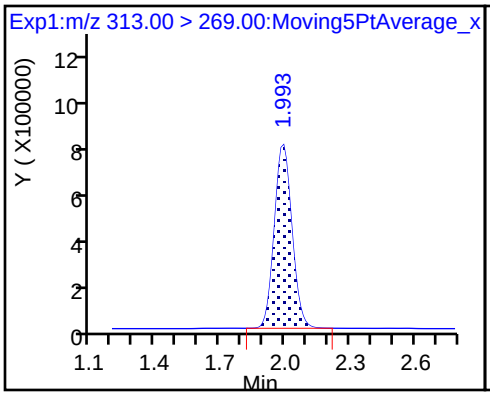
61 Sodium 1H,1H,2H,2H-perfluorohexa



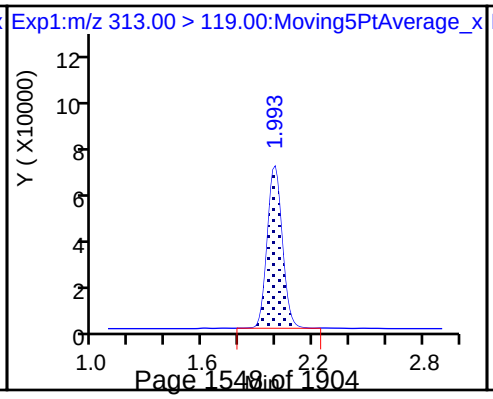
De 7 13C2 PFHxA



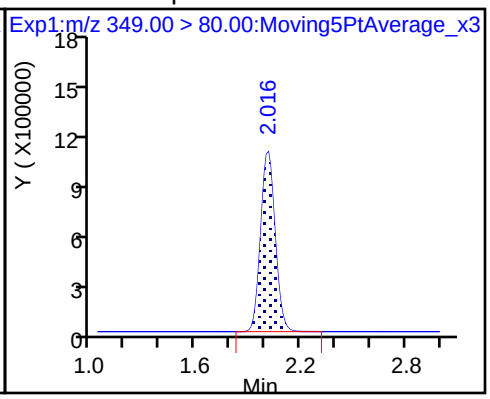
6 Perfluorohexanoic acid



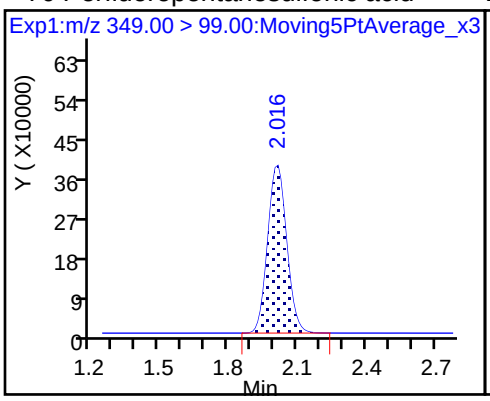
6 Perfluorohexanoic acid



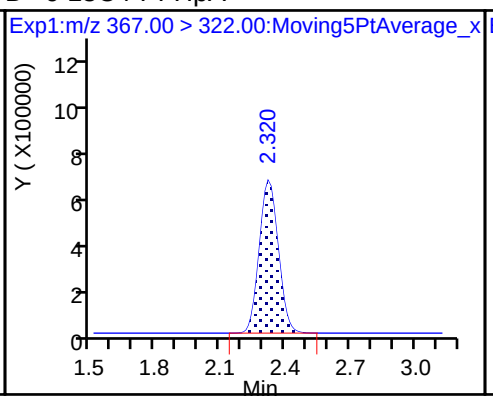
70 Perfluoropentanesulfonic acid



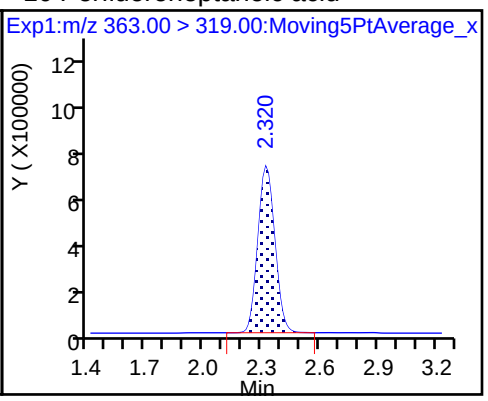
70 Perfluoropentanesulfonic acid



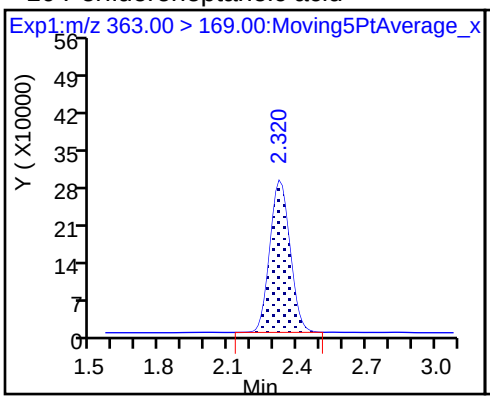
D 9 13C4-PFHpA



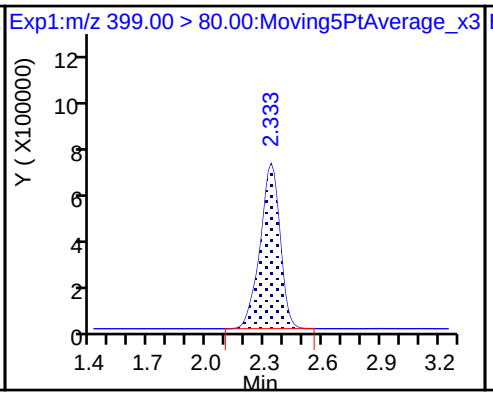
10 Perfluoroheptanoic acid



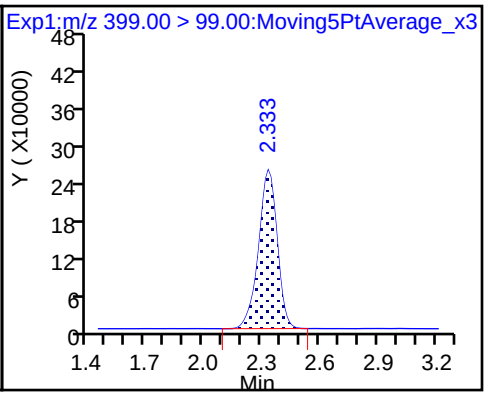
10 Perfluoroheptanoic acid



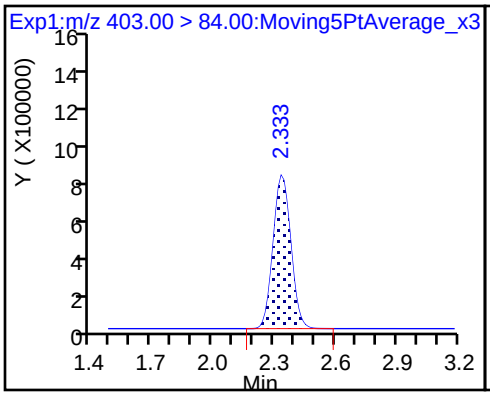
8 Perfluorohexanesulfonic acid



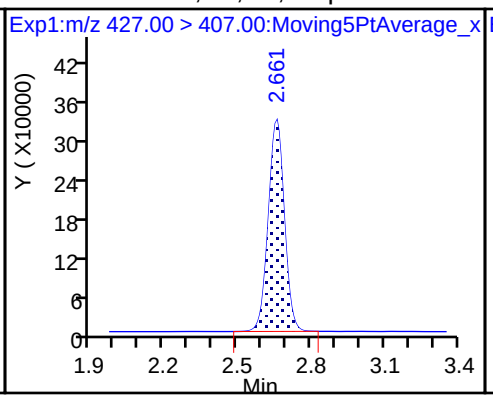
8 Perfluorohexanesulfonic acid



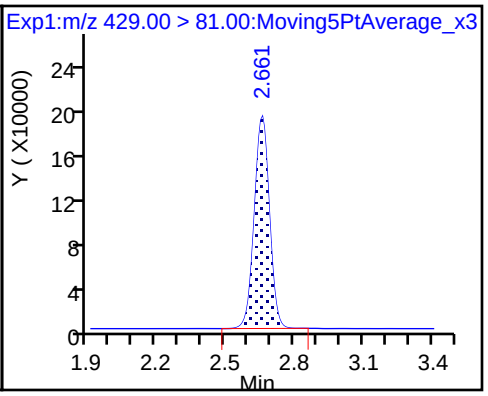
D 11 18O2 PFHxS



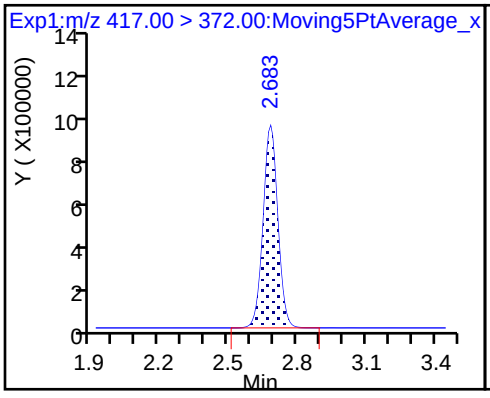
13 Sodium 1H,1H,2H,2H-perfluorooctane



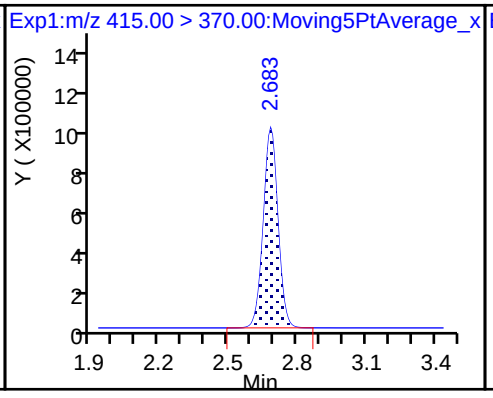
D 12 M2-6:2FTS



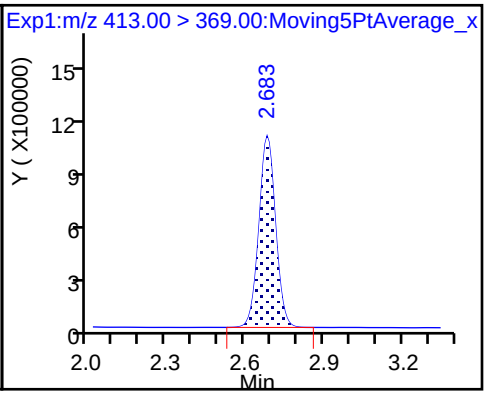
D 14 13C4 PFOA



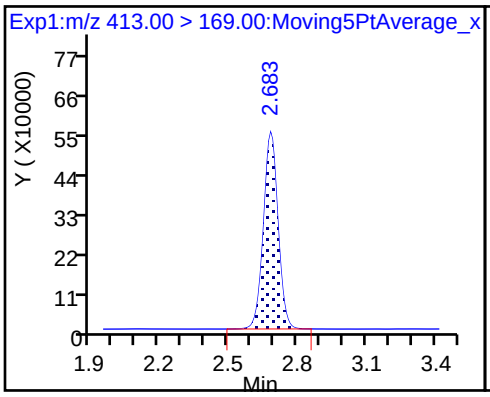
* 62 13C2-PFOA



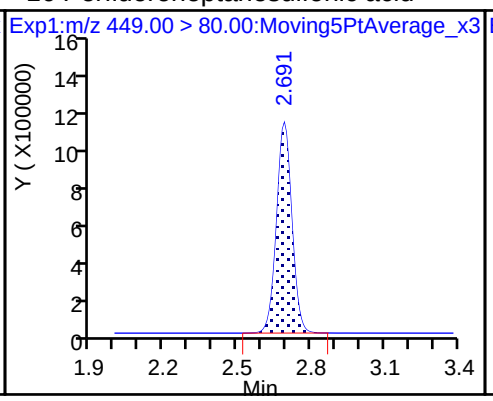
15 Perfluorooctanoic acid



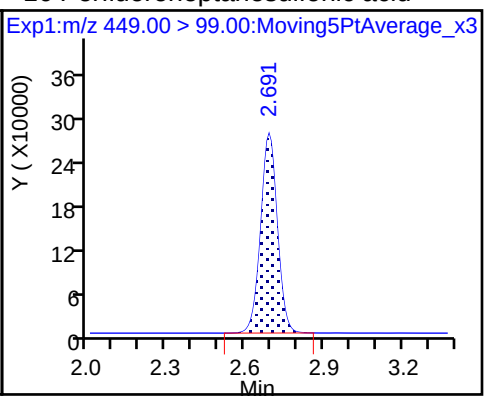
15 Perfluorooctanoic acid



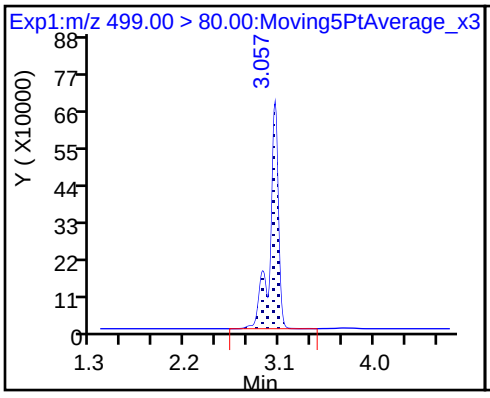
16 Perfluoroheptanesulfonic acid



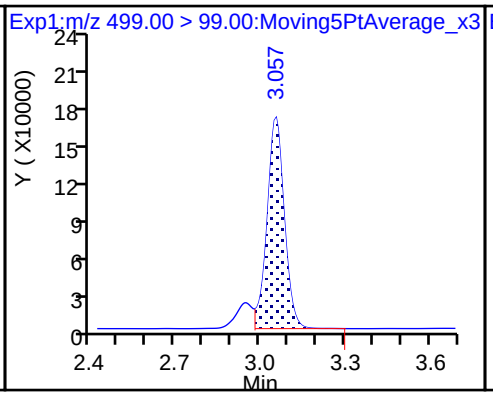
16 Perfluoroheptanesulfonic acid



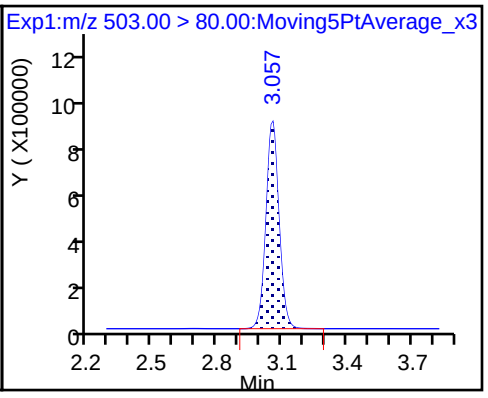
17 Perfluorooctane sulfonic acid



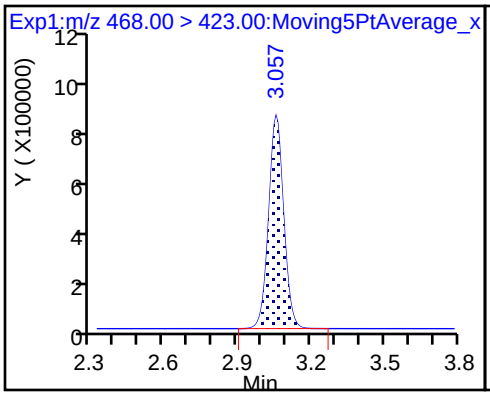
17 Perfluorooctane sulfonic acid



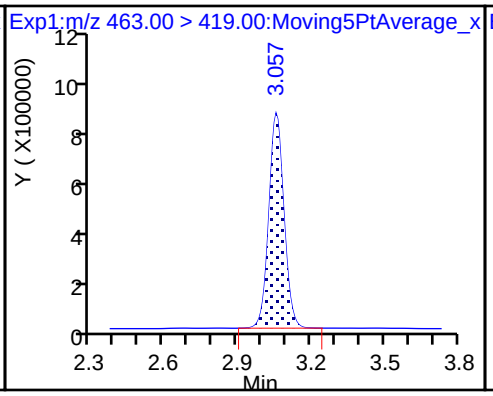
D 18 13C4 PFOS



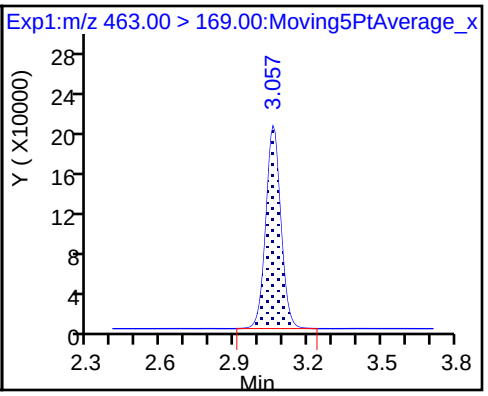
D 19 13C5 PFNA



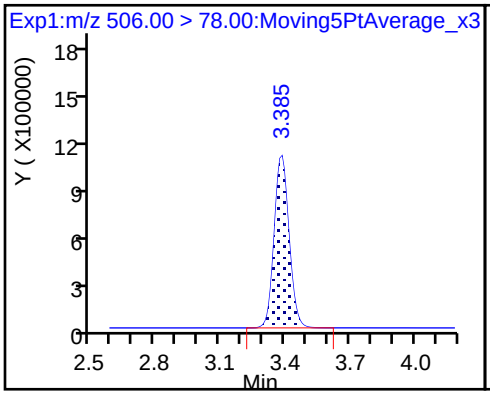
20 Perfluorononanoic acid



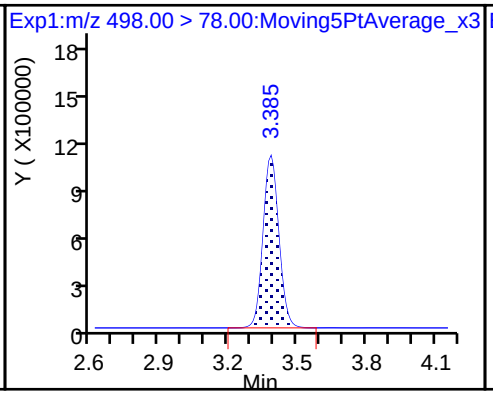
20 Perfluorononanoic acid



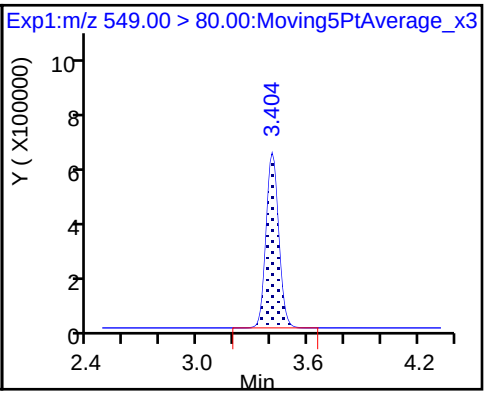
D 21 13C8 FOSA



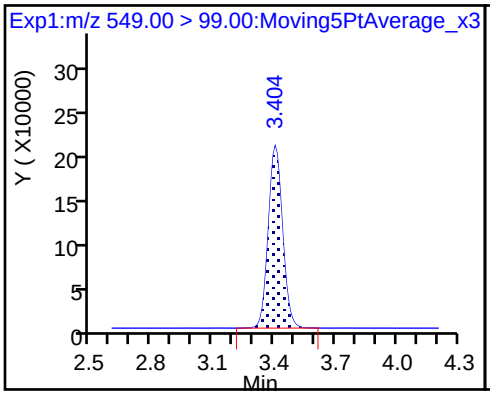
22 Perfluorooctane Sulfonamide



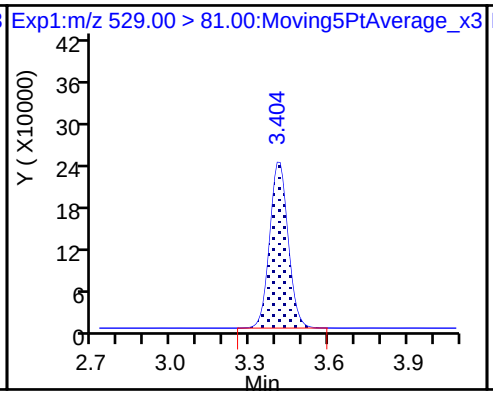
68 Perfluorononanesulfonic acid



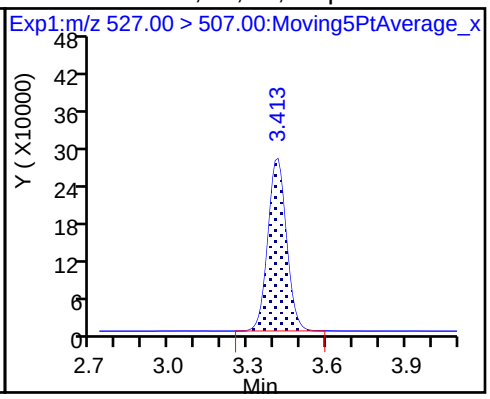
68 Perfluorononanesulfonic acid



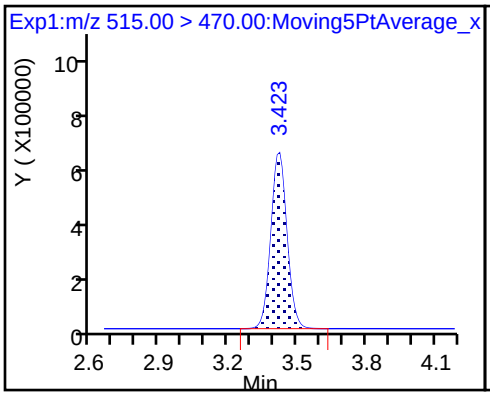
D 26 M2-8:2FTS



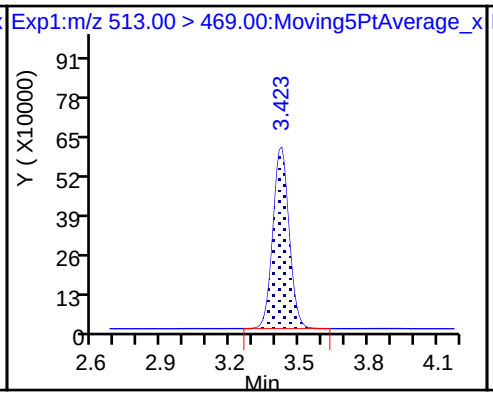
25 Sodium 1H,1H,2H,2H-perfluorodecane



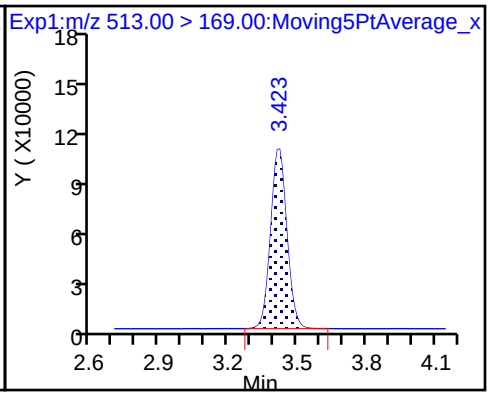
D 23 13C2 PFDA



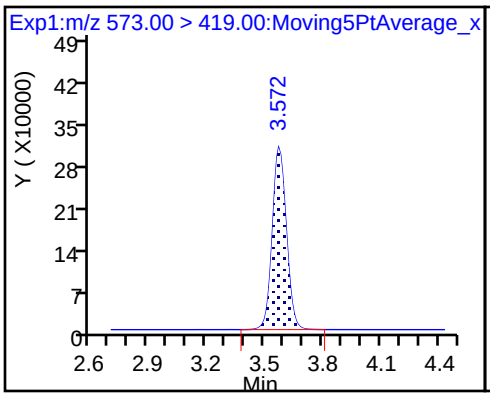
24 Perfluorodecanoic acid



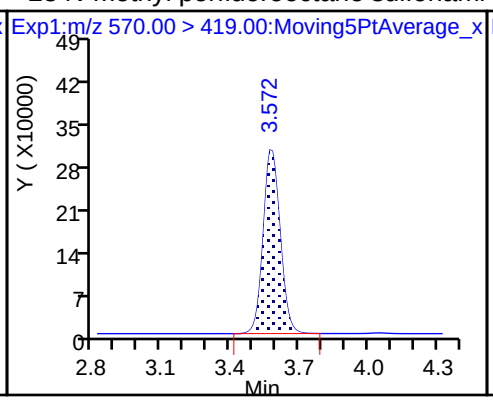
24 Perfluorodecanoic acid



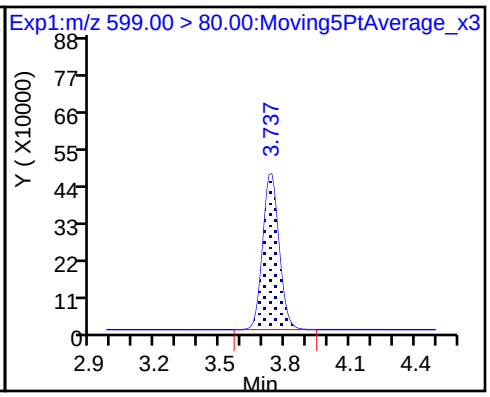
D 27 d3-NMeFOSAA



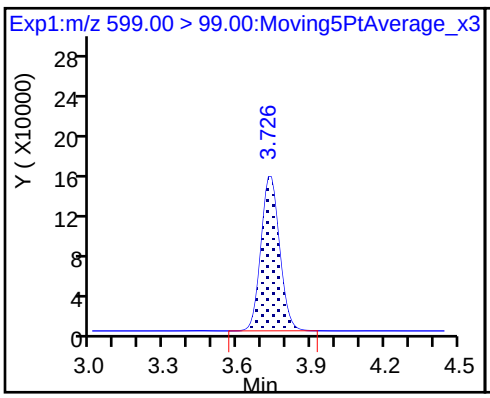
28 N-methyl perfluorooctane sulfonami



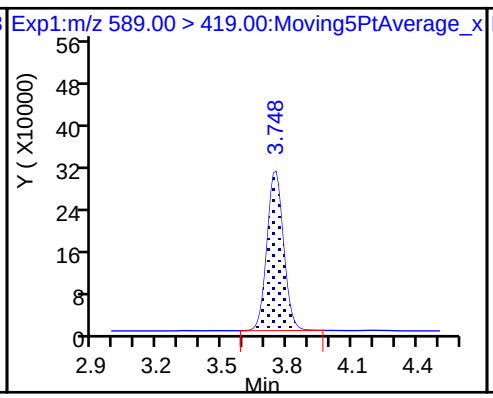
29 Perfluorodecane Sulfonic acid



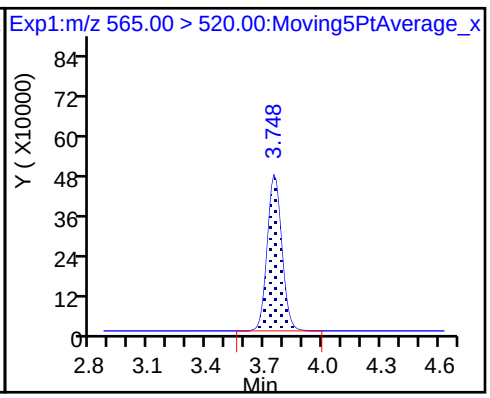
29 Perfluorodecane Sulfonic acid



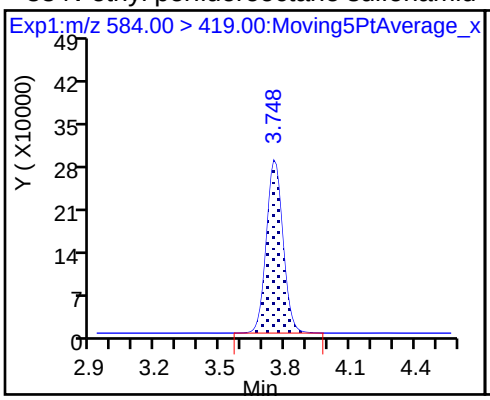
D 32 d5-NEtFOSAA



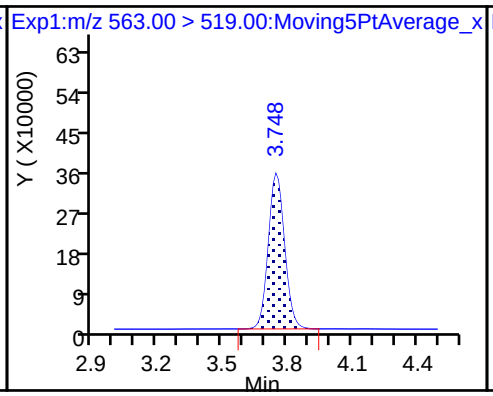
D 30 13C2 PFUnA



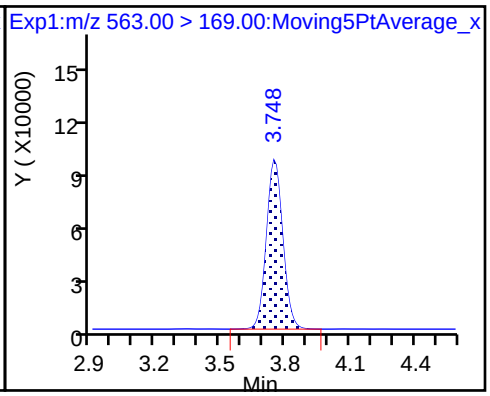
33 N-ethyl perfluorooctane sulfonamid



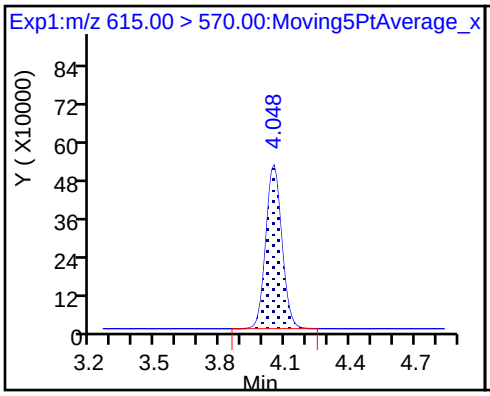
31 Perfluoroundecanoic acid



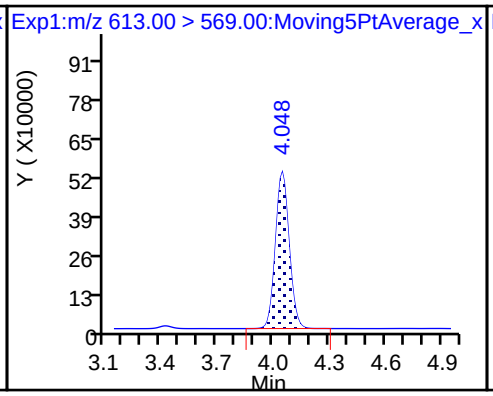
31 Perfluoroundecanoic acid



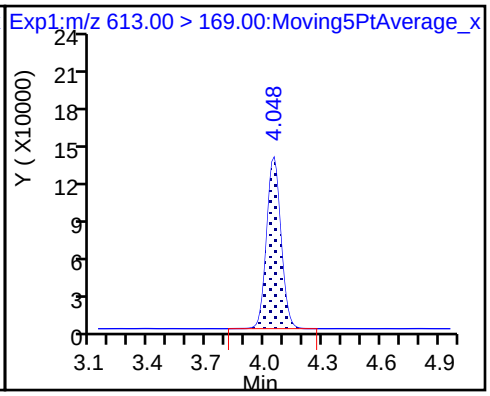
D 36 13C2 PFDoA



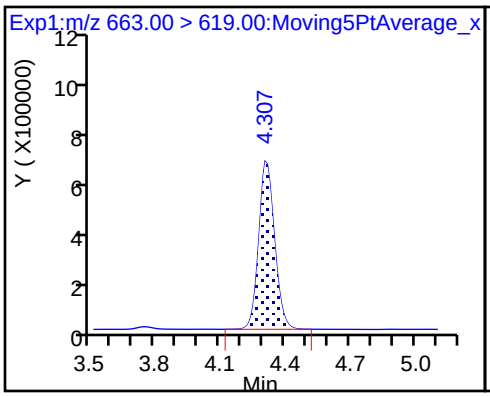
37 Perfluorododecanoic acid



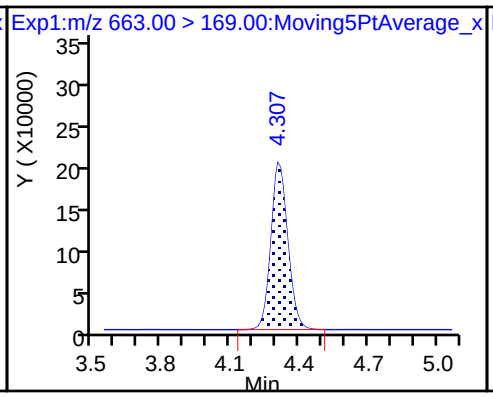
37 Perfluorododecanoic acid



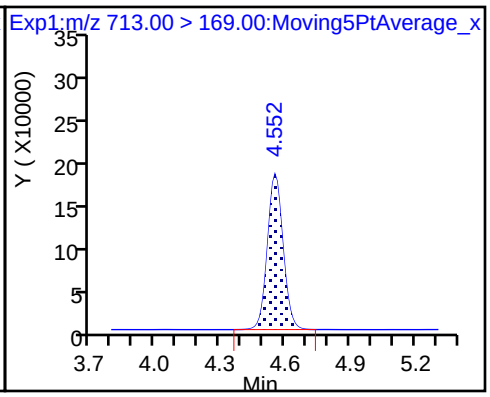
41 Perfluorotridecanoic acid



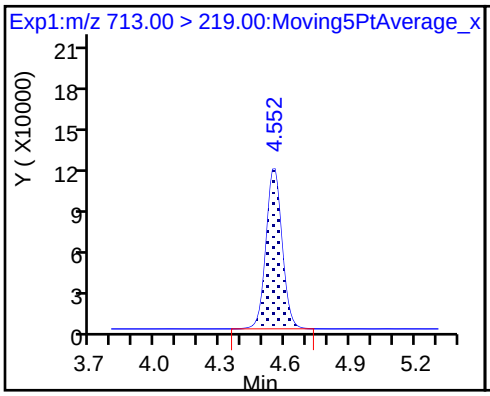
41 Perfluorotridecanoic acid



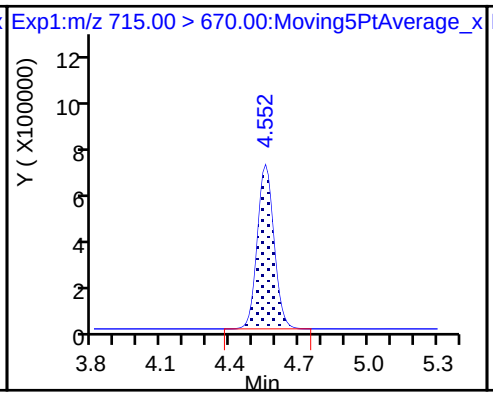
42 Perfluorotetradecanoic acid



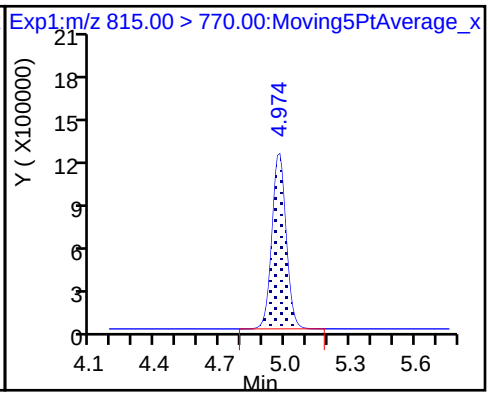
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVL 320-216821/2 Calibration Date: 04/07/2018 09:08

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9242	0.9100		0.0492	0.0500	-1.5	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.197	1.237		0.0517	0.0500	3.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	78.89	78.65		0.0441	0.0442	-0.3	30.0
4:2 FTS	AveID	17.26	20.62		0.400	0.0467	19.5	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.023	1.021		0.0499	0.0500	-0.2	30.0
Perfluoropentanesulfonic acid	AveID	71.20	72.43		0.0477	0.0469	1.7	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.087	1.004		0.0462	0.0500	-7.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.117	1.202		0.0490	0.0455	7.6	30.0
6:2FTS	AveID	1.868	1.664		0.400	0.0474	-10.9	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.148		0.0484	0.0500	-3.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.333	1.295		0.0463	0.0476	-2.8	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.143	1.233		0.0501	0.0464	7.9	30.0
Perfluorononanoic acid (PFNA)	AveID	1.029	1.037		0.0504	0.0500	0.7	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9877	0.9314		0.0471	0.0500	-5.7	30.0
8:2FTS	AveID	1.349	1.182		0.400	0.0479	-12.4	30.0
Perfluorononanesulfonic acid	AveID	0.8018	0.7772		0.0465	0.0480	-3.1	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9893	1.046		0.0529	0.0500	5.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.054	0.9859		0.400	0.0500	-6.5	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6938	0.6907		0.0480	0.0482	-0.4	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9171	0.8775		0.400	0.0500	-4.3	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8023	0.9368		0.0584	0.0500	16.8	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.081	1.091		0.0505	0.0500	0.9	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.156	1.171		0.0506	0.0500	1.3	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2497	0.2293		0.0459	0.0500	-8.2	30.0
13C4 PFBA	Ave	1.382	1.318		2.38	2.50	-4.6	30.0
13C5-PFPeA	Ave	0.8994	0.8547		2.38	2.50	-5.0	30.0
13C3-PFBS	Ave	0.0206	0.0189		2.13	2.33	-8.3	30.0
13C2 PFHxA	Ave	0.9916	0.9632		2.43	2.50	-2.9	30.0
13C4-PFHpA	Ave	0.9533	0.9926		2.60	2.50	4.1	30.0
18O2 PFHxS	Ave	1.189	1.183		2.35	2.37	-0.5	30.0
M2-6:2FTS	Ave	0.2203	0.2027		2.18	2.38	-8.0	30.0

FORM VII EPA 537 (Mod)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCVL 320-216821/2 Calibration Date: 04/07/2018 09:08

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9372	0.9667		2.58	2.50	3.1	30.0
13C4 PFOS	Ave	0.8257	0.8045		2.33	2.39	-2.6	30.0
13C5 PFNA	Ave	0.7930	0.8138		2.57	2.50	2.6	30.0
13C8 FOSA	Ave	1.166	1.078		2.31	2.50	-7.6	30.0
M2-8:2FTS	Ave	0.2562	0.2586		2.42	2.40	1.0	30.0
13C2 PFDA	Ave	0.6698	0.7202		2.69	2.50	7.5	30.0
d3-NMeFOSAA	Ave	0.3583	0.4033		2.81	2.50	12.6	30.0
d5-NEtFOSAA	Ave	0.3760	0.4048		2.69	2.50	7.7	30.0
13C2 PFUnA	Ave	0.5468	0.5737		2.62	2.50	4.9	30.0
13C2 PFDoA	Ave	0.6087	0.6375		2.62	2.50	4.7	30.0
13C2-PFTeDA	Ave	0.7733	0.8125		2.63	2.50	5.1	30.0
13C2-PFHxDA	Ave	1.194	1.303		2.73	2.50	9.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 07-Apr-2018 09:08:59 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:39 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:18:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.424	1.424	0.0	1.000	117459	0.0492		98.5	42.8	
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.425	-0.001	1.000	6454114	2.38		95.4	55596	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.692	1.693	-0.001	1.000	103568	0.0517		103	61.3	
D 3 13C5-PFPeA										
267.90 > 223.00	1.692	1.694	-0.002	0.560	4186177	2.38		95.0	90798	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.729	1.729	0.0	1.000	128640	0.0441		99.7	469	
298.90 > 99.00	1.729	1.729	0.0	1.000	53927		2.39(1.25-3.74)		394	
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	86032	2.13		91.7	541	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.938	1.938	0.0	1.000	35634	0.0558		120	1945	
D 60 M2-4:2FTS										
329.00 > 81.00	1.938	1.950	-0.012	1.000	683120	NC			5289	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.981	1.970	0.011	1.000	96383	0.0499		99.8	188	
313.00 > 119.00	1.970	1.970	0.0	0.995	7350		13.11(5.03-15.10)		88.2	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.982	-0.001	1.000	4717748	2.43		97.1	122824	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	1.991	1.992	-0.001	1.000	125694	0.0477		102	833	
349.00 > 99.00	2.003	1.992	0.011	1.006	49831		2.52(1.36-4.07)		540	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.071	2.071	0.0	1.000	14529	NC			80.0	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.071	2.073	-0.002	1.000	238923	NC			5315	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.307	0.012	1.000	126785	0.0490		108	359	
399.00 > 99.00	2.319	2.307	0.012	1.000	40852		3.10(1.50-4.49)		171	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.306	2.307	-0.001	1.000	97664	0.0462		92.4	109	M
363.00 > 169.00	2.306	2.307	-0.001	1.000	35447		2.76(1.13-3.40)		150	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.308	-0.002	1.000	4861673	2.60		104	76888	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.321	-0.002	1.000	5480870	2.35		99.5	78180	
65 Adona										
377.00 > 251.00	2.345	2.346	-0.001	1.000	285801	NC			5258	
377.00 > 85.00	2.345	2.346	-0.001	1.000	159017		1.80(0.84-2.53)		1905	
13 Sodium 1H,1H,2H,2H-perfluorooctane										M
427.00 > 407.00	2.628	2.629	-0.001	1.000	31327	0.0422		89.1	229	M
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.637	-0.009	1.000	943089	2.18		92.0	10717	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.653	0.007		4898002	2.50			125818	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	4734724	2.58		103	84491	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.660	0.0	1.000	108705	0.0484		96.8	42.7	
413.00 > 169.00	2.652	2.660	-0.008	0.997	59859		1.82(0.84-2.52)		136	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.660	0.007	1.000	97153	0.0463		97.2	841	
449.00 > 99.00	2.667	2.660	0.007	1.000	26895		3.61(1.94-5.82)		499	
20 Perfluorononanoic acid										M
463.00 > 419.00	3.029	3.023	0.006	1.002	82650	0.0504		101	150	M
463.00 > 169.00	3.022	3.023	-0.001	1.000	18288		4.52(1.90-5.69)		260	M
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.022	3.023	-0.001	1.000	90176	0.0501		108	482	
499.00 > 99.00	3.029	3.023	0.006	1.002	19632		4.59(2.31-6.93)		183	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.023	-0.001	1.000	3767099	2.33		97.4	26143	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.030	-0.008	1.000	3986103	2.57		103	91302	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.237	3.238	-0.001	1.000	128533	NC			1991	
22 Perfluorooctane Sulfonamide										M
498.00 > 78.00	3.357	3.359	-0.002	1.000	98352	0.0471		94.3	5409	M
D 21 13C8 FOSA										
506.00 > 78.00	3.357	3.360	-0.003	1.000	5279721	2.31		92.4	58600	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.376	3.369	0.007	1.000	58801	0.0465		96.9	610	
549.00 > 99.00	3.366	3.369	-0.003	0.997	22861		2.57(1.33-3.97)		330	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 Sodium 1H,1H,2H,2H-perfluorodecane										M
527.00 > 507.00	3.376	3.378	-0.002	1.000	28684	0.0420		87.6	950	M
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.378	-0.002	1.000	1213449	2.42		101	10876	
24 Perfluorodecanoic acid										RM
513.00 > 469.00	3.385	3.387	-0.002	1.000	73823	0.0529		106	241	RM
513.00 > 169.00	3.385	3.387	-0.002	1.000	10386		7.11(2.36-7.09)		170	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.387	-0.002	1.000	3527275	2.69		108	63345	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.544	3.537	0.007	1.000	1975365	2.81		113	35029	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.544	3.546	-0.002	1.000	38952	0.0468		93.5	312	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.694	3.696	-0.002	1.000	52473	0.0480		99.6	575	
599.00 > 99.00	3.705	3.696	0.009	1.003	14213		3.69(1.39-4.16)		357	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.707	-0.002	1.000	1982679	2.69		108	13683	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.715	3.718	-0.003	1.000	52648	0.0584		117	178	
563.00 > 169.00	3.726	3.718	0.008	1.003	9645		5.46(2.12-6.36)		241	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.715	3.718	-0.003	1.003	34794	0.0478		95.7	360	
D 30 13C2 PFUnA										
565.00 > 520.00	3.715	3.718	-0.003	1.000	2809975	2.62		105	86828	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.872	3.875	-0.002	1.000	213304	NC			1835	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.005	4.007	-0.002	1.000	68110	0.0505		101	49.1	
613.00 > 169.00	4.005	4.007	-0.002	1.000	15065		4.52(2.13-6.40)		215	
D 36 13C2 PFDoA										
615.00 > 570.00	4.005	4.008	-0.003	1.000	3122486	2.62		105	22353	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.269	4.270	-0.001	1.000	73102	0.0506		101	42.1	
663.00 > 169.00	4.269	4.270	-0.001	1.000	22919		3.19(1.25-3.76)		224	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.509	4.511	-0.002	1.000	18249	0.0459		91.8	222	
713.00 > 219.00	4.499	4.511	-0.012	0.998	11644		1.57(0.71-2.13)		135	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.509	4.511	-0.002	1.000	3979775	2.63		105	21321	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.921	4.922	-0.001	1.000	171509	NC			39.1	
813.00 > 169.00	4.929	4.922	0.007	1.002	24707		6.94(2.86-8.58)		153	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.921	4.922	-0.001	1.000	6380430	2.73		109	14695	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.276	5.276	0.0	1.000	129432	NC			22.5	
913.00 > 169.00	5.276	5.276	0.0	1.000	12520		10.34(3.83-11.48)		90.0	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL2_00004 Amount Added: 1.00 Units: mL

Report Date: 09-Apr-2018 08:26:41 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d

Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N

Lims ID: CCVL

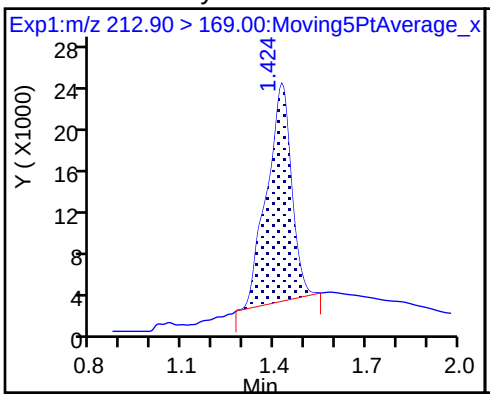
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2

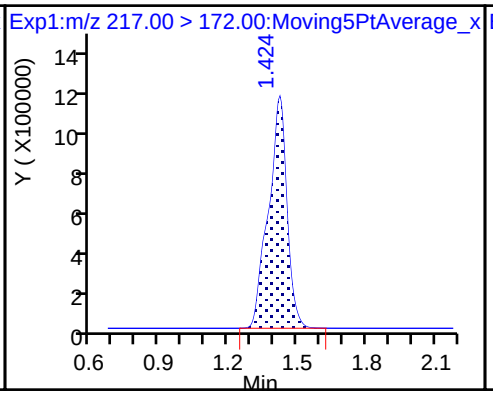
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

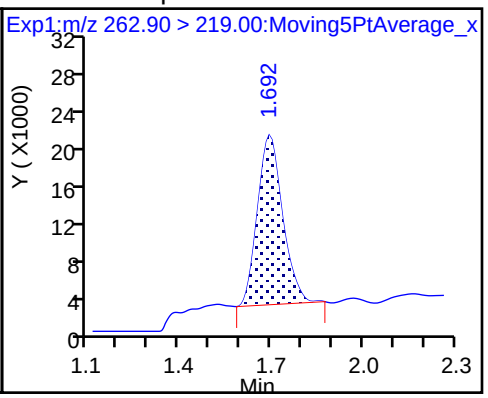
2 Perfluorobutyric acid



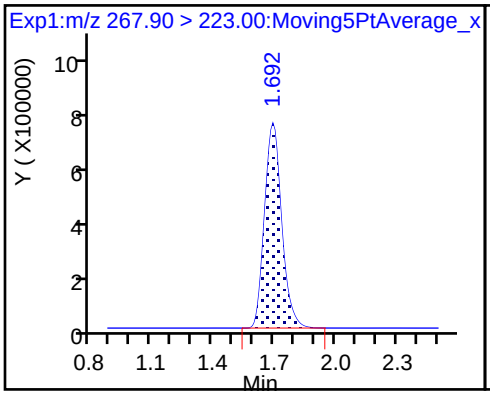
D 1 13C4 PFBA



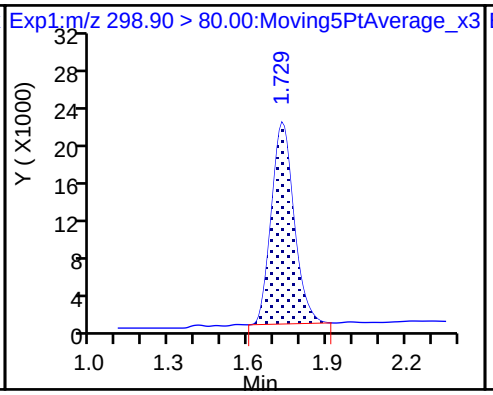
4 Perfluoropentanoic acid



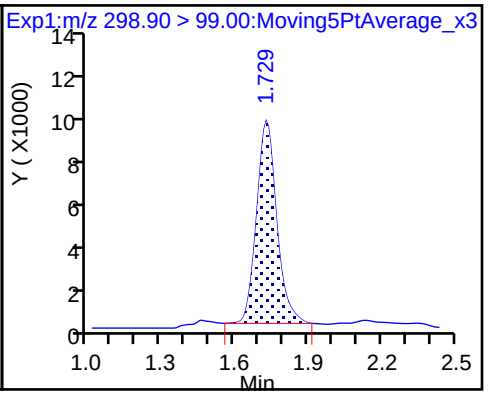
D 3 13C5-PFPeA



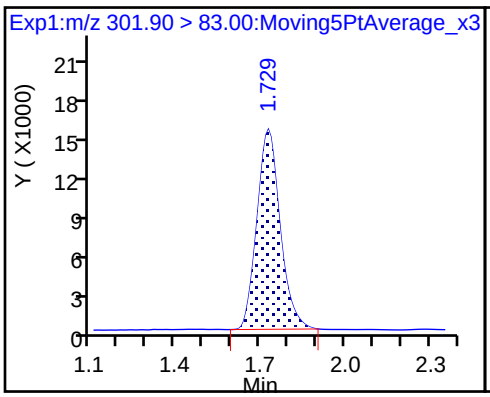
5 Perfluorobutanesulfonic acid



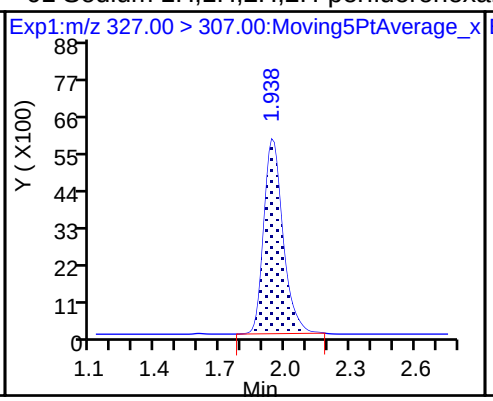
5 Perfluorobutanesulfonic acid



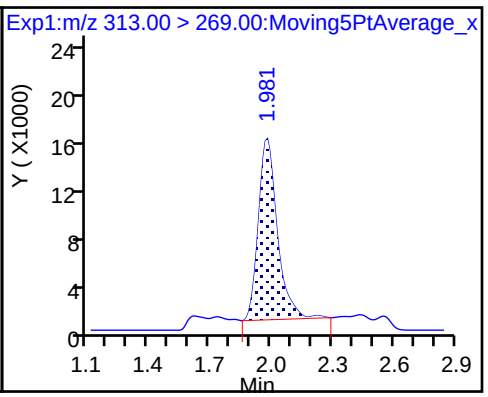
D 47 13C3-PFBS



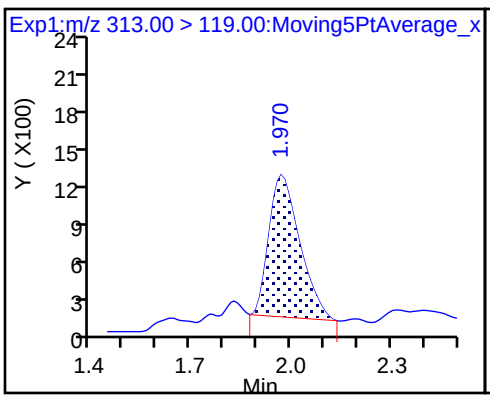
61 Sodium 1H,1H,2H,2H-perfluorohexane



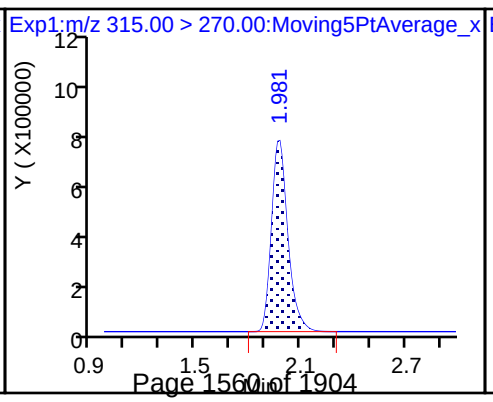
6 Perfluorohexanoic acid



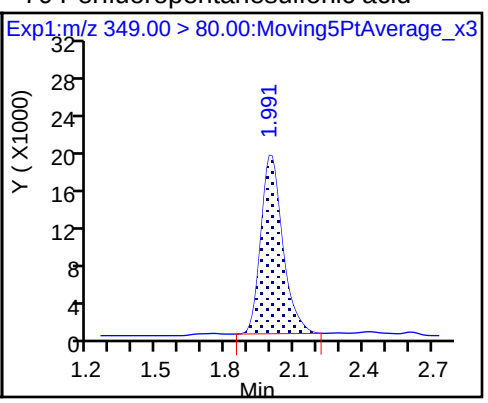
6 Perfluorohexanoic acid



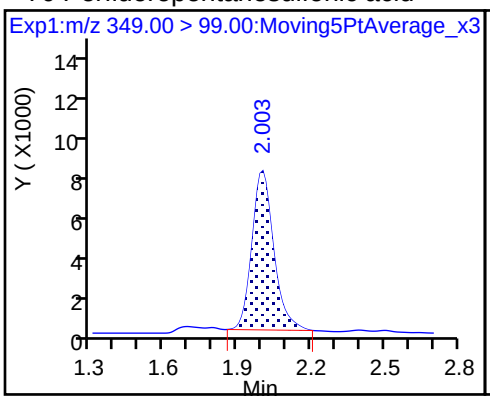
D 7 13C2 PFHxA



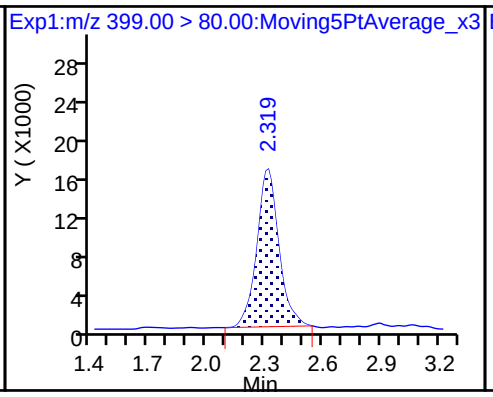
70 Perfluoropentanesulfonic acid



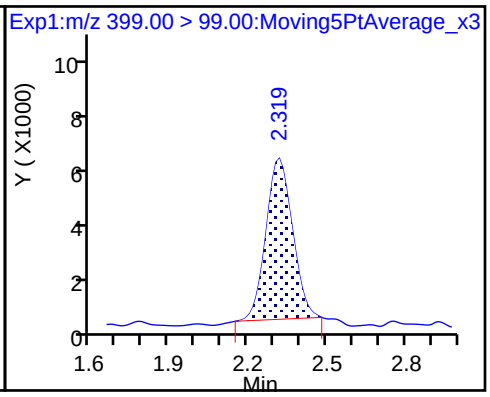
70 Perfluoropentanesulfonic acid



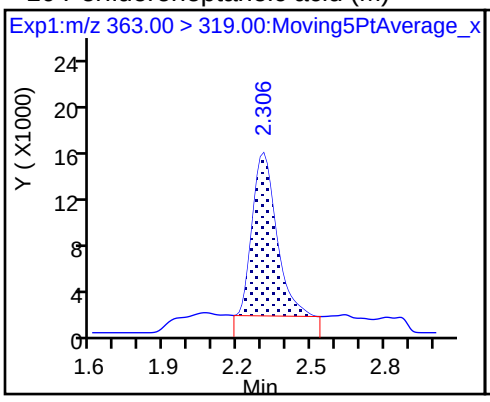
8 Perfluorohexanesulfonic acid



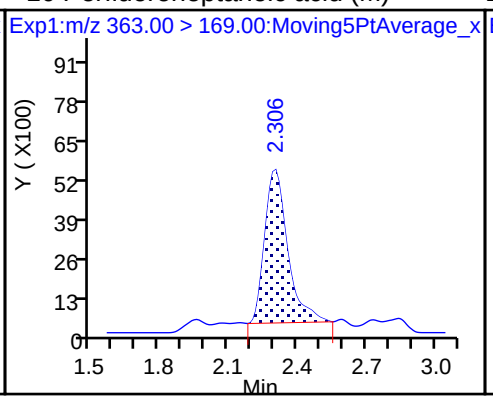
8 Perfluorohexanesulfonic acid



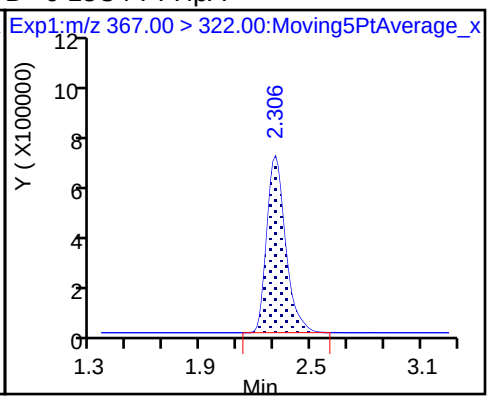
10 Perfluoroheptanoic acid (M)



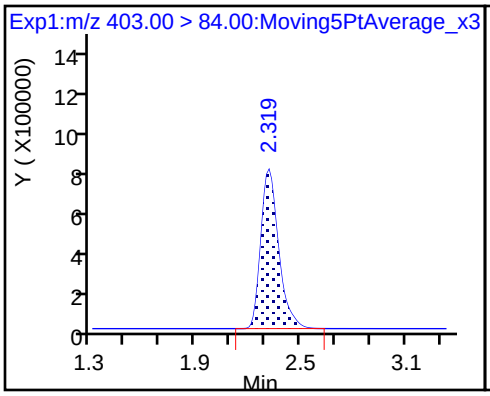
10 Perfluoroheptanoic acid (M)



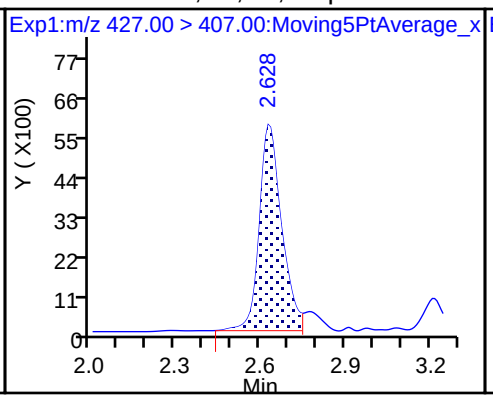
D 9 13C4-PFHpA



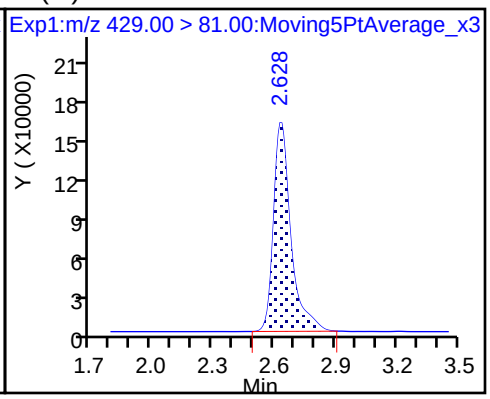
D 11 18O2 PFHxS



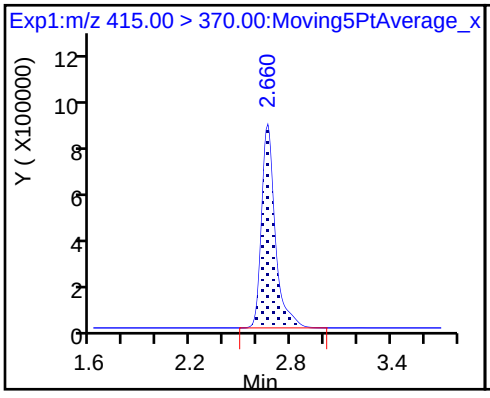
13 Sodium 1H,1H,2H,2H-perfluorooctane (M2-6:2FTS



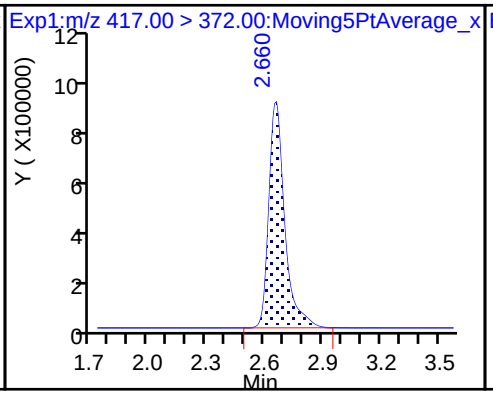
D 12 M2-6:2FTS



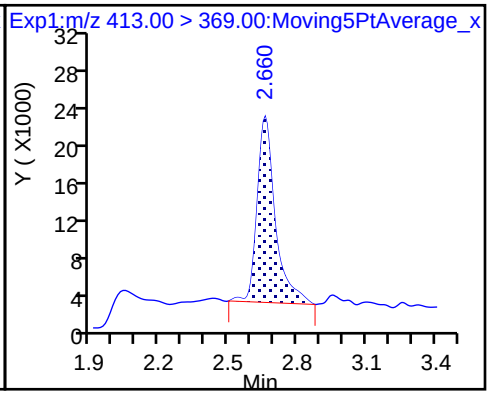
* 62 13C2-PFOA



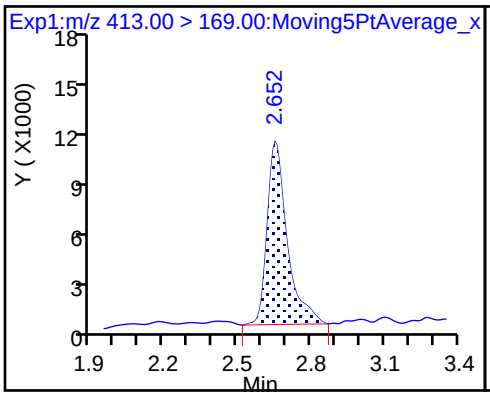
D 14 13C4 PFOA



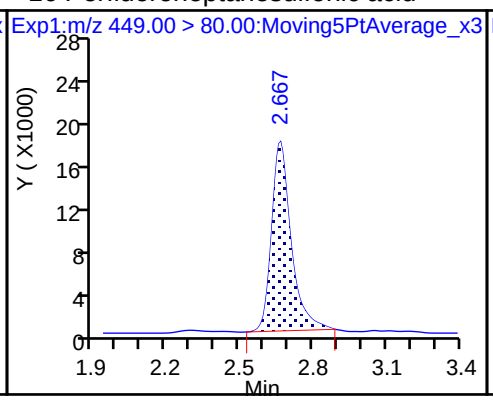
15 Perfluorooctanoic acid



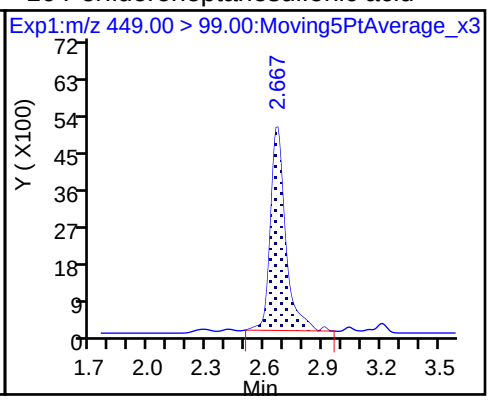
15 Perfluorooctanoic acid



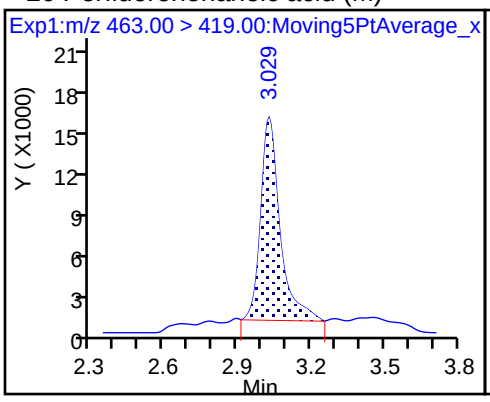
16 Perfluoroheptanesulfonic acid



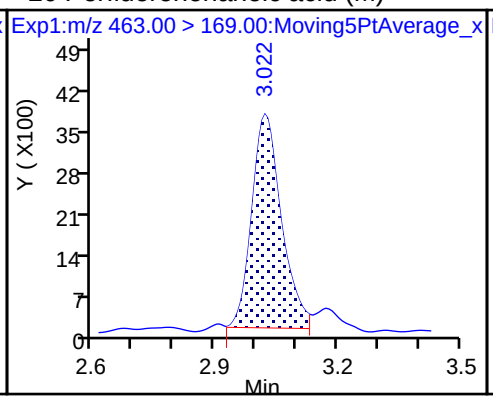
16 Perfluoroheptanesulfonic acid



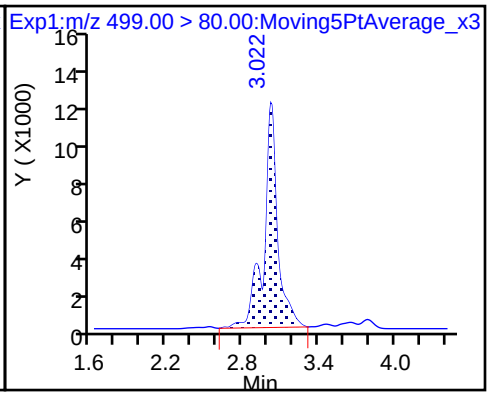
20 Perfluorononanoic acid (M)



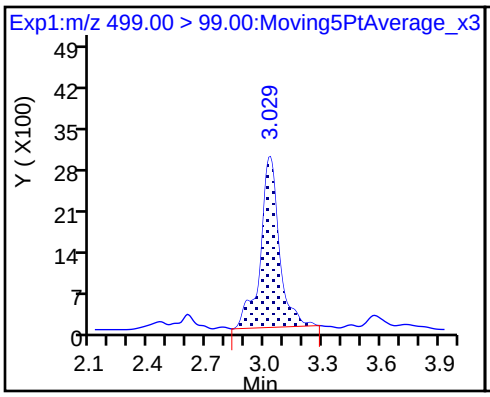
20 Perfluorononanoic acid (M)



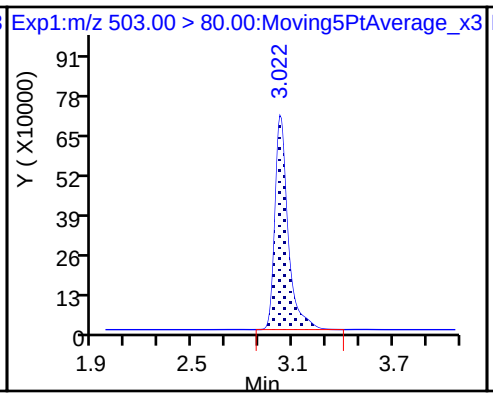
17 Perfluorooctane sulfonic acid



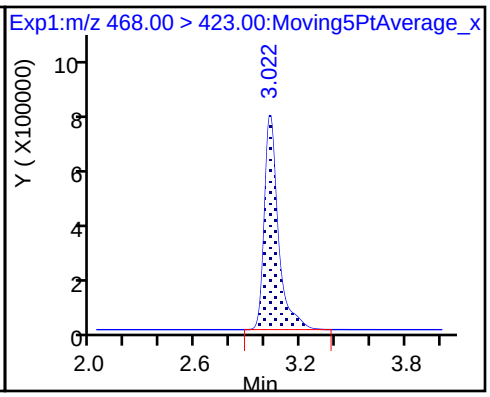
17 Perfluorooctane sulfonic acid



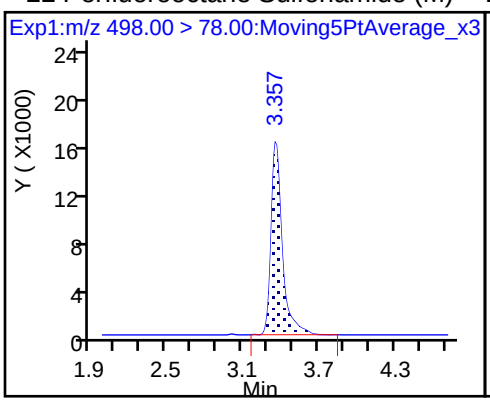
D 18 13C4 PFOS



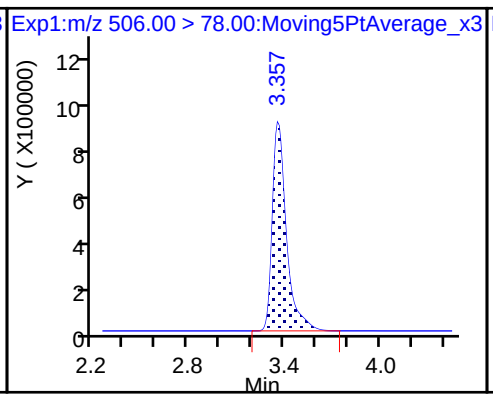
D 19 13C5 PFNA



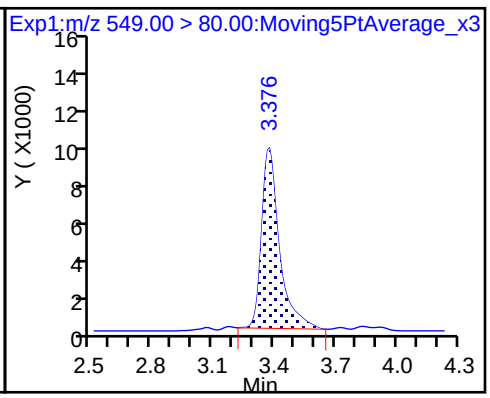
22 Perfluorooctane Sulfonamide (M)



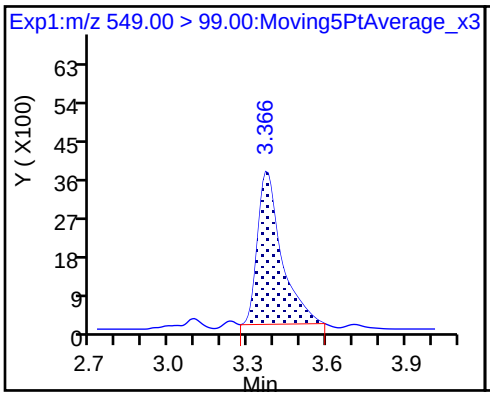
D 21 13C8 FOSA



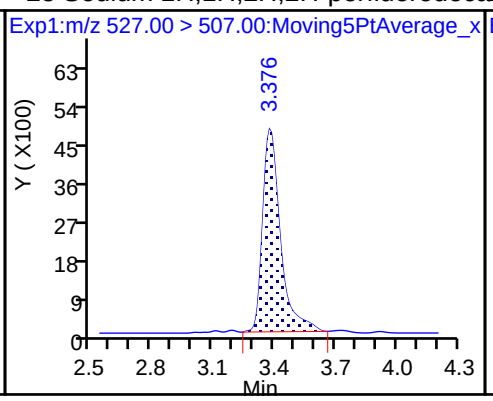
68 Perfluorononanesulfonic acid



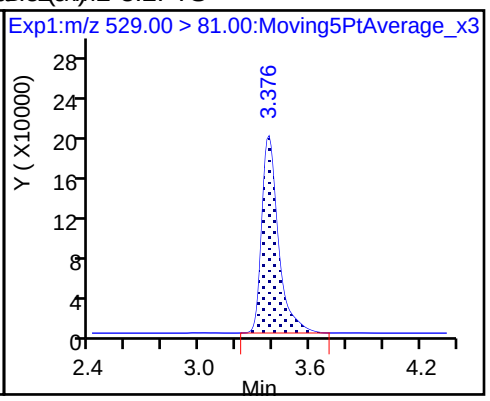
68 Perfluorononanesulfonic acid



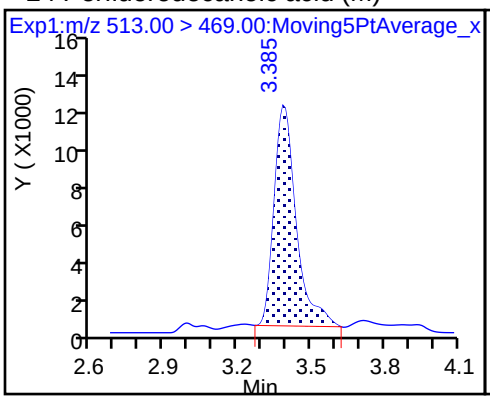
25 Sodium 1H,1H,2H,2H-perfluorodecane2(M)



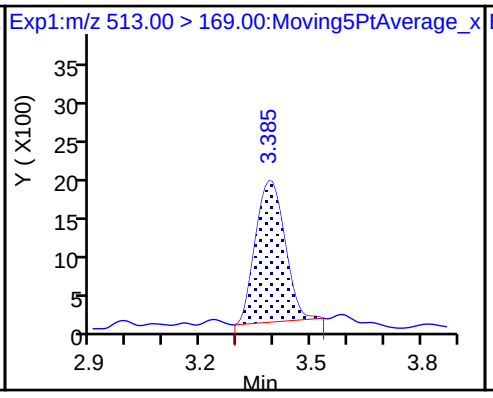
D 26 M2-8:2FTS



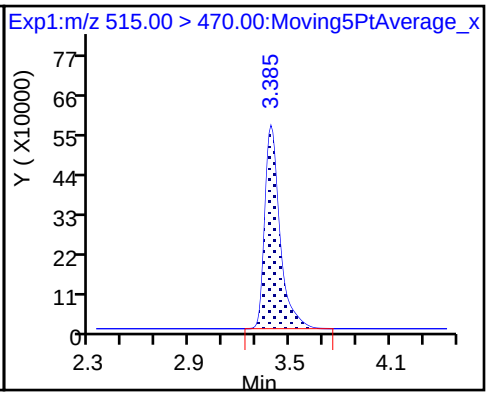
24 Perfluorodecanoic acid (M)



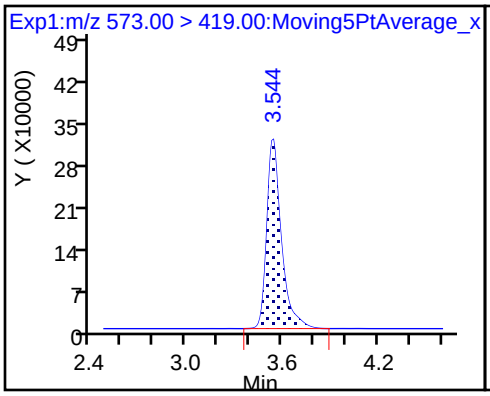
24 Perfluorodecanoic acid



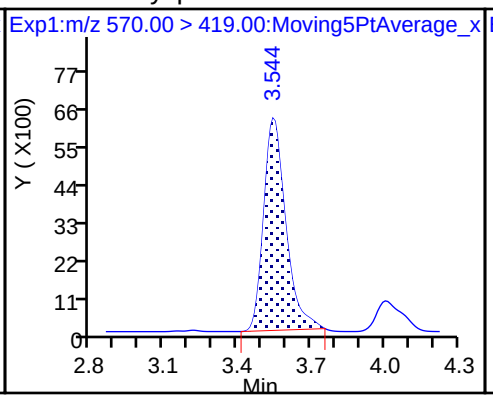
D 23 13C2 PFDA



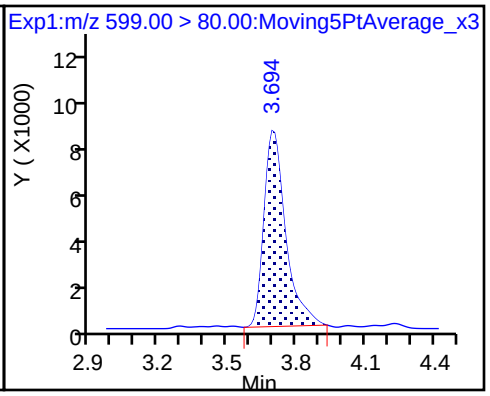
D 27 d3-NMeFOSAA



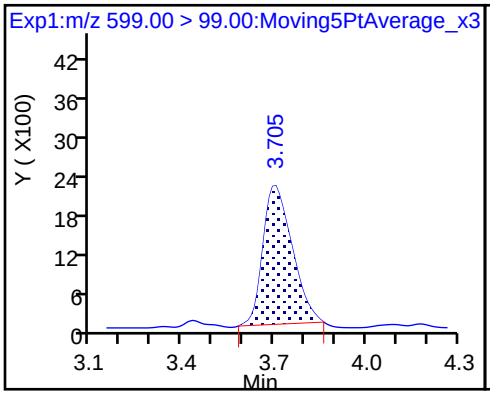
28 N-methyl perfluorooctane sulfonami



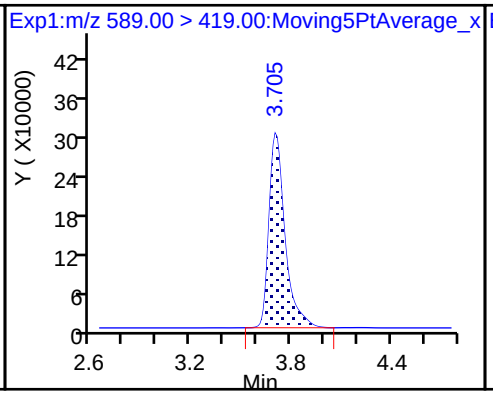
29 Perfluorodecane Sulfonic acid



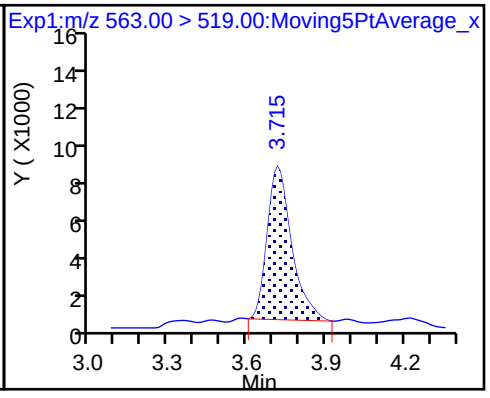
29 Perfluorodecane Sulfonic acid



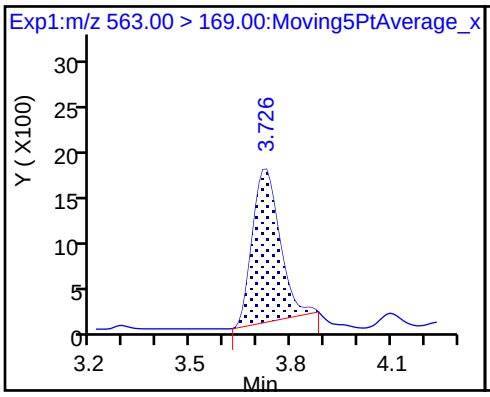
D 32 d5-NEtFOSAA



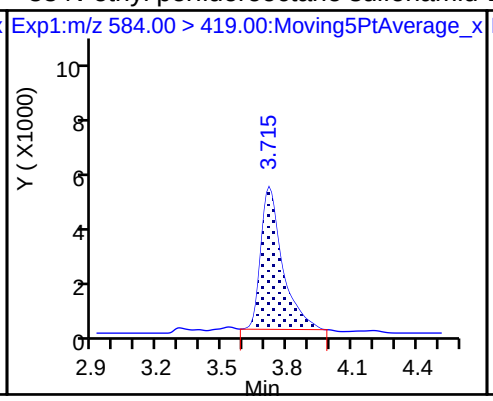
31 Perfluoroundecanoic acid



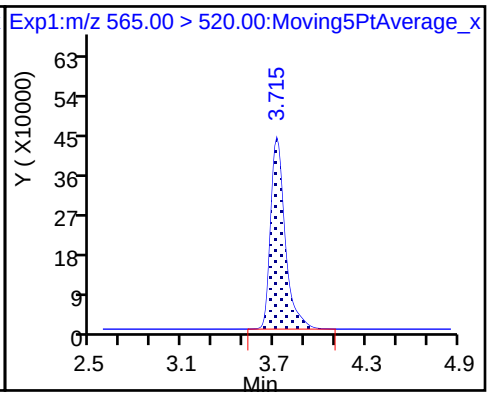
31 Perfluoroundecanoic acid



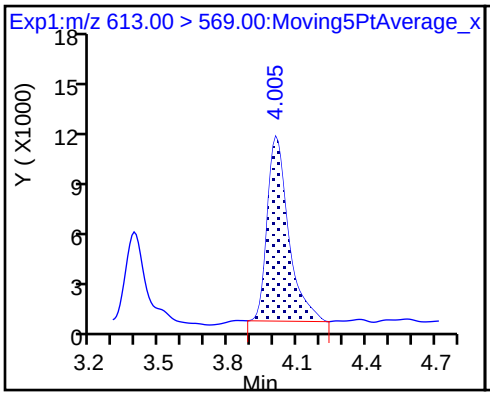
33 N-ethyl perfluorooctane sulfonamid



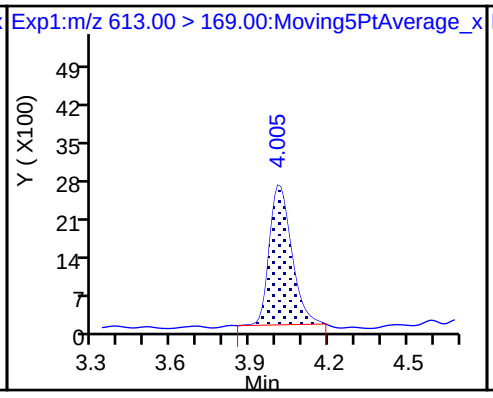
D 30 13C2 PFUnA



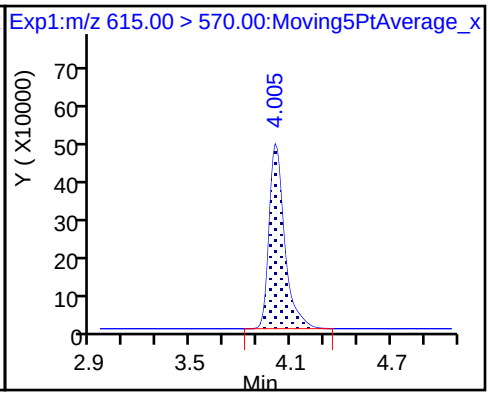
37 Perfluorododecanoic acid



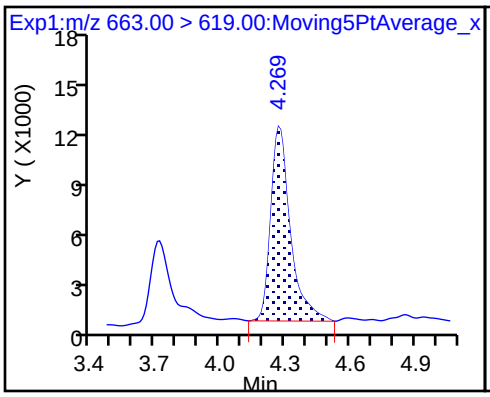
37 Perfluorododecanoic acid



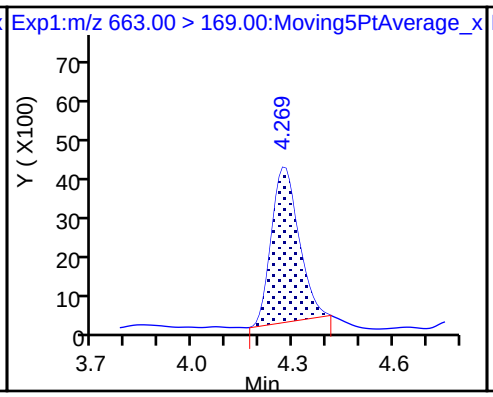
D 36 13C2 PFDoA



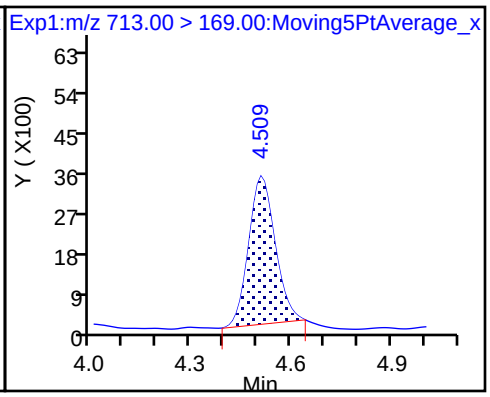
41 Perfluorotridecanoic acid



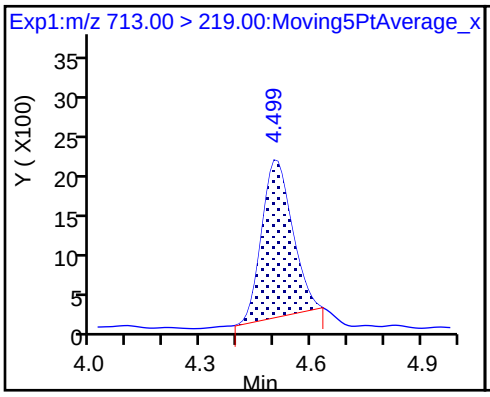
41 Perfluorotridecanoic acid



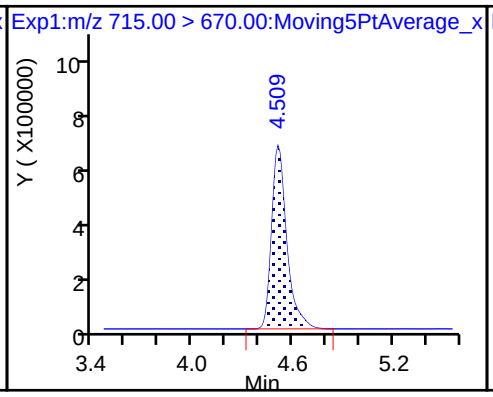
42 Perfluorotetradecanoic acid



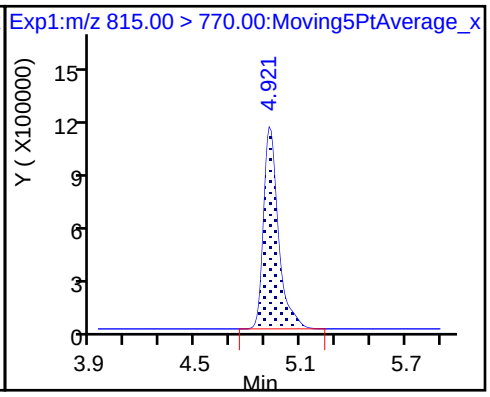
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

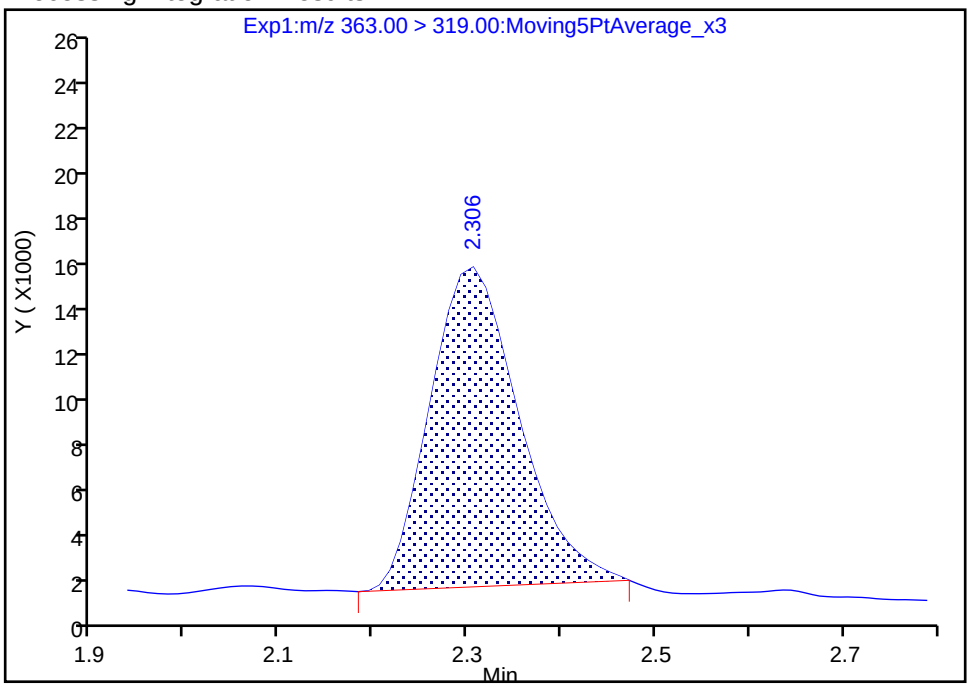
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

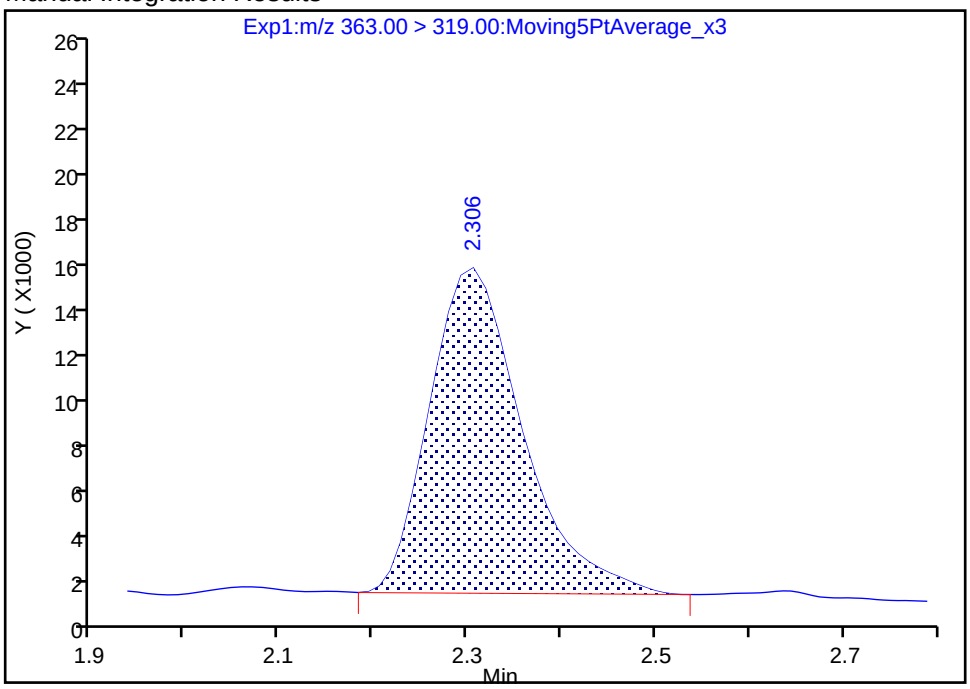
Processing Integration Results

RT: 2.31
Area: 92083
Amount: 0.043580
Amount Units: ng/ml



Manual Integration Results

RT: 2.31
Area: 97664
Amount: 0.046222
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:17:48
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

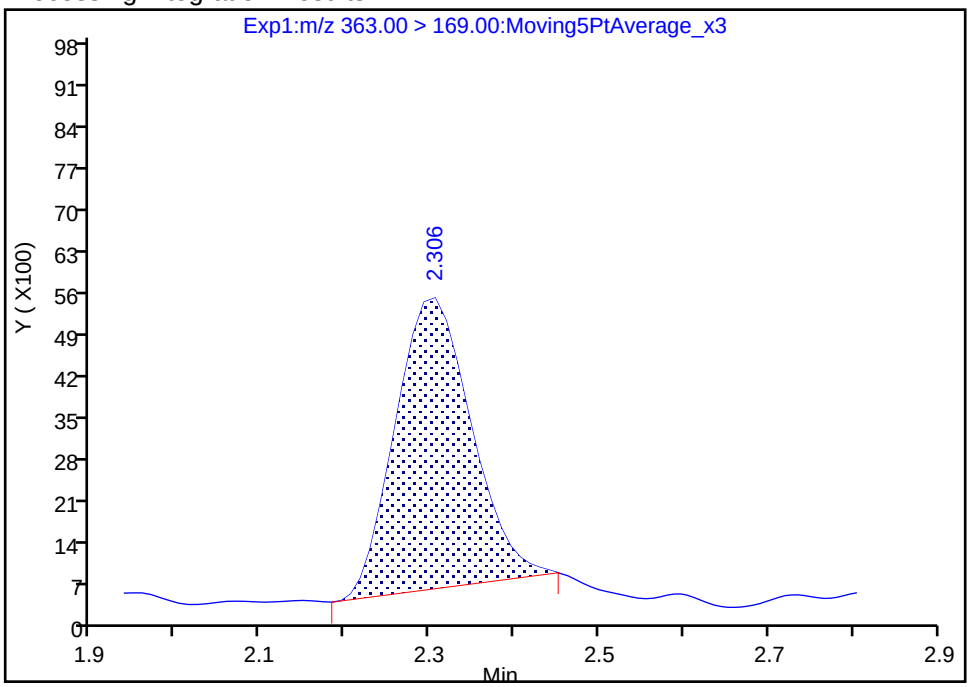
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 2

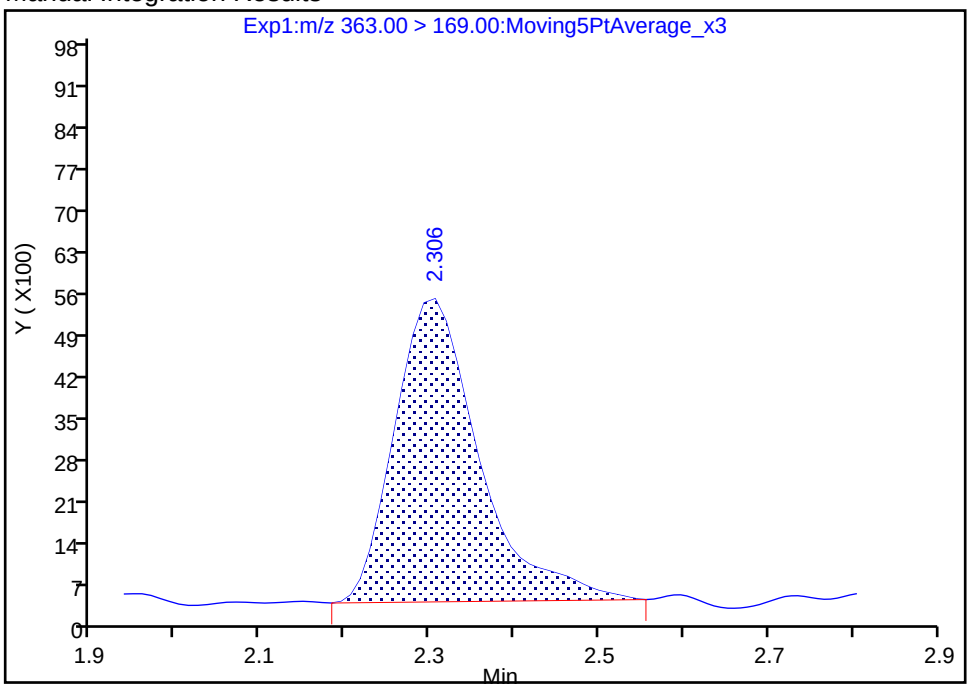
Processing Integration Results

RT: 2.31
Area: 30675
Amount: 0.043580
Amount Units: ng/ml



Manual Integration Results

RT: 2.31
Area: 35447
Amount: 0.046222
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:17:54
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

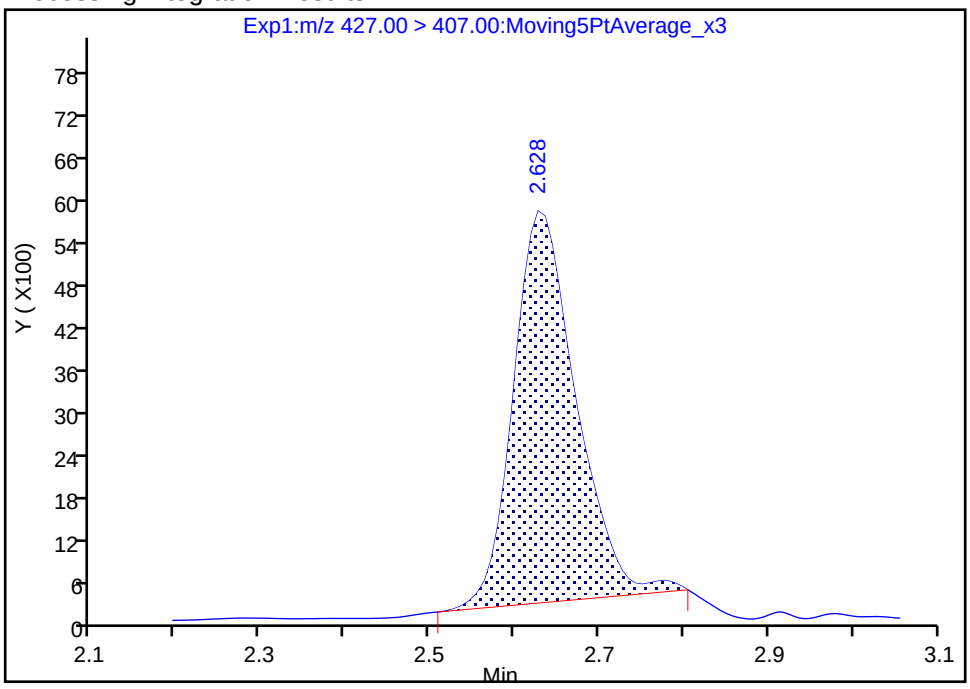
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

13 Sodium 1H,1H,2H,2H-perfluorooctane sulfonate, CAS: 27619-97-2

Signal: 1

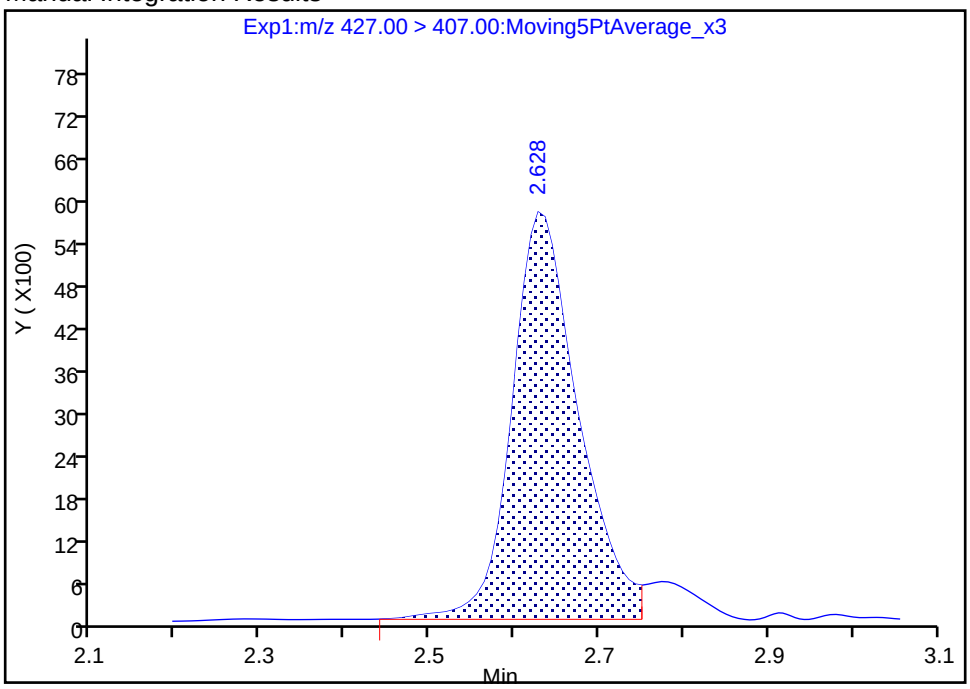
Processing Integration Results

RT: 2.63
Area: 28383
Amount: 0.038273
Amount Units: ng/ml



Manual Integration Results

RT: 2.63
Area: 31327
Amount: 0.042242
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:18:09
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

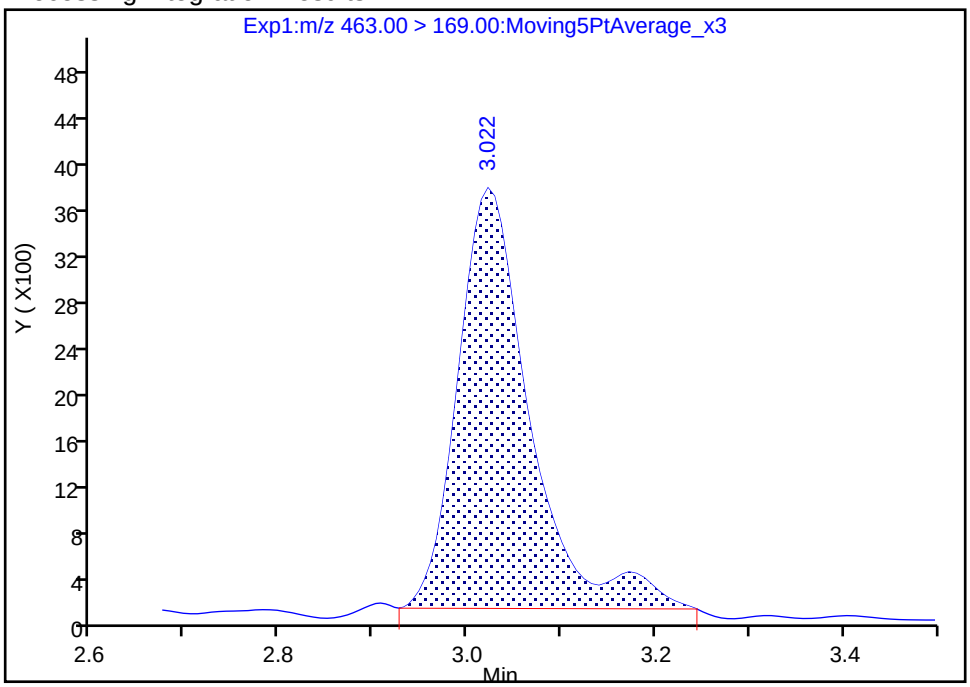
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 2

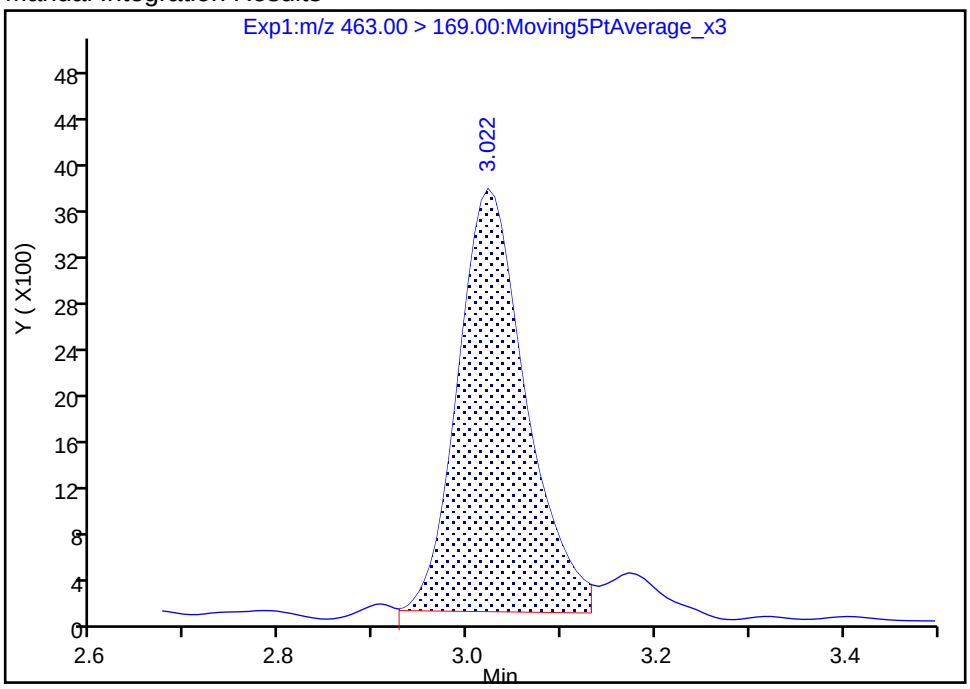
Processing Integration Results

RT: 3.02
Area: 19265
Amount: 0.044411
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 18288
Amount: 0.050375
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:18:21
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

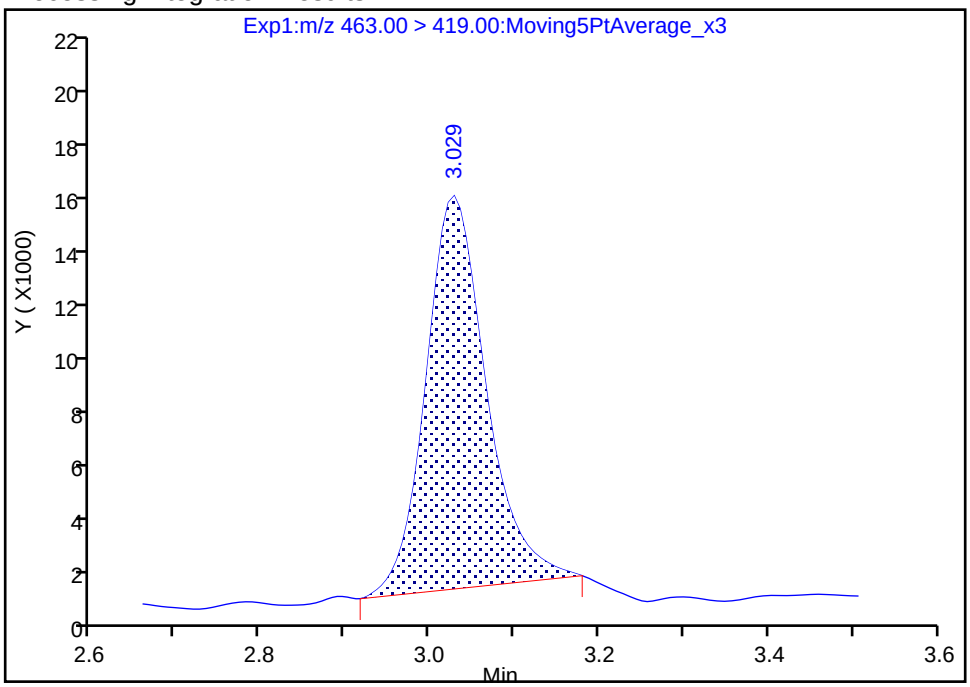
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

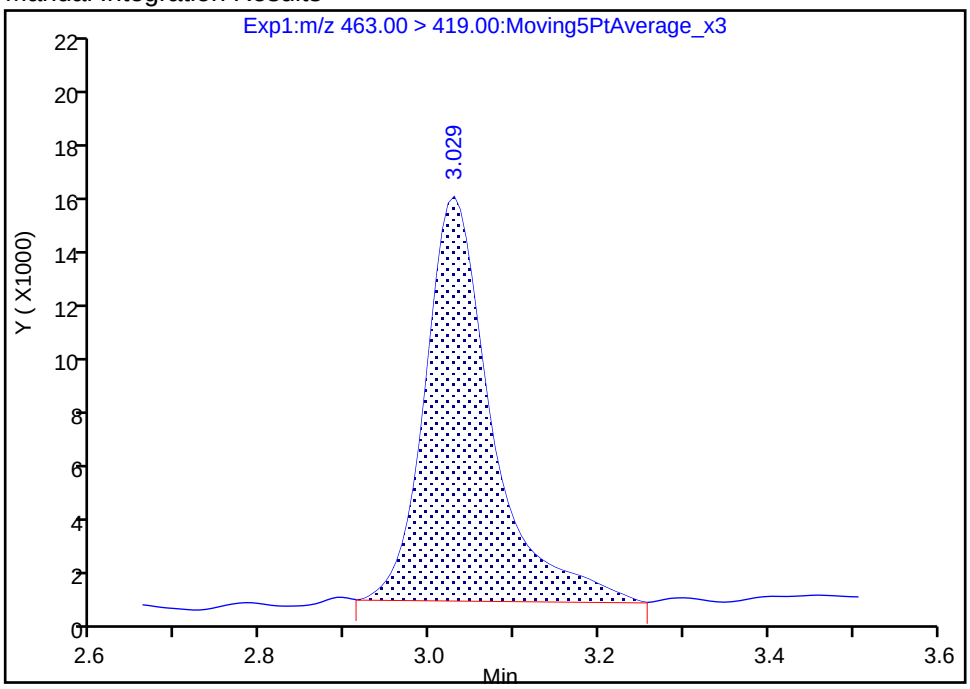
Processing Integration Results

RT: 3.03
Area: 72865
Amount: 0.044411
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 82650
Amount: 0.050375
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:18:24
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

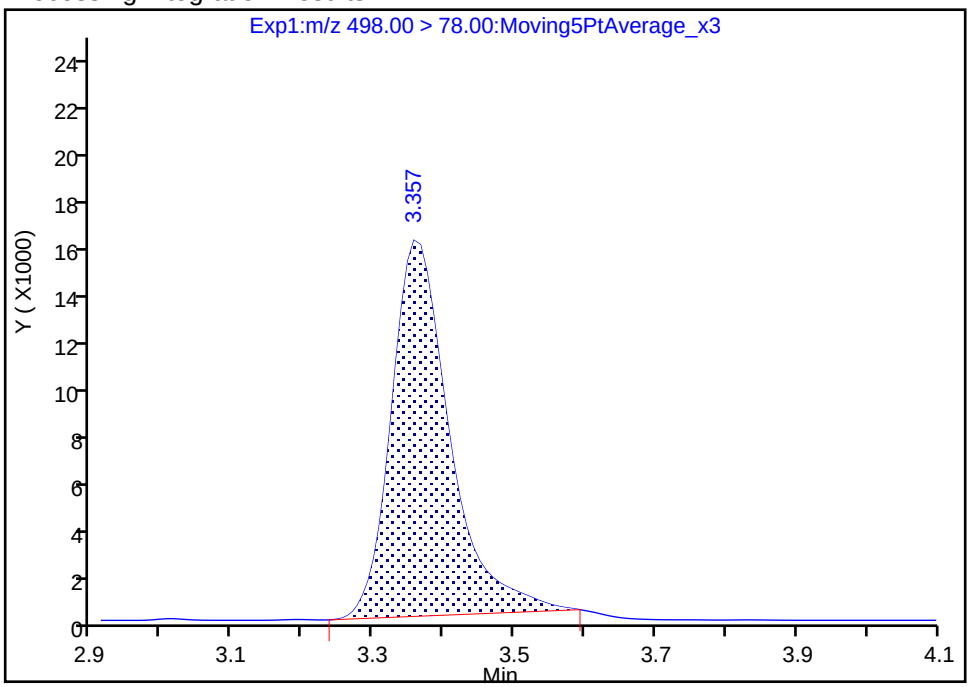
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

22 Perfluorooctane Sulfonamide, CAS: 754-91-6

Signal: 1

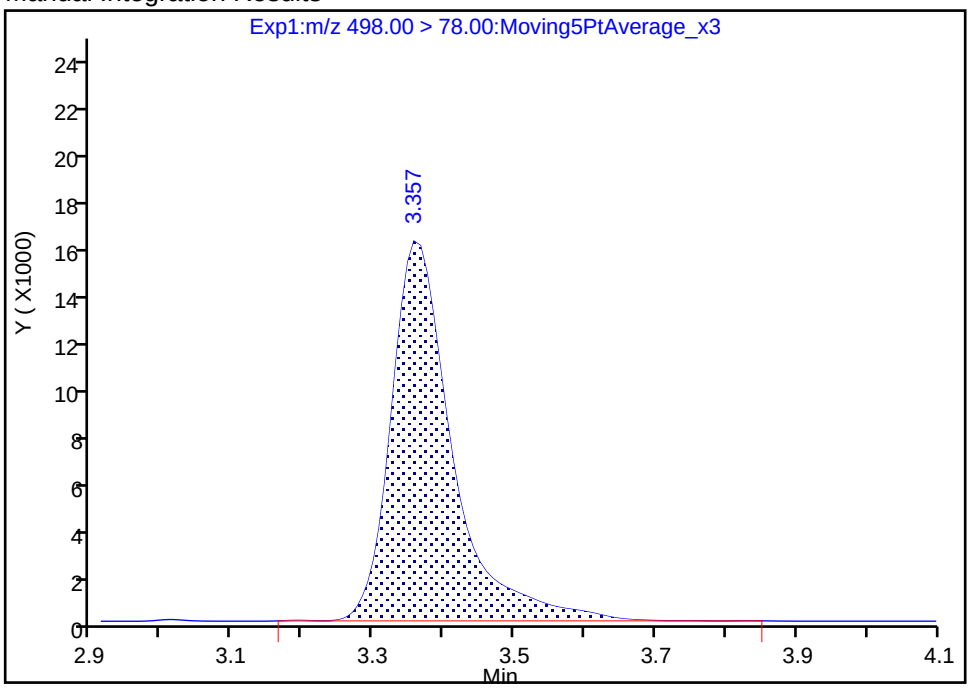
Processing Integration Results

RT: 3.36
Area: 92428
Amount: 0.044310
Amount Units: ng/ml



Manual Integration Results

RT: 3.36
Area: 98352
Amount: 0.047150
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:18:31
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

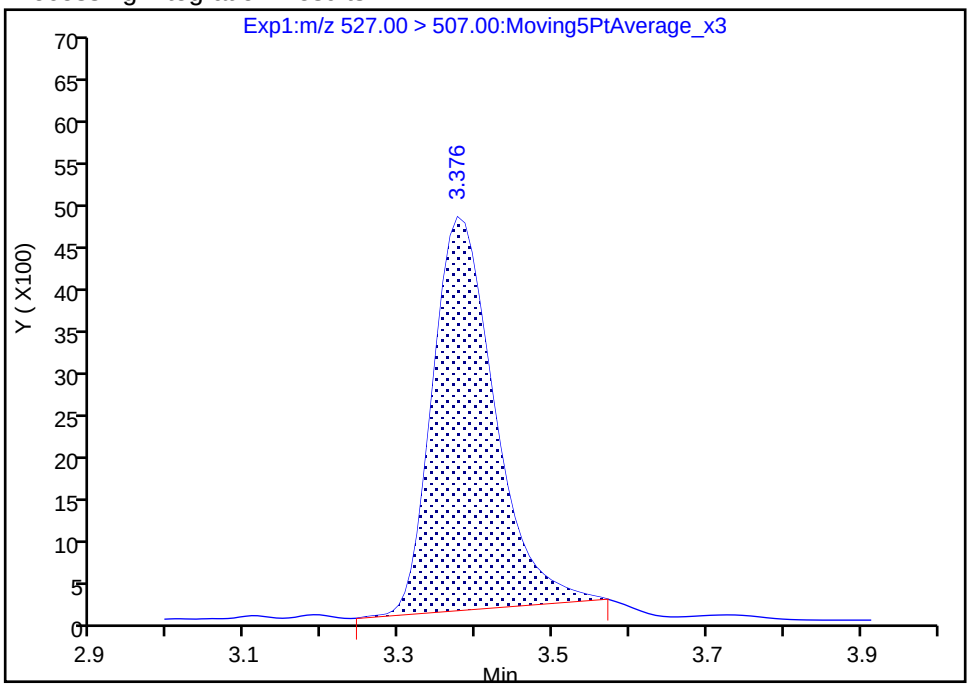
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

25 Sodium 1H,1H,2H,2H-perfluorodecane sulfonate, CAS: 39108-34-4

Signal: 1

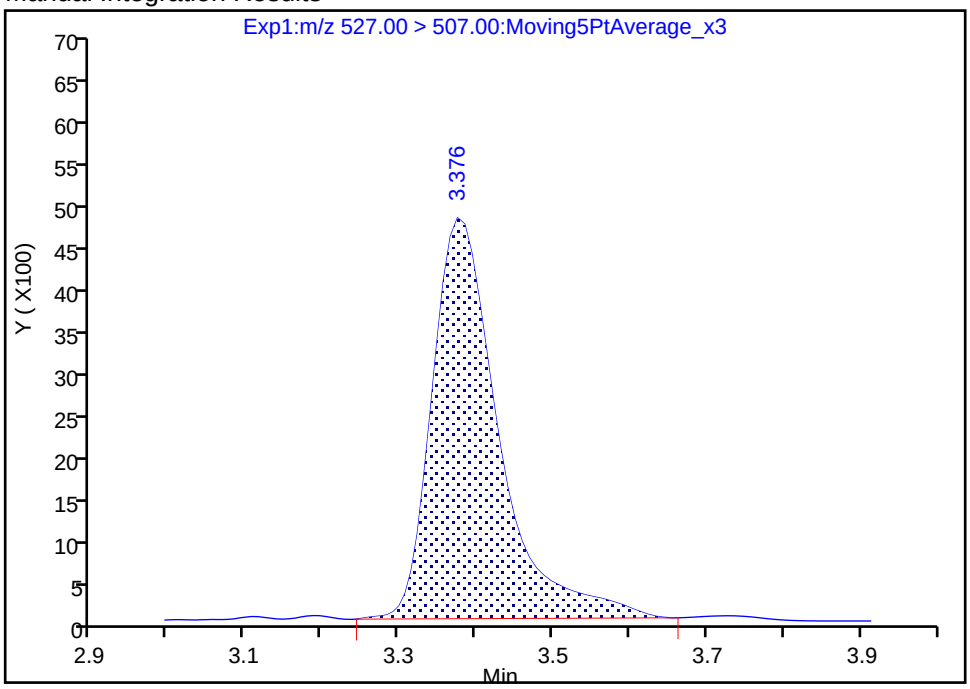
Processing Integration Results

RT: 3.38
Area: 26180
Amount: 0.038309
Amount Units: ng/ml



Manual Integration Results

RT: 3.38
Area: 28684
Amount: 0.041973
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:18:38
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

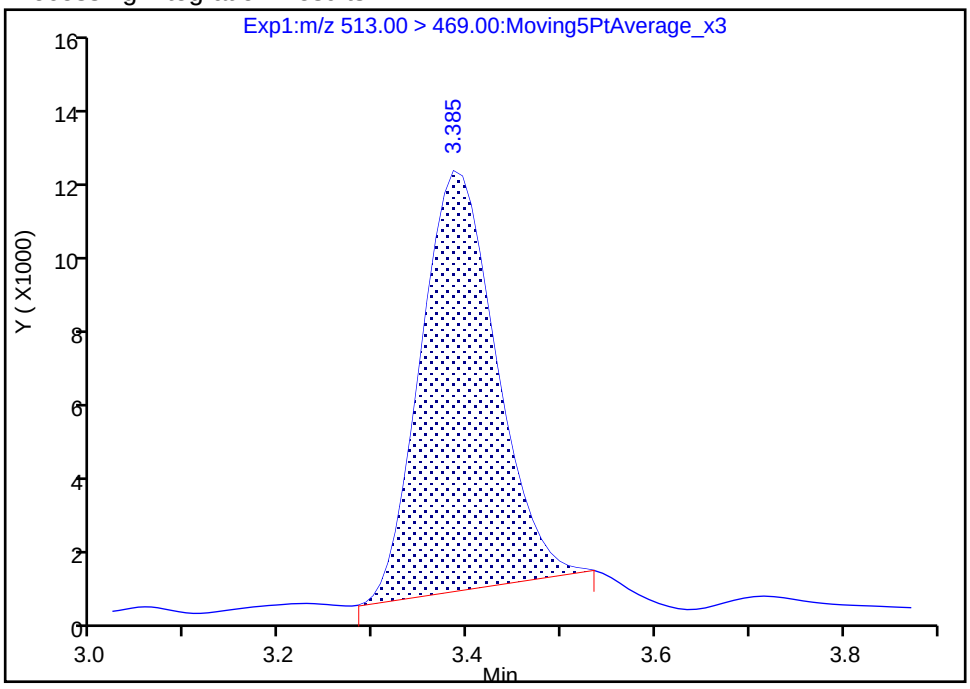
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_005.d
Injection Date: 07-Apr-2018 09:08:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

24 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 1

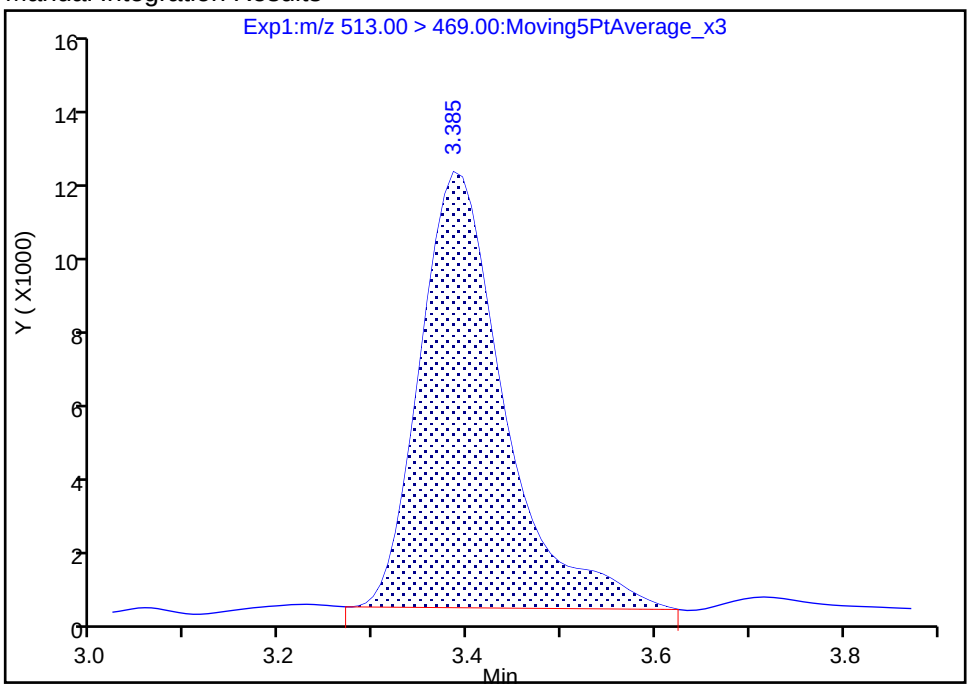
Processing Integration Results

RT: 3.39
Area: 63703
Amount: 0.045641
Amount Units: ng/ml



Manual Integration Results

RT: 3.39
Area: 73823
Amount: 0.052891
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:18:43
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216821/3 Calibration Date: 04/07/2018 09:16

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9242	0.9117		0.987	1.00	-1.3	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.197	1.136		0.949	1.00	-5.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	78.89	77.11		0.864	0.884	-2.3	30.0
4:2 FTS	AveID	17.26	17.84		0.966	0.934	3.4	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.023	1.010		0.987	1.00	-1.3	30.0
Perfluoropentanesulfonic acid	AveID	71.20	71.96		0.948	0.938	1.1	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.087	1.052		0.969	1.00	-3.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.117	1.011		0.824	0.910	-9.5	30.0
6:2FTS	AveID	1.868	1.703		0.864	0.948	-8.8	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.333	1.299		0.928	0.952	-2.6	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.085		0.915	1.00	-8.5	30.0
Perfluorononanoic acid (PFNA)	AveID	1.029	1.018		0.989	1.00	-1.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.143	1.061		0.861	0.928	-7.2	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9877	1.008		1.02	1.00	2.0	30.0
8:2FTS	AveID	1.349	1.255		0.891	0.958	-7.0	30.0
Perfluorononanesulfonic acid	AveID	0.8018	0.7500		0.898	0.960	-6.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9893	0.9656		0.976	1.00	-2.4	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.054	0.9790		0.929	1.00	-7.1	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6938	0.6213		0.863	0.964	-10.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9171	0.9229		1.01	1.00	0.6	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8023	0.7933		0.989	1.00	-1.1	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.081	0.9878		0.914	1.00	-8.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.156	1.078		0.932	1.00	-6.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2497	0.2447		0.980	1.00	-2.0	30.0
13C4 PFBA	Ave	1.382	1.327		2.40	2.50	-4.0	30.0
13C5-PFPeA	Ave	0.8994	0.8687		2.41	2.50	-3.4	30.0
13C3-PFBS	Ave	0.0206	0.0196		2.21	2.33	-4.9	30.0
13C2 PFHxA	Ave	0.9916	0.9613		2.42	2.50	-3.1	30.0
13C4-PFHpA	Ave	0.9533	0.9270		2.43	2.50	-2.8	30.0
18O2 PFHxS	Ave	1.189	1.167		2.32	2.37	-1.8	30.0
M2-6:2FTS	Ave	0.2203	0.2197		2.37	2.38	-0.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216821/3 Calibration Date: 04/07/2018 09:16

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9372	0.9483		2.53	2.50	1.2	30.0
13C4 PFOS	Ave	0.8257	0.8225		2.38	2.39	-0.4	30.0
13C5 PFNA	Ave	0.7930	0.8183		2.58	2.50	3.2	30.0
13C8 FOSA	Ave	1.166	1.048		2.25	2.50	-10.1	30.0
M2-8:2FTS	Ave	0.2562	0.2464		2.30	2.40	-3.8	30.0
13C2 PFDA	Ave	0.6698	0.7122		2.66	2.50	6.3	30.0
d3-NMeFOSAA	Ave	0.3583	0.3965		2.77	2.50	10.7	30.0
13C2 PFUnA	Ave	0.5468	0.5853		2.68	2.50	7.1	30.0
d5-NEtFOSAA	Ave	0.3760	0.4086		2.72	2.50	8.7	30.0
13C2 PFDoA	Ave	0.6087	0.6571		2.70	2.50	7.9	30.0
13C2-PFTeDA	Ave	0.7733	0.8065		2.61	2.50	4.3	30.0
13C2-PFHxDA	Ave	1.194	1.300		2.72	2.50	8.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_006.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 07-Apr-2018 09:16:48 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:19:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.431	1.431	0.0	1.000	2370317	0.9865		98.7	1091	
D 1 13C4 PFBA										
217.00 > 172.00	1.431	1.425	0.006	1.000	6499641	2.40		96.0	52540	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.704	1.704	0.0	1.005	1932254	0.9488		94.9	1333	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.695	1.694	0.001	0.558	4253852	2.41		96.6	73978	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.740	1.740	0.0	1.005	2615190	0.8640		97.7	11610	
298.90 > 99.00	1.740	1.740	0.0	1.005	1124640		2.33(1.25-3.74)		7569	
D 47 13C3-PFBS										
301.90 > 83.00	1.731	1.730	0.001	1.000	89199	2.21		95.1	571	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.951	1.951	0.0	1.000	639325	0.9657		103	35209	
D 60 M2-4:2FTS										
329.00 > 81.00	1.951	1.950	0.001	1.000	669132	NC			5024	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.983	1.983	0.0	1.000	1901993	0.9872		98.7	3572	
313.00 > 119.00	1.983	1.983	0.0	1.000	178034		10.68(5.03-15.10)		2852	
D 7 13C2 PFHxA										
315.00 > 270.00	1.983	1.982	0.001	1.000	4707011	2.42		96.9	122408	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.005	2.005	0.0	1.000	2589444	0.9479		101	21485	
349.00 > 99.00	2.005	2.005	0.0	1.000	923121		2.81(1.36-4.07)		10966	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.085	2.085	0.0	1.000	284014	NC			1827	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.085	2.073	0.012	1.000	234662	NC			4457	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.323	2.323	0.0	1.000	2103537	0.8239		90.5	5208	
399.00 > 99.00	2.323	2.323	0.0	1.000	719020		2.93(1.50-4.49)		2923	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.310	2.310	0.0	1.000	1911065	0.9687		96.9	2226	
363.00 > 169.00	2.310	2.310	0.0	1.000	742694		2.57(1.13-3.40)		3678	
D 9 13C4-PFHpA										
367.00 > 322.00	2.310	2.308	0.002	1.000	4539395	2.43		97.2	71587	
D 11 18O2 PFHxS										
403.00 > 84.00	2.323	2.321	0.002	1.000	5405811	2.32		98.2	77135	
65 Adona										
377.00 > 251.00	2.349	2.349	0.0	1.000	5657753	NC			90838	
377.00 > 85.00	2.349	2.349	0.0	1.000	3296577		1.72(0.84-2.53)		47231	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.637	2.637	0.0	1.000	694564	0.8642		91.2	8229	
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.637	0.0	1.000	1022016	2.37		99.7	14109	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.661	0.0		4896716	2.50			86782	
D 14 13C4 PFOA										
417.00 > 372.00	2.669	2.660	0.009	1.000	4643519	2.53		101	117682	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.669	2.669	0.0	1.000	2015457	0.9151		91.5	830	
413.00 > 169.00	2.669	2.669	0.0	1.000	1069869		1.88(0.84-2.52)		3338	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.669	2.669	0.0	1.000	1991736	0.9276		97.4	14363	
449.00 > 99.00	2.669	2.669	0.0	1.000	535362		3.72(1.94-5.82)		9601	
20 Perfluorononanoic acid										
463.00 > 419.00	3.032	3.032	0.0	0.998	1631045	0.9890		98.9	4529	
463.00 > 169.00	3.032	3.032	0.0	0.998	375628		4.34(1.90-5.69)		11471	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.032	3.032	0.0	1.000	1585783	0.8614		92.8	16256	M
499.00 > 99.00	3.032	3.032	0.0	1.000	348079		4.56(2.31-6.93)		5620	
D 18 13C4 PFOS										
503.00 > 80.00	3.032	3.023	0.009	1.000	3850506	2.38		99.6	20753	
D 19 13C5 PFNA										
468.00 > 423.00	3.039	3.030	0.009	1.000	4006845	2.58		103	105405	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.248	3.248	0.0	1.000	2812818	NC			42517	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.371	3.371	0.0	1.000	2068938	1.02		102	31483	
D 21 13C8 FOSA										
506.00 > 78.00	3.371	3.360	0.011	1.000	5132110	2.25		89.9	52720	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.380	3.380	0.0	1.000	1159990	0.8980		93.5	15161	
549.00 > 99.00	3.380	3.380	0.0	1.000	456182		2.54(1.33-3.97)		9667	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.380	3.380	0.0	1.000	580024	0.8911		93.0	23102	
D 26 M2-8:2FTS										
529.00 > 81.00	3.380	3.378	0.002	1.000	1155772	2.30		96.2	13180	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.399	3.399	0.0	1.003	1346858	0.9760		97.6	4384	
513.00 > 169.00	3.389	3.399	-0.010	1.000	244197		5.52(2.36-7.09)		7959	
D 23 13C2 PFDA										
515.00 > 470.00	3.389	3.387	0.002	1.000	3487272	2.66		106	70848	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.548	3.537	0.011	1.000	1941667	2.77		111	28230	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.548	3.548	0.0	1.000	760382	0.9288		92.9	4970	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.709	3.709	0.0	1.000	964916	0.8632		89.5	16730	
599.00 > 99.00	3.709	3.709	0.0	1.000	334971		2.88(1.39-4.16)		8635	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.720	3.707	0.013	1.000	2000947	2.72		109	13297	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.720	3.720	0.0	1.000	909504	0.9888		98.9	4119	
563.00 > 169.00	3.720	3.720	0.0	1.000	243624		3.73(2.12-6.36)		5369	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.720	3.720	0.0	1.000	738664	1.01		101	7051	
D 30 13C2 PFUnA										
565.00 > 520.00	3.720	3.718	0.002	1.000	2866124	2.68		107	73142	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.876	3.876	0.0	1.000	4374967	NC			69288	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.020	4.020	0.0	1.000	1271255	0.9140		91.4	935	
613.00 > 169.00	4.020	4.020	0.0	1.000	317227		4.01(2.13-6.40)		3614	
D 36 13C2 PFDoA										
615.00 > 570.00	4.020	4.008	0.012	1.000	3217430	2.70		108	24066	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.282	4.282	0.0	1.000	1387070	0.9323		93.2	831	
663.00 > 169.00	4.282	4.282	0.0	1.000	448784		3.09(1.25-3.76)		4296	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.522	4.522	0.0	1.000	386613	0.9799		98.0	2921	
713.00 > 219.00	4.512	4.522	-0.010	0.998	271077		1.43(0.71-2.13)		3371	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.522	4.511	0.011	1.000	3949366	2.61		104	19757	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.932	4.932	0.0	1.000	2328054	NC			517	
813.00 > 169.00	4.932	4.932	0.0	1.000	377700		6.16(2.86-8.58)		2022	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.932	4.922	0.010	1.000	6364850	2.72		109	15718	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.285	5.285	0.0	1.000	2429538	NC			431	
913.00 > 169.00	5.285	5.285	0.0	1.000	306025		7.94(3.83-11.48)		2167	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 09-Apr-2018 08:26:44 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_006.d

Injection Date: 07-Apr-2018 09:16:48 Instrument ID: A8_N

Lims ID: CCV L4

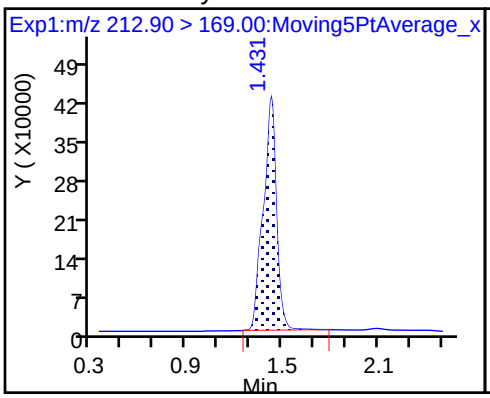
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3

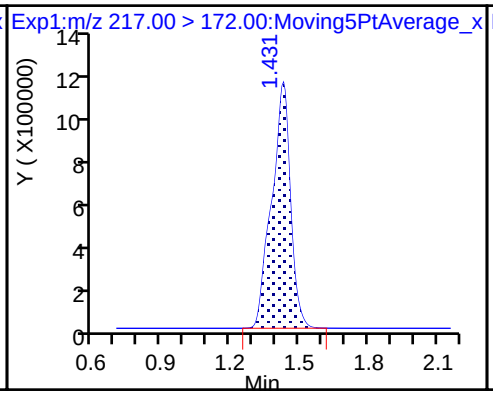
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

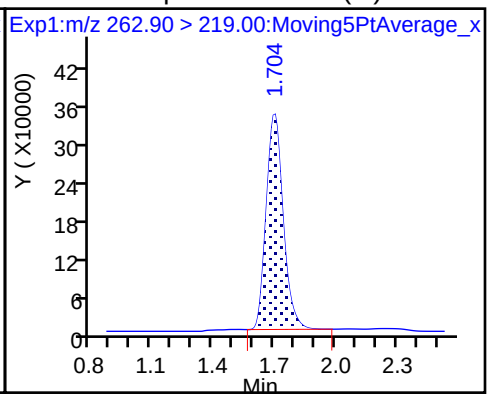
2 Perfluorobutyric acid



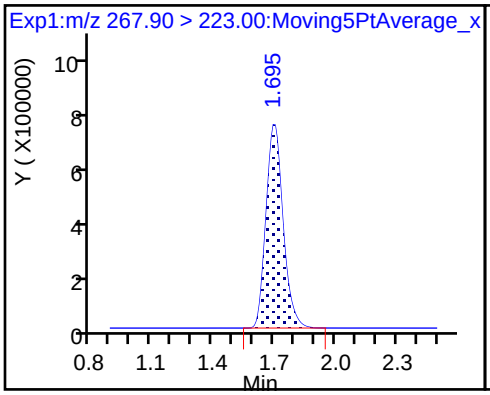
D 1 13C4 PFBA



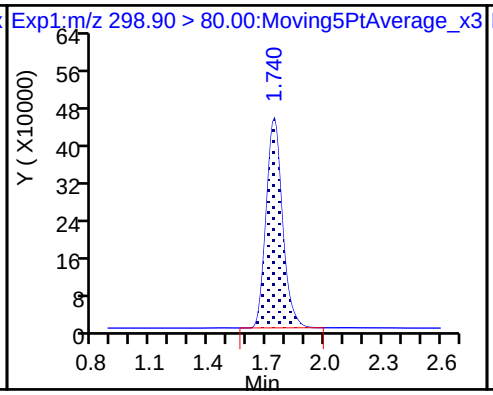
4 Perfluoropentanoic acid (M)



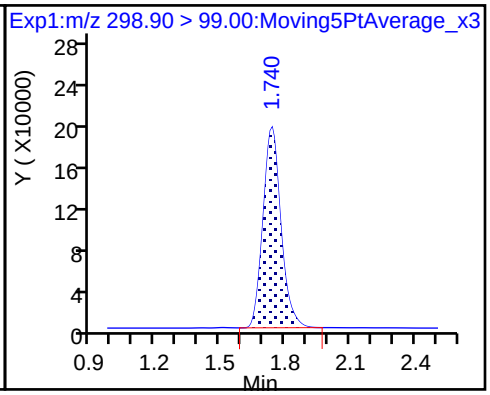
D 3 13C5-PFPeA



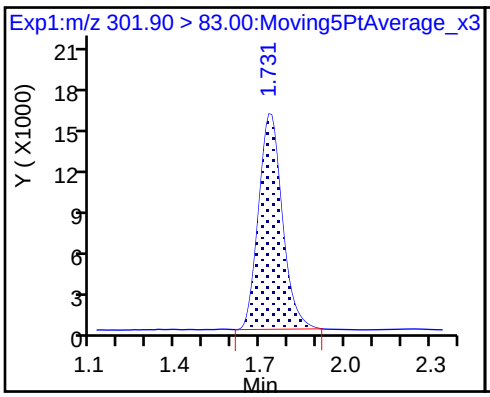
5 Perfluorobutanesulfonic acid



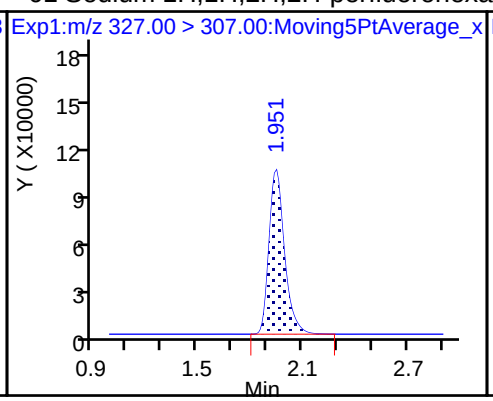
5 Perfluorobutanesulfonic acid



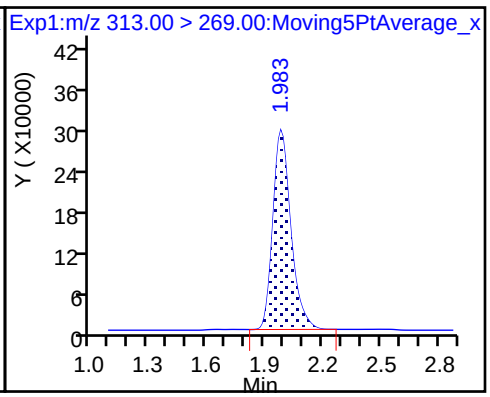
D 47 13C3-PFBS



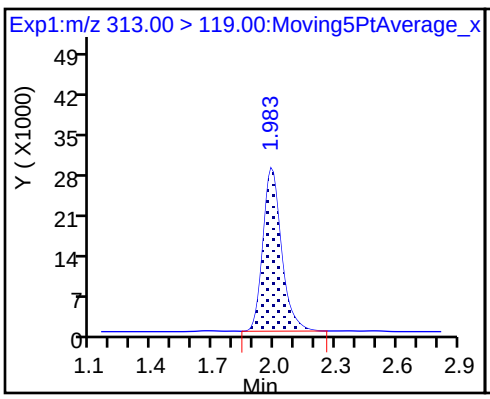
61 Sodium 1H,1H,2H,2H-perfluorohexane



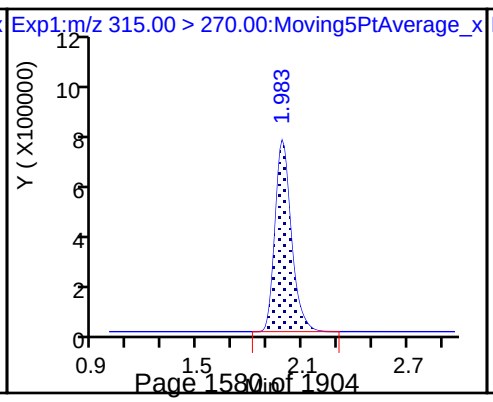
6 Perfluorohexanoic acid



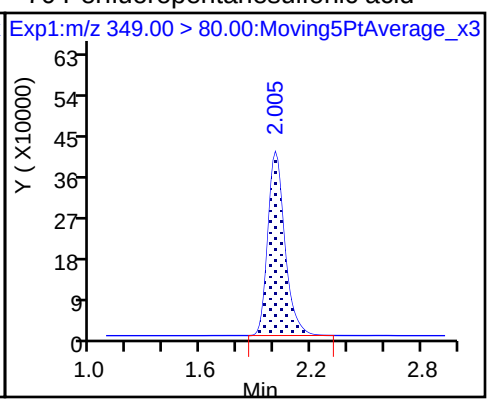
6 Perfluorohexanoic acid



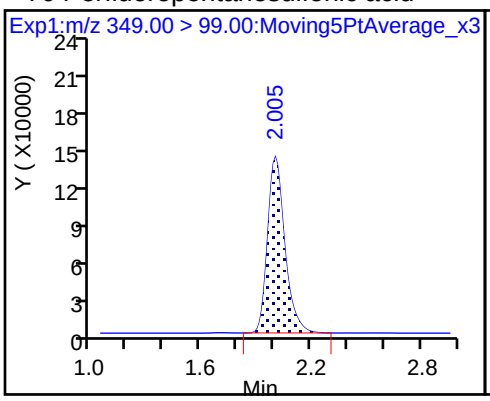
D 7 13C2 PFHxA



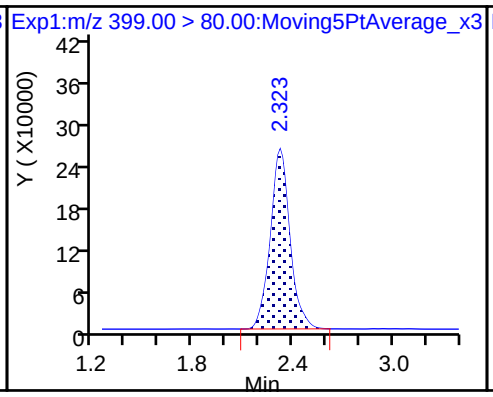
70 Perfluoropentanesulfonic acid



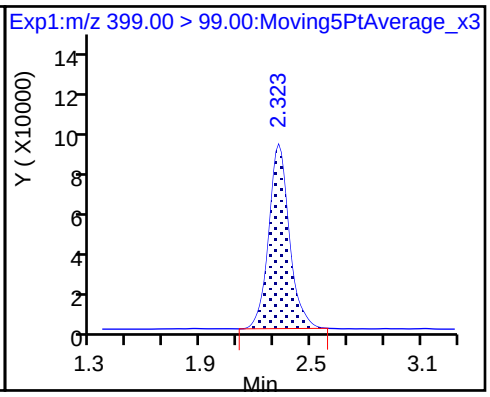
70 Perfluoropentanesulfonic acid



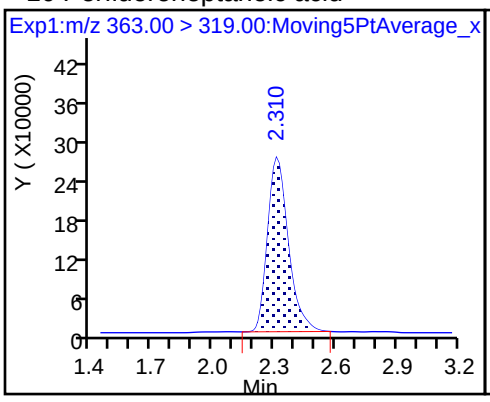
8 Perfluorohexanesulfonic acid



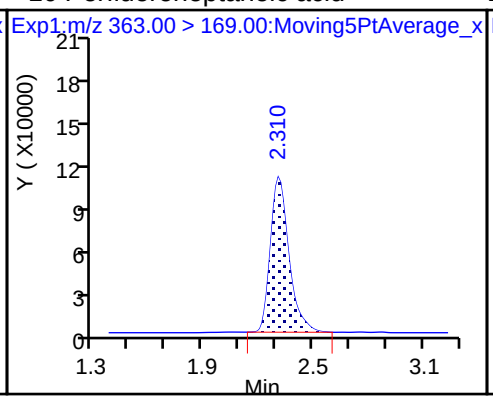
8 Perfluorohexanesulfonic acid



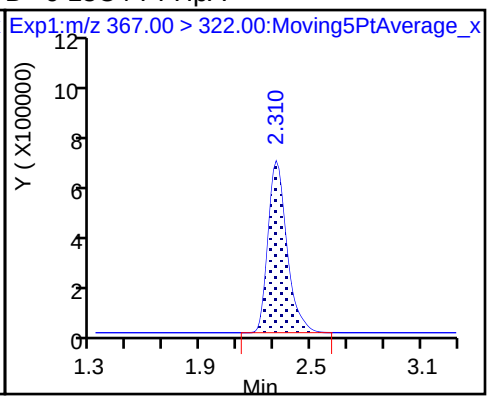
10 Perfluoroheptanoic acid



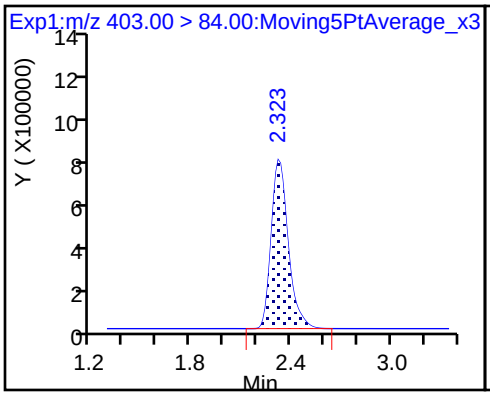
10 Perfluoroheptanoic acid



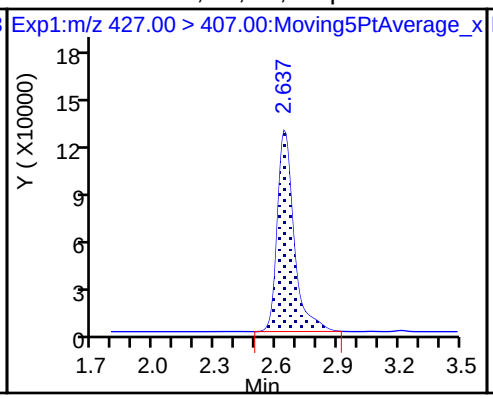
D 9 13C4-PFHpA



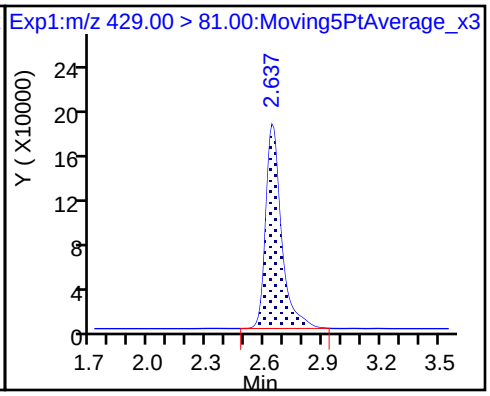
D 11 18O2 PFHxS



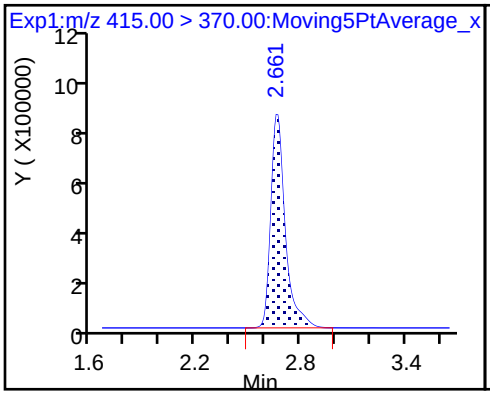
13 Sodium 1H,1H,2H,2H-perfluorooctane



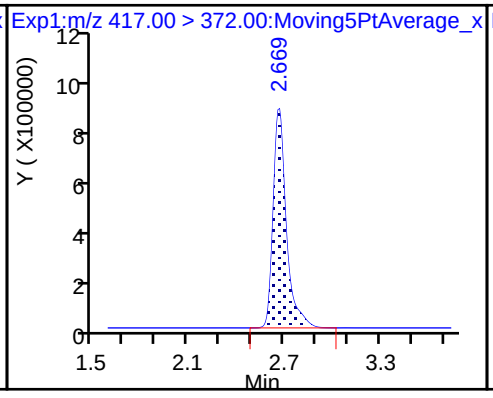
D 12 M2-6:2FTS



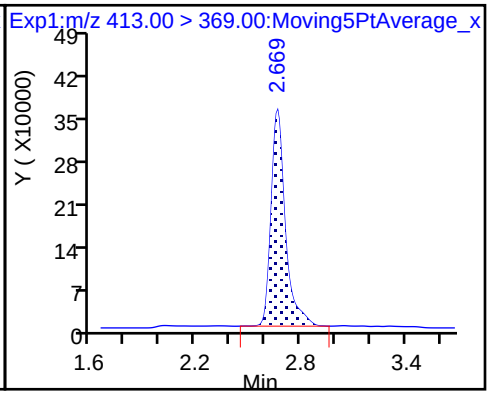
* 62 13C2-PFOA



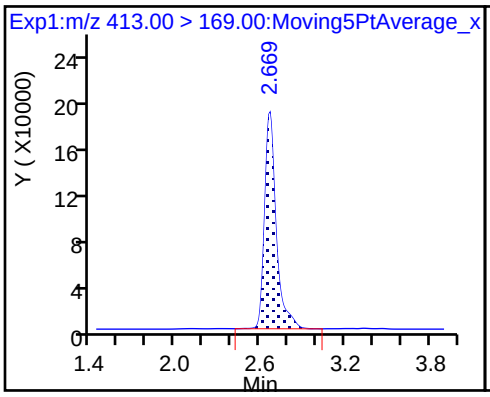
D 14 13C4 PFOA



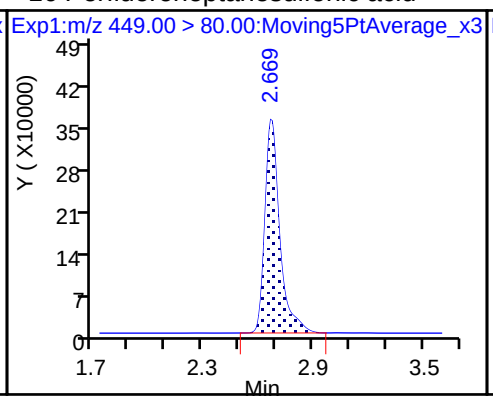
15 Perfluorooctanoic acid



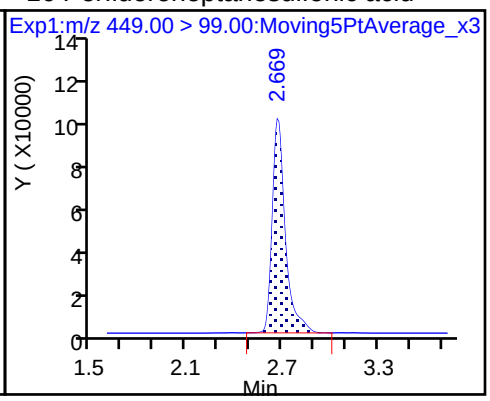
15 Perfluorooctanoic acid



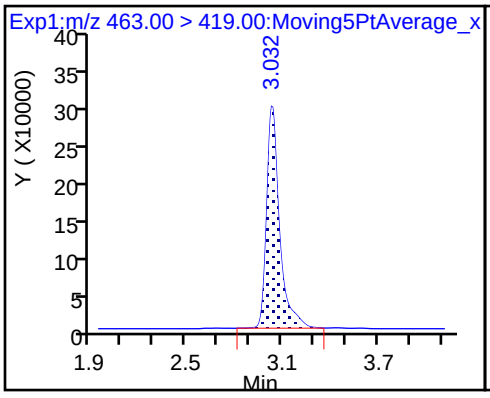
16 Perfluoroheptanesulfonic acid



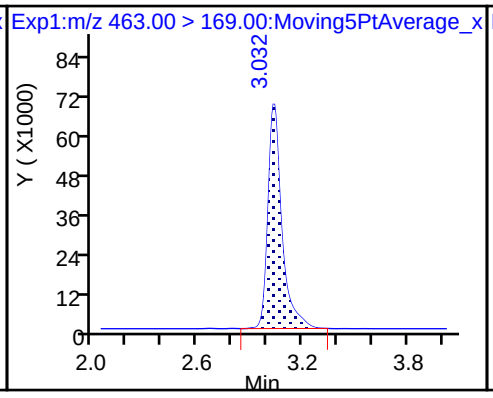
16 Perfluoroheptanesulfonic acid



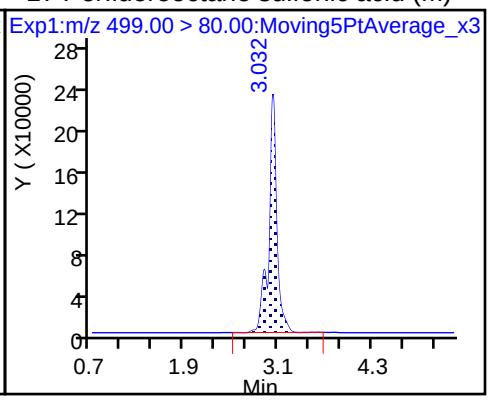
20 Perfluorononanoic acid



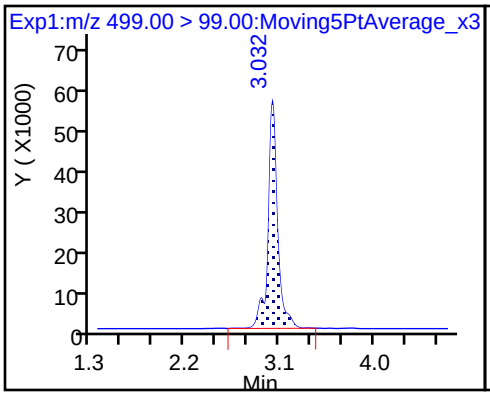
20 Perfluorononanoic acid



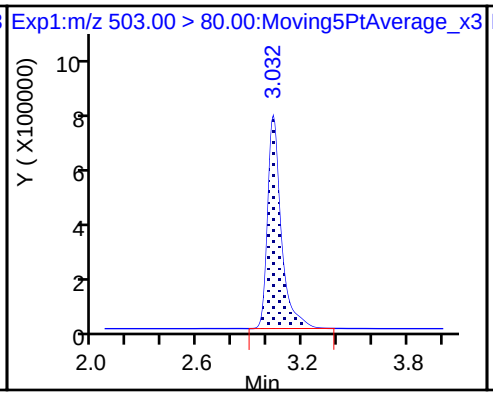
17 Perfluorooctane sulfonic acid (M)



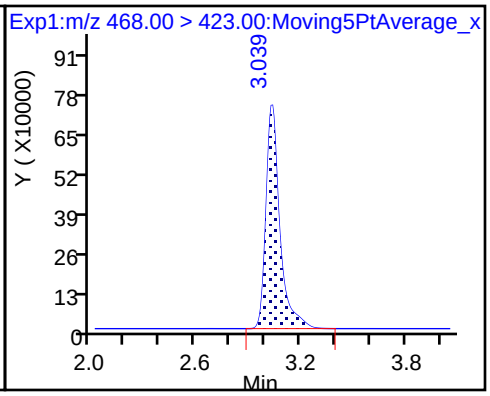
17 Perfluorooctane sulfonic acid



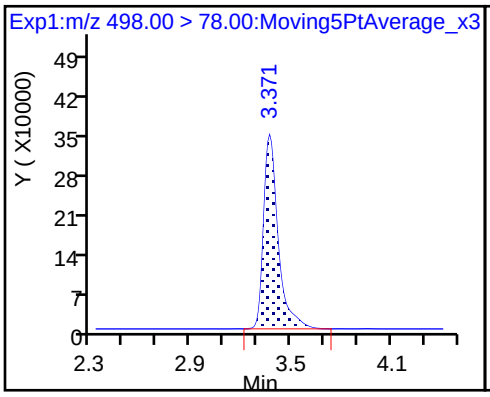
D 18 13C4 PFOS



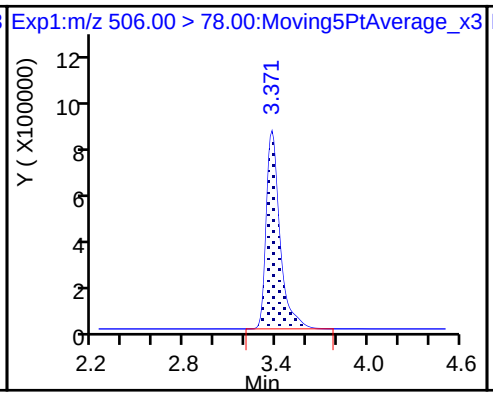
D 19 13C5 PFNA



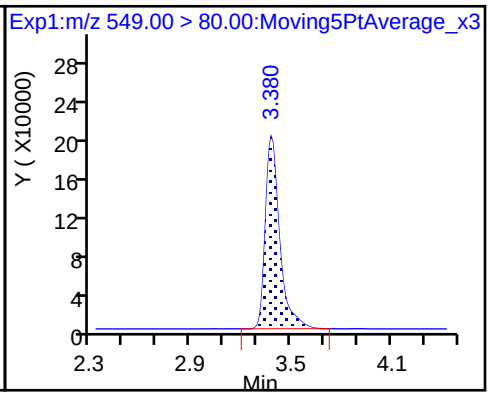
22 Perfluorooctane Sulfonamide



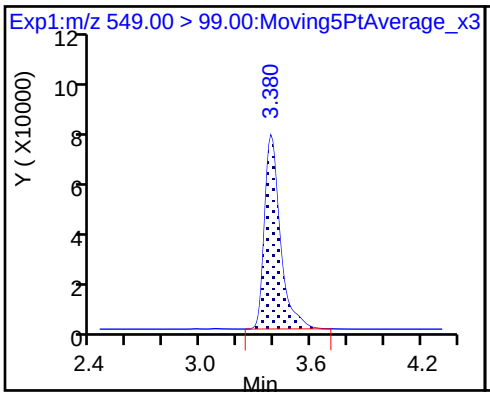
D 21 13C8 FOSA



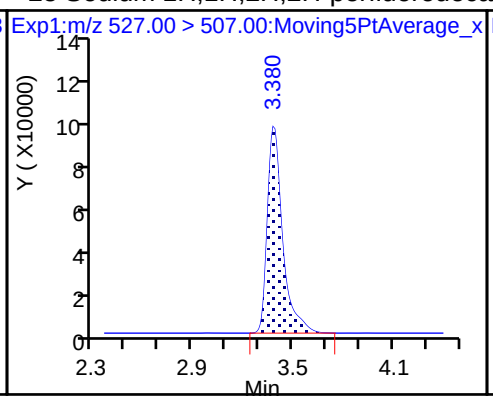
68 Perfluorononanesulfonic acid



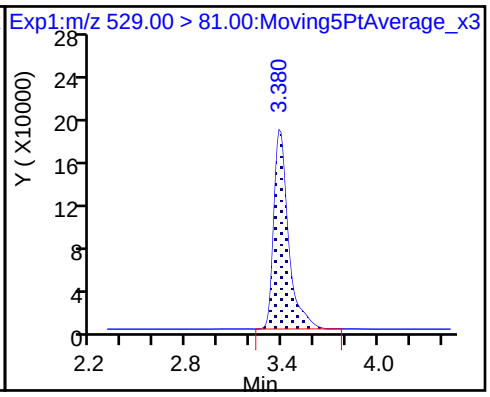
68 Perfluorononanesulfonic acid



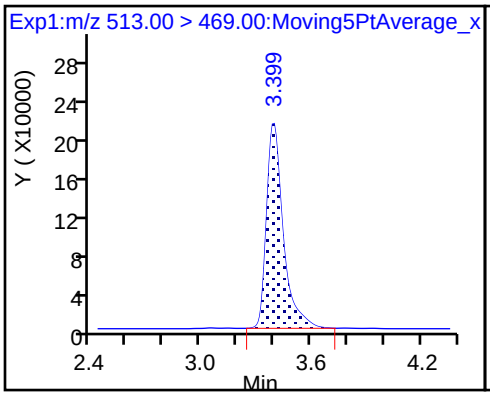
25 Sodium 1H,1H,2H,2H-perfluorodecane



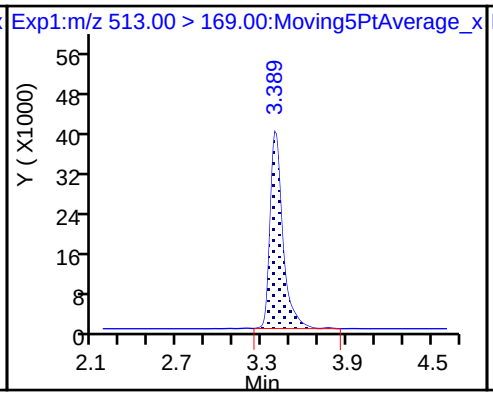
D 26 M2-8:2FTS



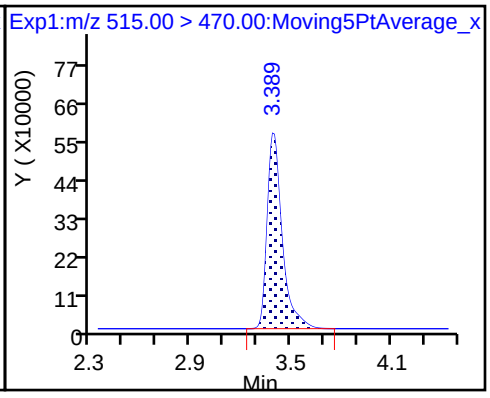
24 Perfluorodecanoic acid



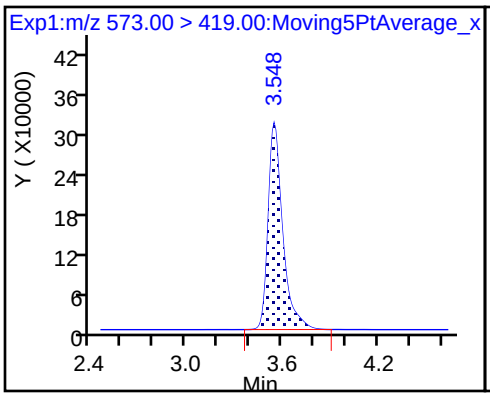
24 Perfluorodecanoic acid



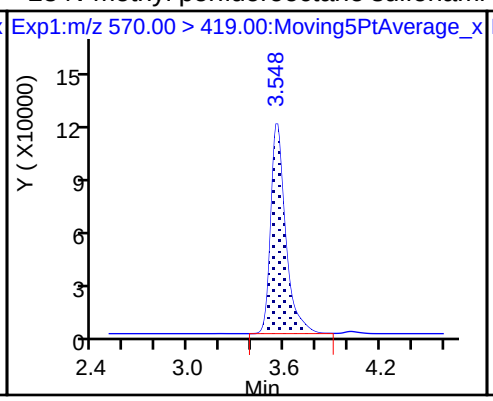
D 23 13C2 PFDA



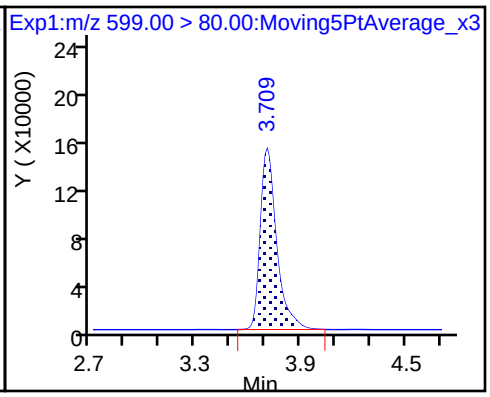
D 27 d3-NMeFOSAA



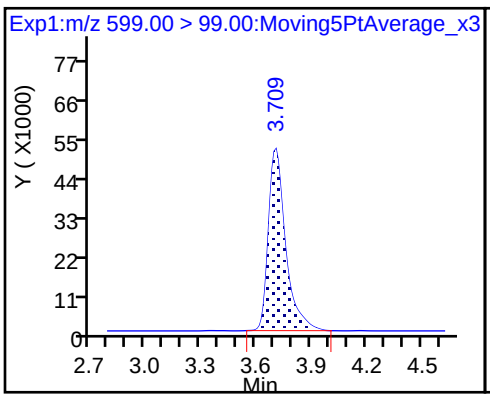
28 N-methyl perfluorooctane sulfonami



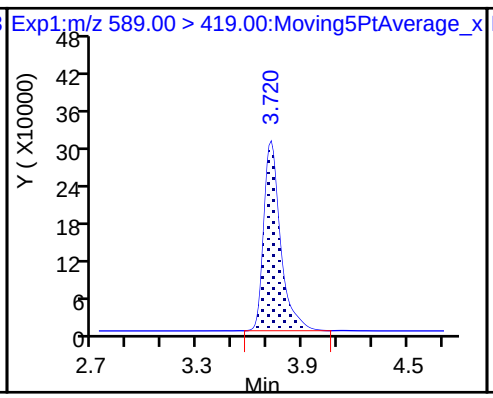
29 Perfluorodecane Sulfonic acid



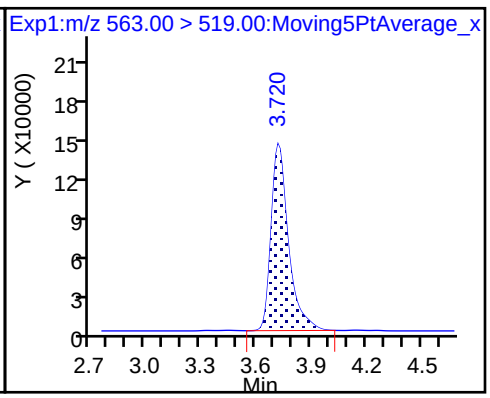
29 Perfluorodecane Sulfonic acid



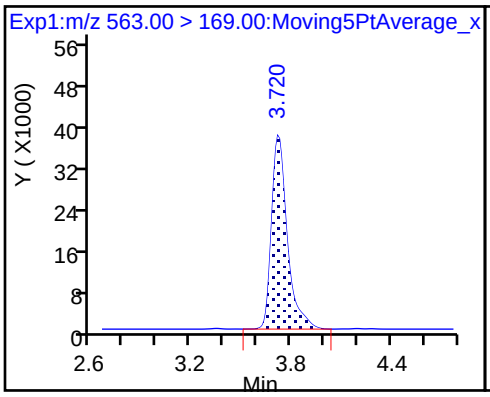
D 32 d5-NEtFOSAA



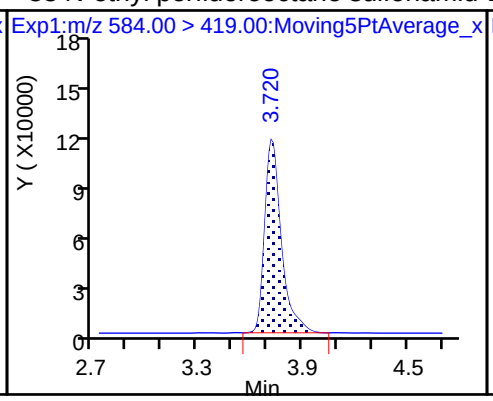
31 Perfluoroundecanoic acid



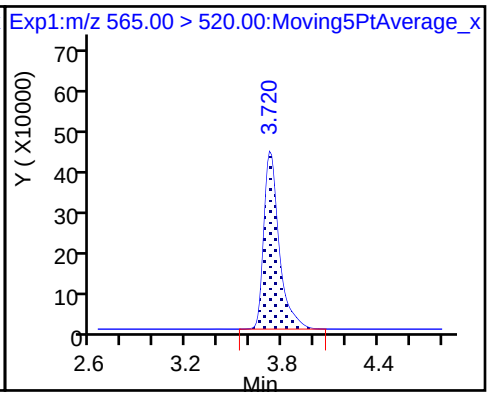
31 Perfluoroundecanoic acid



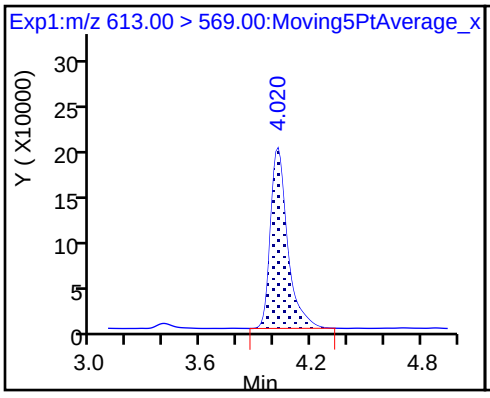
33 N-ethyl perfluorooctane sulfonamid



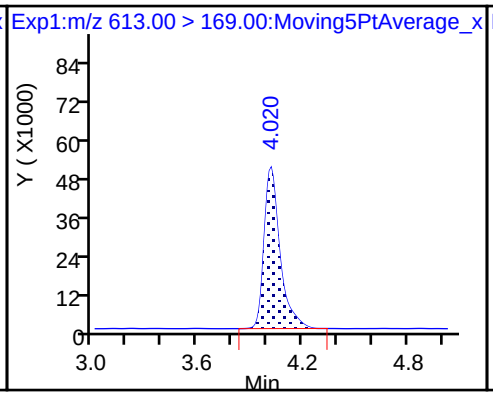
D 30 13C2 PFUnA



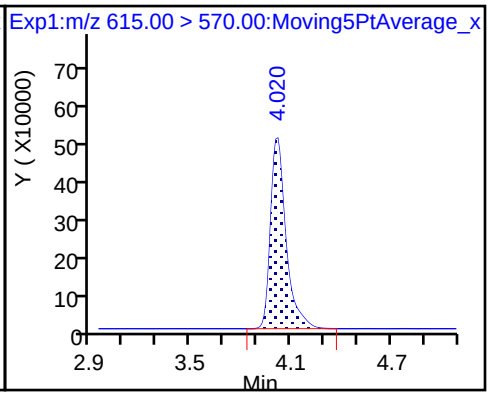
37 Perfluorododecanoic acid



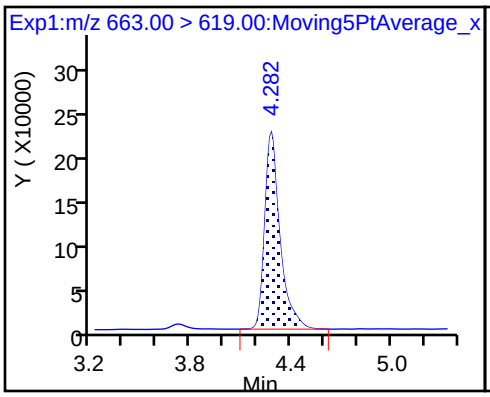
37 Perfluorododecanoic acid



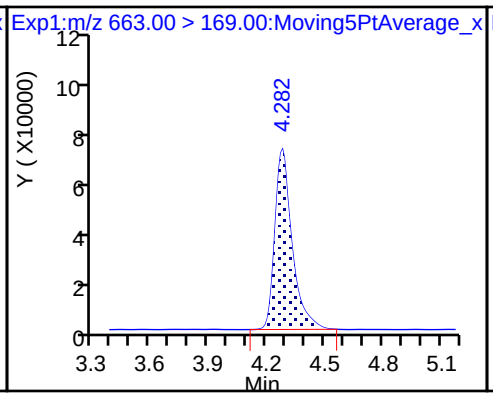
D 36 13C2 PFDoA



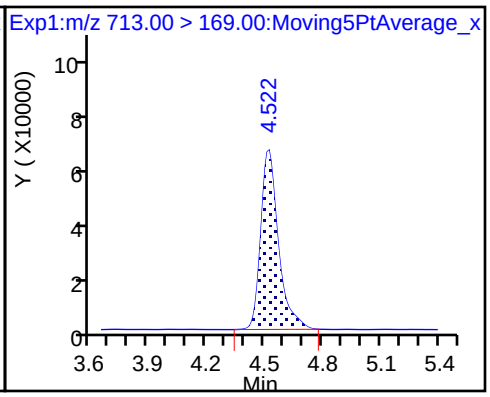
41 Perfluorotridecanoic acid



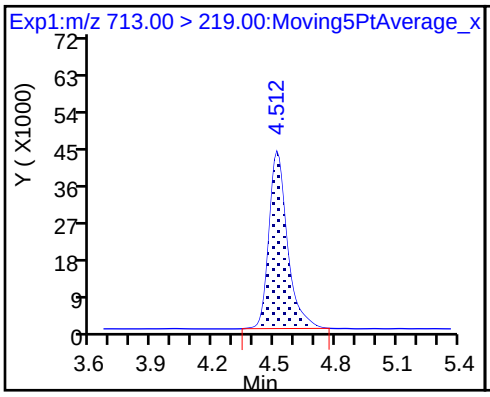
41 Perfluorotridecanoic acid



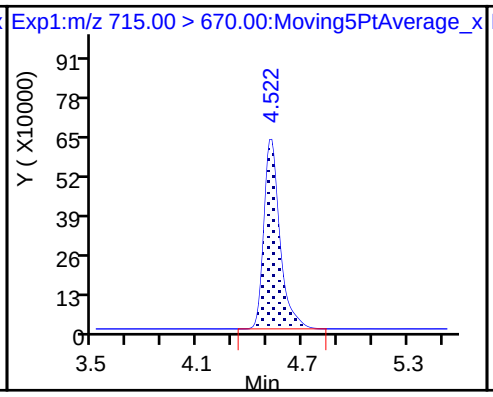
42 Perfluorotetradecanoic acid



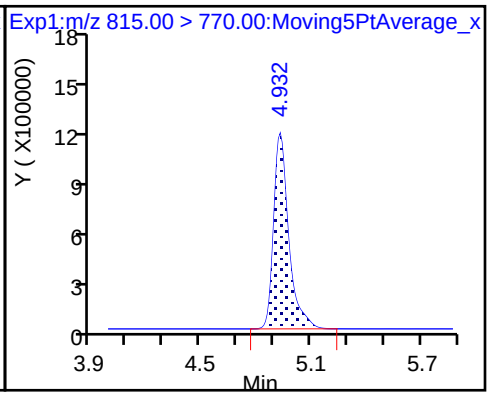
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

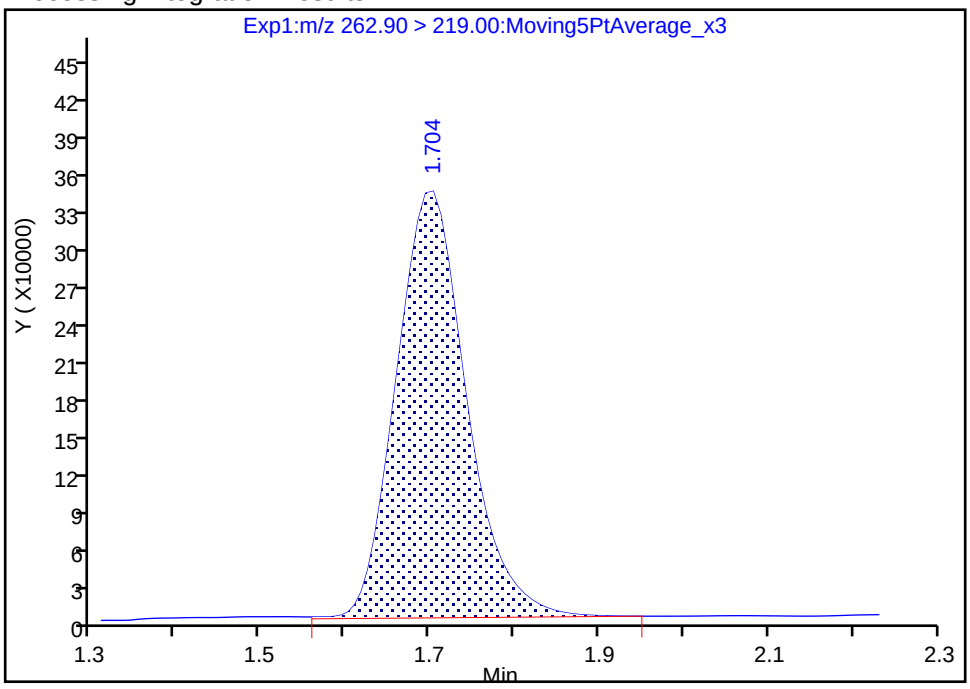
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_006.d
Injection Date: 07-Apr-2018 09:16:48 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

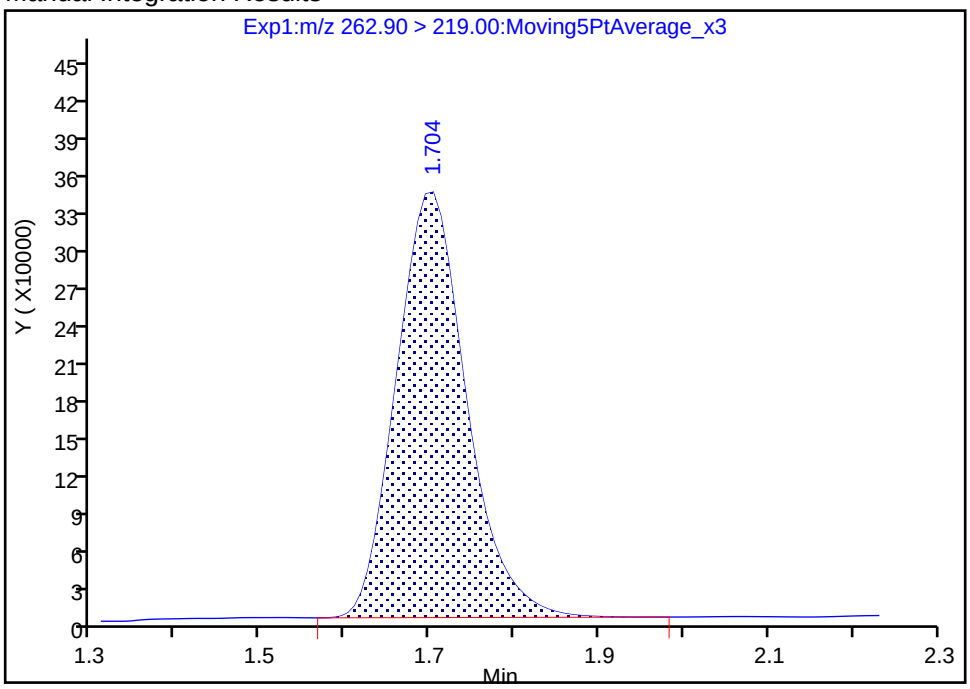
Processing Integration Results

RT: 1.70
Area: 1948838
Amount: 0.956913
Amount Units: ng/ml



Manual Integration Results

RT: 1.70
Area: 1932254
Amount: 0.948770
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:19:10
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

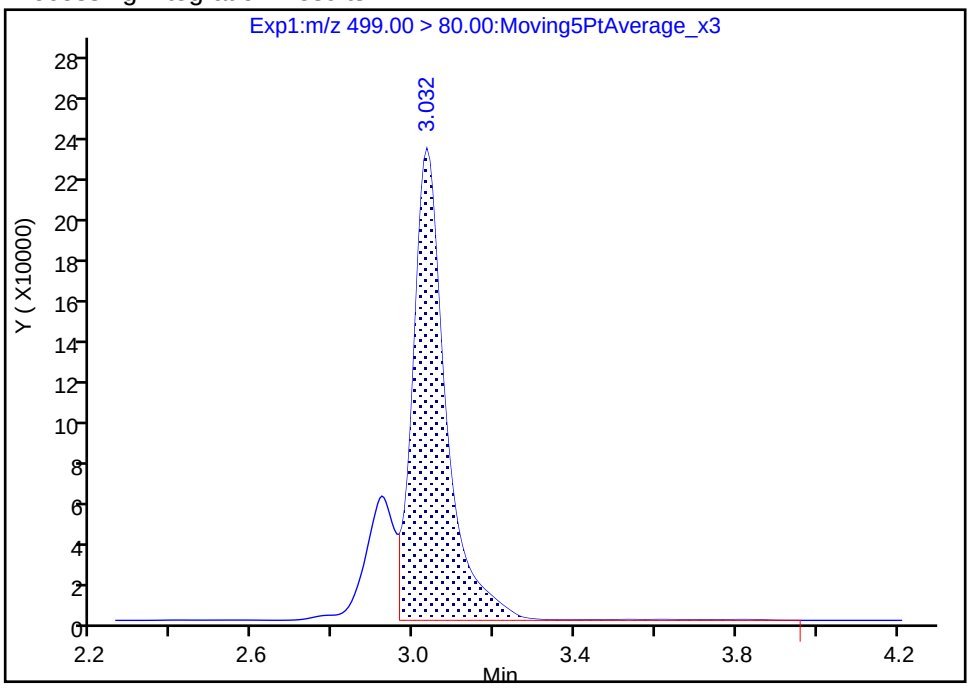
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_006.d				
Injection Date:	07-Apr-2018 09:16:48	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

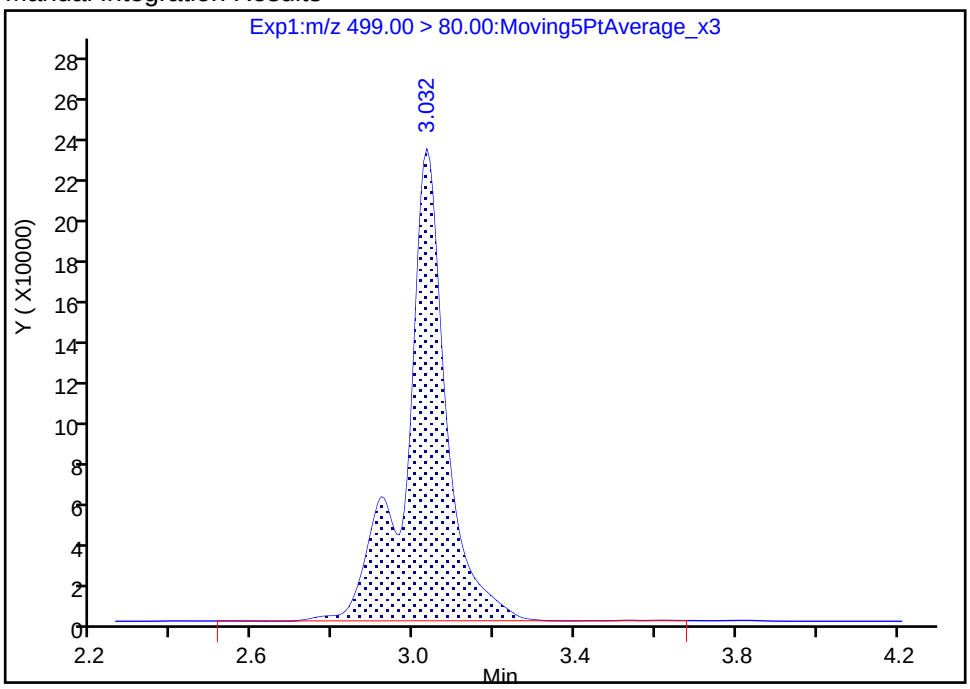
Processing Integration Results

RT: 3.03
Area: 1295945
Amount: 0.703975
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 1585783
Amount: 0.861419
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:19:19

Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216821/14 Calibration Date: 04/07/2018 10:42

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9242	0.9523		2.58	2.50	3.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.197	1.133		2.37	2.50	-5.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	78.89	79.29		2.22	2.21	0.5	30.0
4:2 FTS	AveID	17.26	16.87		2.28	2.34	-2.2	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.023	1.003		2.45	2.50	-1.9	30.0
Perfluoropentanesulfonic acid	AveID	71.20	70.19		2.31	2.35	-1.4	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.087	1.038		2.39	2.50	-4.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.117	1.099		2.24	2.28	-1.6	30.0
6:2FTS	AveID	1.868	1.640		2.08	2.37	-12.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.333	1.376		2.46	2.38	3.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.229		2.59	2.50	3.7	30.0
Perfluorononanoic acid (PFNA)	AveID	1.029	1.058		2.57	2.50	2.8	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.143	1.138		2.31	2.32	-0.4	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9877	0.995		2.52	2.50	0.8	30.0
8:2FTS	AveID	1.349	1.260		2.24	2.40	-6.6	30.0
Perfluorononanesulfonic acid	AveID	0.8018	0.8160		2.44	2.40	1.8	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9893	1.007		2.55	2.50	1.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.054	1.062		2.52	2.50	0.7	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6938	0.6840		2.38	2.41	-1.4	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9171	0.9942		2.71	2.50	8.4	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8023	0.8118		2.53	2.50	1.2	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.081	1.039		2.40	2.50	-3.9	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.156	1.110		2.40	2.50	-4.0	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2497	0.2489		2.49	2.50	-0.3	30.0
13C4 PFBA	Ave	1.382	1.272		2.30	2.50	-7.9	30.0
13C5-PFPeA	Ave	0.8994	0.8369		2.33	2.50	-7.0	30.0
13C3-PFBS	Ave	0.0206	0.0197		2.23	2.33	-4.2	30.0
13C2 PFHxA	Ave	0.9916	0.9613		2.42	2.50	-3.1	30.0
13C4-PFHpA	Ave	0.9533	0.9638		2.53	2.50	1.1	30.0
18O2 PFHxS	Ave	1.189	1.133		2.25	2.37	-4.7	30.0
M2-6:2FTS	Ave	0.2203	0.2108		2.27	2.38	-4.3	30.0

FORM VII EPA 537 (Mod)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216821/14 Calibration Date: 04/07/2018 10:42

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9372	0.8707		2.32	2.50	-7.1	30.0
13C4 PFOS	Ave	0.8257	0.7829		2.27	2.39	-5.2	30.0
13C5 PFNA	Ave	0.7930	0.8069		2.54	2.50	1.8	30.0
13C8 FOSA	Ave	1.166	1.064		2.28	2.50	-8.8	30.0
M2-8:2FTS	Ave	0.2562	0.2481		2.32	2.40	-3.1	30.0
13C2 PFDA	Ave	0.6698	0.6957		2.60	2.50	3.9	30.0
d3-NMeFOSAA	Ave	0.3583	0.3776		2.63	2.50	5.4	30.0
d5-NEtFOSAA	Ave	0.3760	0.3917		2.60	2.50	4.2	30.0
13C2 PFUnA	Ave	0.5468	0.5821		2.66	2.50	6.5	30.0
13C2 PFDoA	Ave	0.6087	0.6226		2.56	2.50	2.3	30.0
13C2-PFTeDA	Ave	0.7733	0.7932		2.56	2.50	2.6	30.0
13C2-PFHxDA	Ave	1.194	1.275		2.67	2.50	6.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_017.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2018 10:42:53 ALS Bottle#: 14 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub30

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:58 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:23:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.425	0.005	1.000	6008563	2.30		92.1	50124	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.431	-0.001	1.000	5721791	2.58		103	3073	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.694	0.009	0.562	3952781	2.33		93.0	75385	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.704	-0.001	1.000	4477750	2.37		94.6	3454	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.730	0.009	1.000	86641	2.23		95.8	645	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.739	1.740	-0.001	1.000	6530342	2.22		101	24484	
298.90 > 99.00	1.739	1.740	-0.001	1.000	2692995		2.42(1.25-3.74)		22171	
D 60 M2-4:2FTS										
329.00 > 81.00	1.950	1.950	0.0	1.000	630486	NC			5207	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.950	1.951	-0.001	1.000	1467884	2.28		97.8	77486	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.982	0.0	1.000	4540400	2.42		96.9	100800	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.982	1.983	-0.001	1.000	4555821	2.45		98.1	10355	
313.00 > 119.00	1.982	1.983	-0.001	1.000	401002		11.36(5.03-15.10)		7700	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.005	2.005	0.0	1.000	6133681	2.31		98.6	39250	
349.00 > 99.00	2.005	2.005	0.0	1.000	2232188		2.75(1.36-4.07)		24583	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.308	0.0	1.000	4552267	2.53		101	93147	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.310	-0.002	1.000	4725474	2.39		95.5	6388	
363.00 > 169.00	2.308	2.310	-0.002	1.000	1841578		2.57(1.13-3.40)		8150	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.321	0.0	1.000	5062468	2.25		95.3	102360	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.323	-0.002	1.000	5353797	2.24		98.4	12121	
399.00 > 99.00	2.321	2.323	-0.002	1.000	1740499		3.08(1.50-4.49)		7275	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.637	-0.001	1.000	945678	2.27		95.7	11922	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.636	2.637	-0.001	1.000	1547745	2.08		87.8	15213	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	4112319	2.32		92.9	103496	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.661	0.006		4723212	2.50			59613	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.669	-0.002	1.003	5055095	2.59		104	2530	
413.00 > 169.00	2.667	2.669	-0.002	1.003	2570209		1.97(0.84-2.52)		8377	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.669	-0.002	1.000	4842578	2.46		103	36277	
449.00 > 99.00	2.667	2.669	-0.002	1.000	1289182		3.76(1.94-5.82)		17707	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.023	0.006	1.000	3535196	2.27		94.8	18677	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.030	-0.001	1.000	3810921	2.54		102	101413	
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.032	-0.003	1.000	4033099	2.57		103	12154	
463.00 > 169.00	3.036	3.032	0.004	1.002	955100		4.22(1.90-5.69)		28843	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.029	3.032	-0.003	1.000	3905693	2.31		99.6	14144	
499.00 > 99.00	3.029	3.032	-0.003	1.000	871003		4.48(2.31-6.93)		12948	
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.360	0.007	1.000	5024218	2.28		91.2	75257	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.367	3.371	-0.004	1.000	5000449	2.52		101	58742	
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.378	-0.002	1.000	1122723	2.32		96.9	13085	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.376	3.380	-0.004	1.000	2896873	2.44		102	30503	
549.00 > 99.00	3.376	3.380	-0.004	1.000	1120572		2.59(1.33-3.97)		21165	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.376	3.380	-0.004	1.000	1414321	2.24		93.4	56251	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.387	-0.002	1.000	3285697	2.60		104	53924	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.395	3.399	-0.004	1.003	3309349	2.55		102	13393	
513.00 > 169.00	3.385	3.399	-0.014	1.000	566007		5.85(2.36-7.09)		1624	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.544	3.537	0.007	1.000	1783275	2.63		105	30441	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.544	3.548	-0.004	1.000	1893373	2.52		101	13505	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.707	-0.002	1.000	1850134	2.60		104	14536	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.705	3.709	-0.004	1.000	2438424	2.38		98.6	20098	
599.00 > 99.00	3.705	3.709	-0.004	1.000	847606		2.88(1.39-4.16)		19096	
D 30 13C2 PFUnA										
565.00 > 520.00	3.716	3.718	-0.002	1.000	2749195	2.66		106	70673	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.716	3.720	-0.004	1.003	1839444	2.71		108	23506	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.716	3.720	-0.004	1.000	2231683	2.53		101	9049	
563.00 > 169.00	3.716	3.720	-0.004	1.000	544090		4.10(2.12-6.36)		13583	
D 36 13C2 PFDoA										
615.00 > 570.00	4.016	4.008	0.008	1.000	2940496	2.56		102	25452	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.016	4.020	-0.004	1.000	3054391	2.40		96.1	2299	
613.00 > 169.00	4.016	4.020	-0.004	1.000	754650		4.05(2.13-6.40)		6435	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.276	4.282	-0.006	1.000	3263211	2.40		96.0	1979	
663.00 > 169.00	4.276	4.282	-0.006	1.000	1020908		3.20(1.25-3.76)		10540	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.517	4.511	0.006	1.000	3746432	2.56		103	22113	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.517	4.522	-0.005	1.000	932530	2.49		99.7	7760	
713.00 > 219.00	4.507	4.522	-0.015	0.998	664614		1.40(0.71-2.13)		8200	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.927	4.922	0.005	1.000	6021740	2.67		107	14095	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.927	4.932	-0.005	1.000	5973992	NC			1366	
813.00 > 169.00	4.927	4.932	-0.005	1.000	974557		6.13(2.86-8.58)		4621	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.281	5.285	-0.004	1.000	6540316	NC			1090	
913.00 > 169.00	5.281	5.285	-0.004	1.000	786559		8.32(3.83-11.48)		4303	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00003 Amount Added: 1.00 Units: mL

Report Date: 09-Apr-2018 08:26:59 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_017.d

Injection Date: 07-Apr-2018 10:42:53 Instrument ID: A8_N

Lims ID: CCV L5

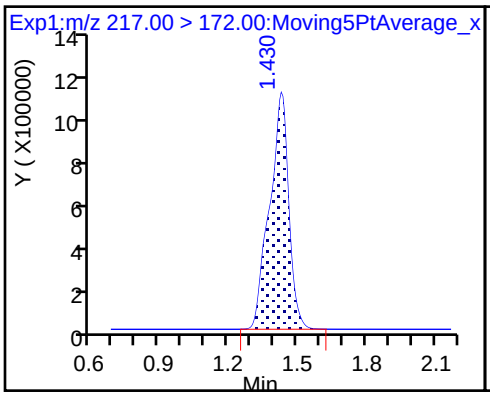
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 14

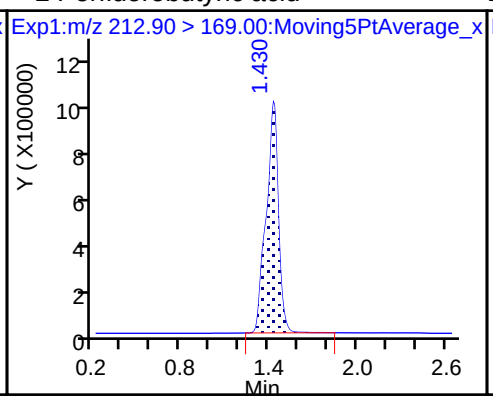
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

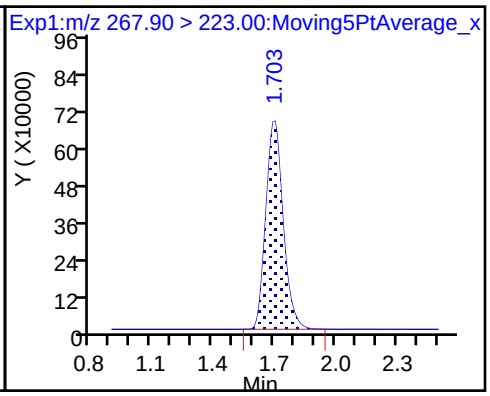
D 1 13C4 PFBA



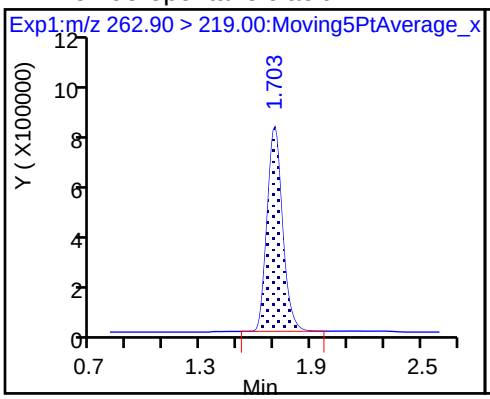
2 Perfluorobutyric acid



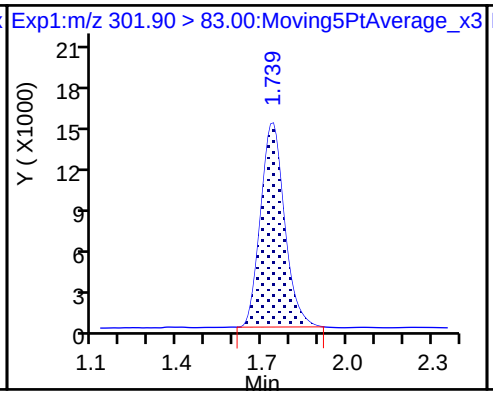
D 3 13C5-PFPeA



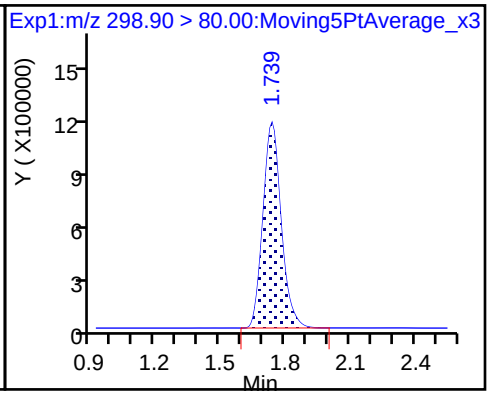
4 Perfluoropentanoic acid



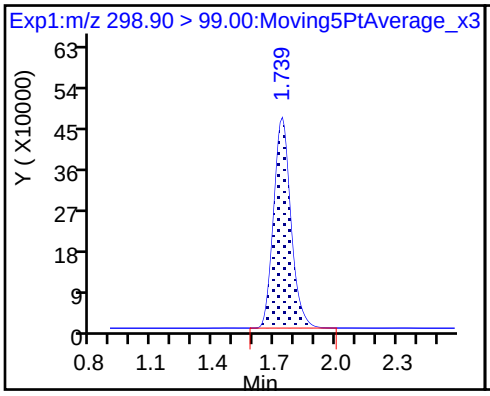
D 47 13C3-PFBS



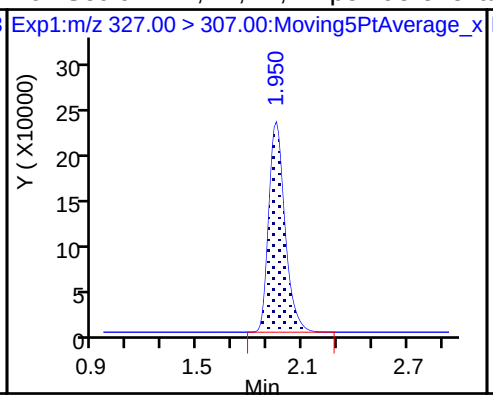
5 Perfluorobutanesulfonic acid



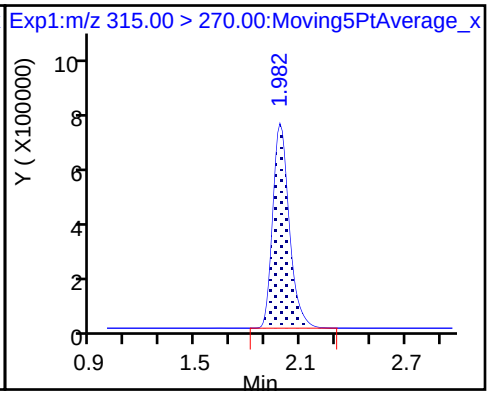
5 Perfluorobutanesulfonic acid



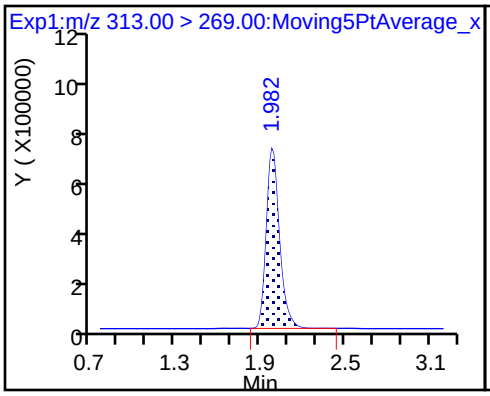
61 Sodium 1H,1H,2H,2H-perfluorohexa



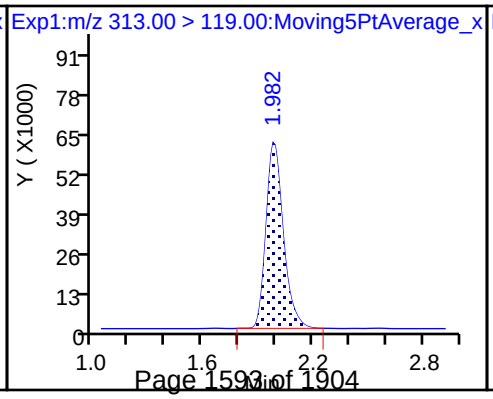
De 7 13C2 PFHxA



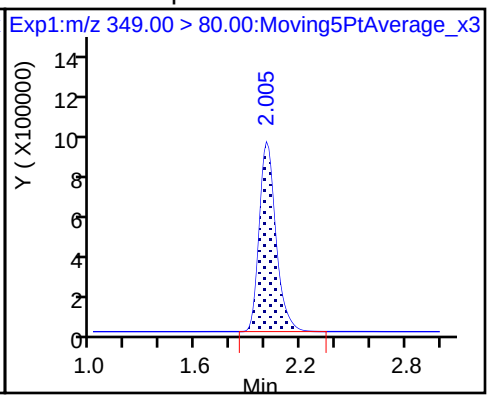
6 Perfluorohexanoic acid



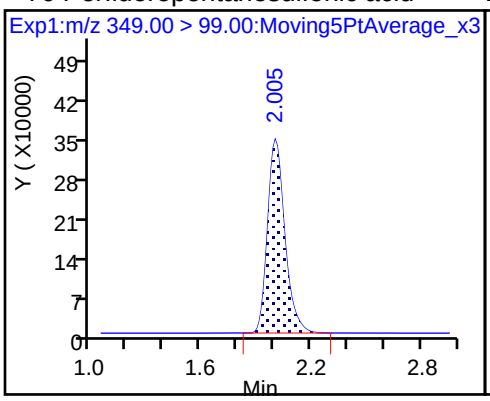
6 Perfluorohexanoic acid



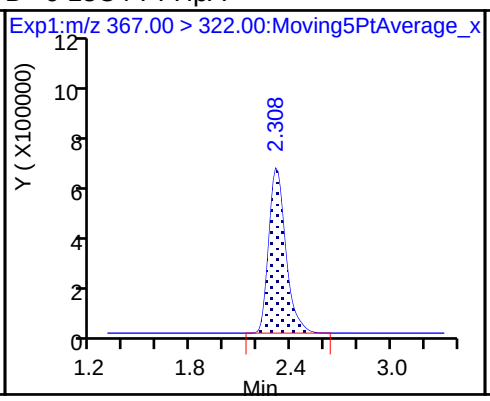
70 Perfluoropentanesulfonic acid



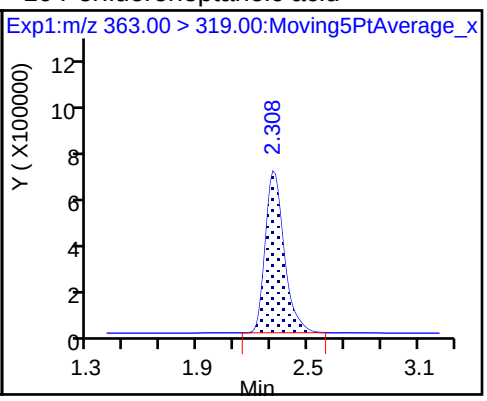
70 Perfluoropentanesulfonic acid



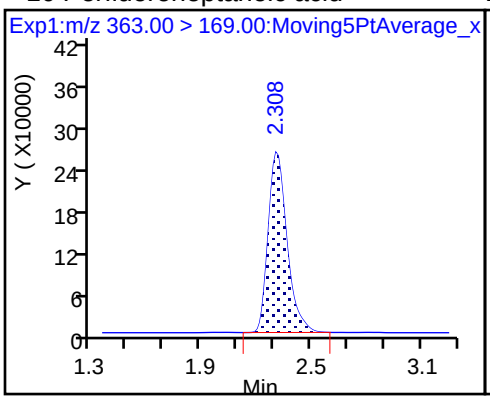
D 9 13C4-PFHpA



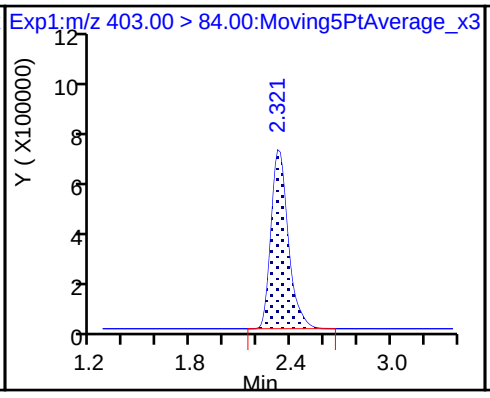
10 Perfluoroheptanoic acid



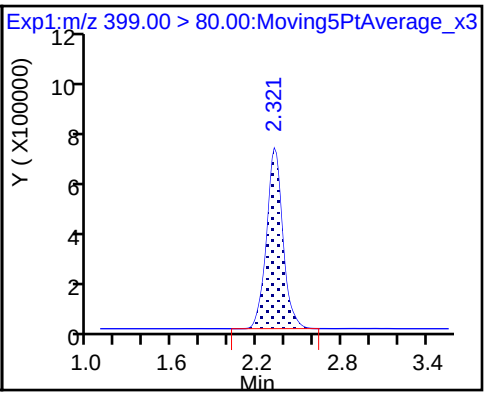
10 Perfluoroheptanoic acid



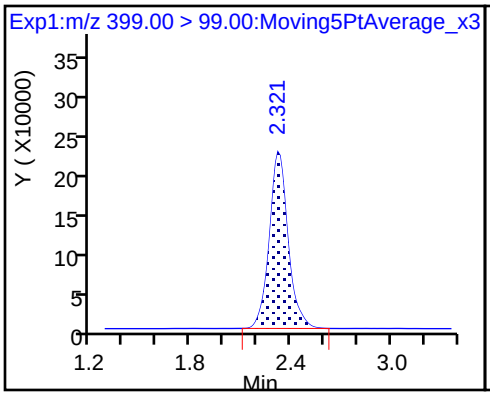
D 11 18O2 PFHxS



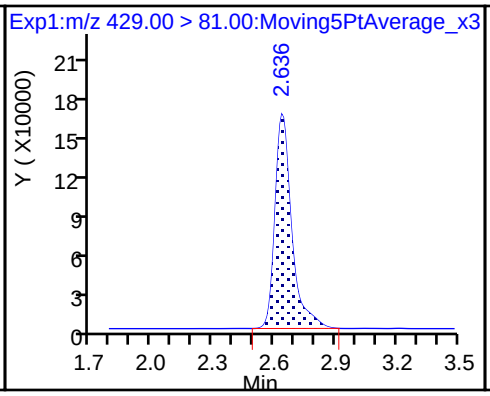
8 Perfluorohexanesulfonic acid



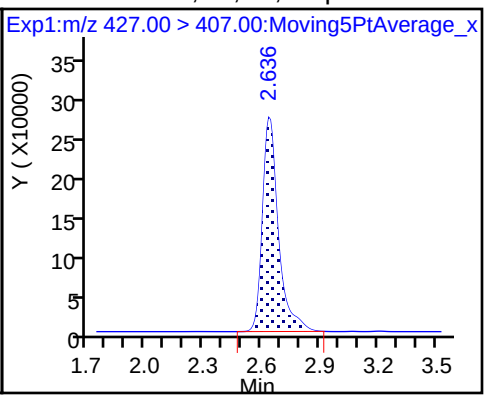
8 Perfluorohexanesulfonic acid



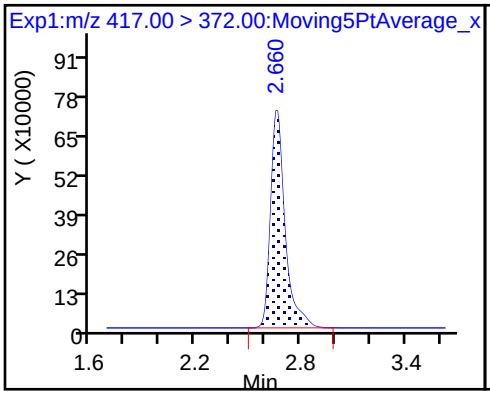
D 12 M2-6:2FTS



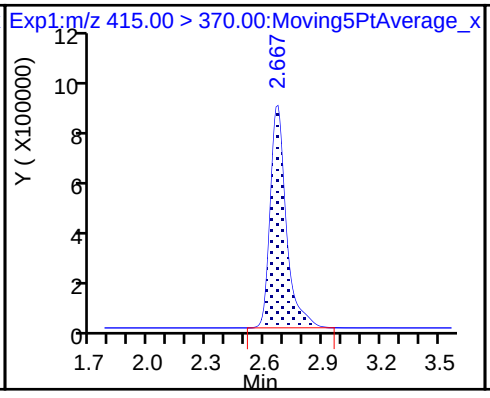
13 Sodium 1H,1H,2H,2H-perfluorooctane



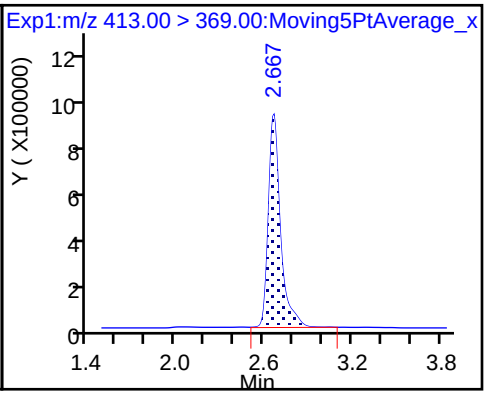
D 14 13C4 PFOA



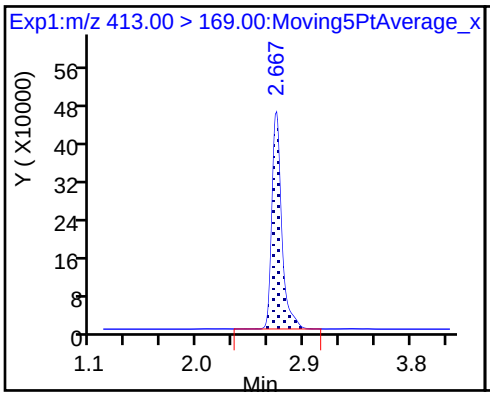
* 62 13C2-PFOA



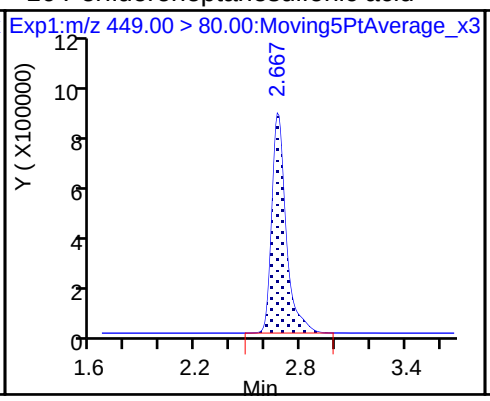
15 Perfluorooctanoic acid



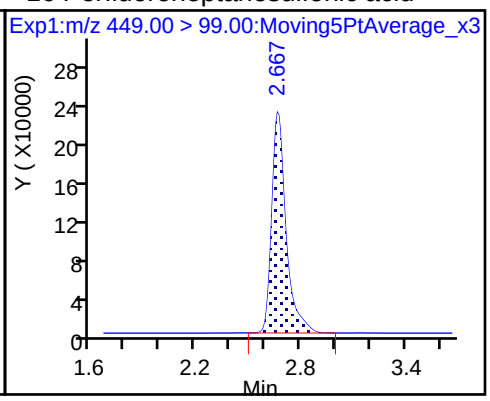
15 Perfluorooctanoic acid



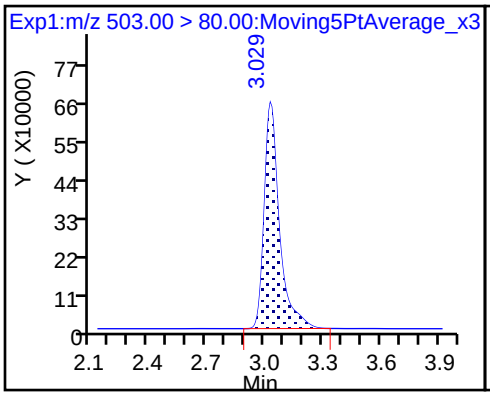
16 Perfluoroheptanesulfonic acid



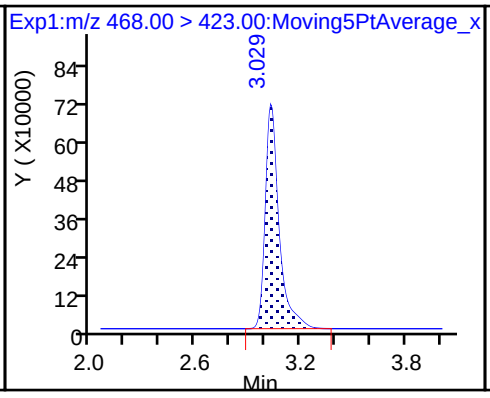
16 Perfluoroheptanesulfonic acid



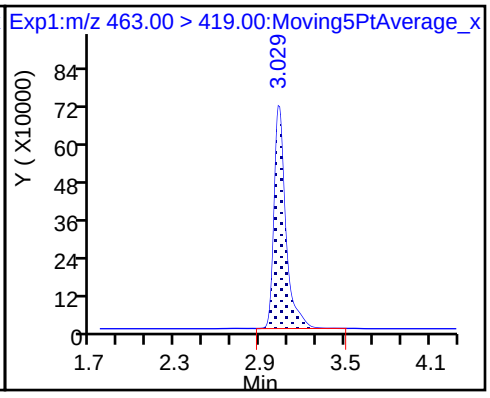
D 18 13C4 PFOS



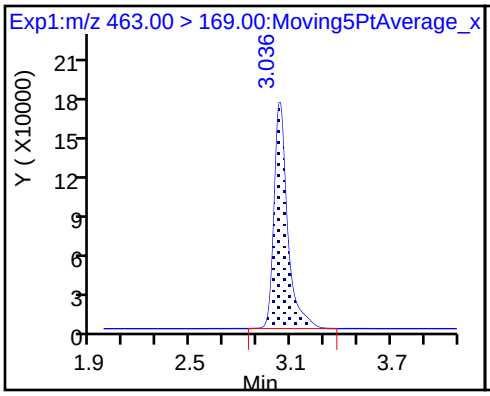
D 19 13C5 PFNA



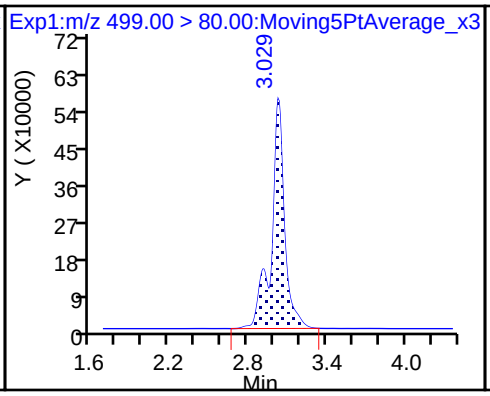
20 Perfluorononanoic acid



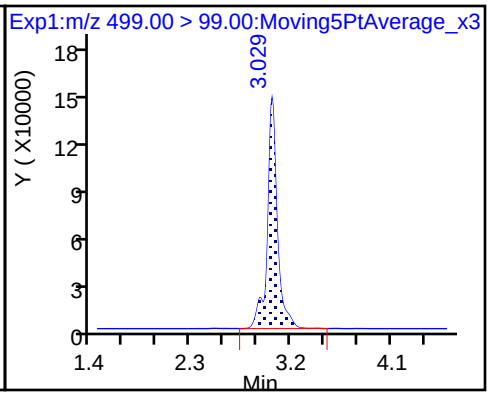
20 Perfluorononanoic acid



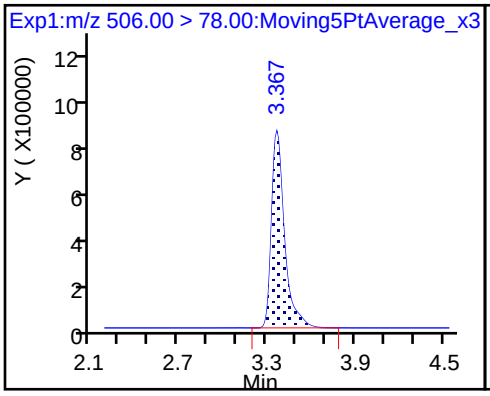
17 Perfluorooctane sulfonic acid



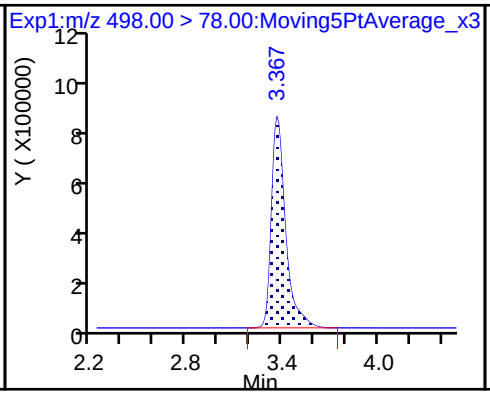
17 Perfluorooctane sulfonic acid



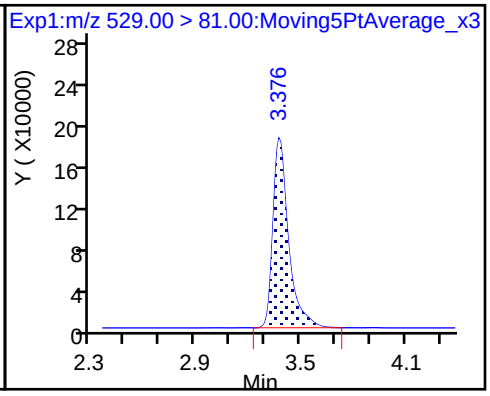
D 21 13C8 FOSA



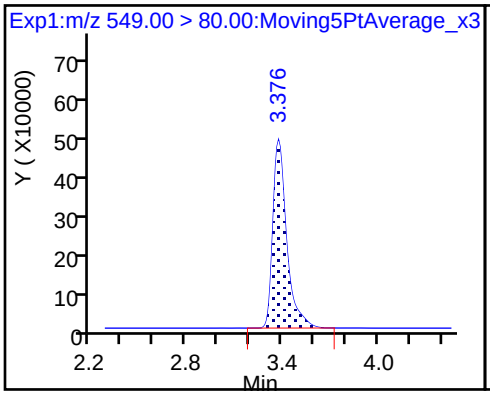
22 Perfluorooctane Sulfonamide



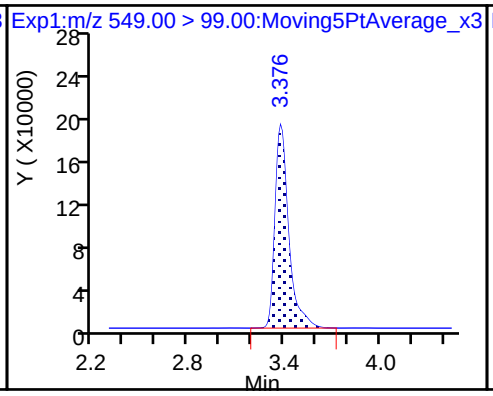
D 26 M2-8:2FTS



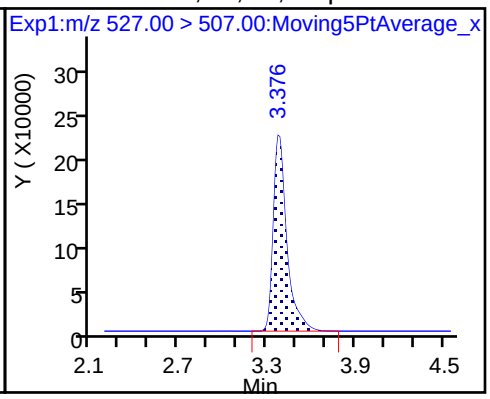
68 Perfluorononanesulfonic acid



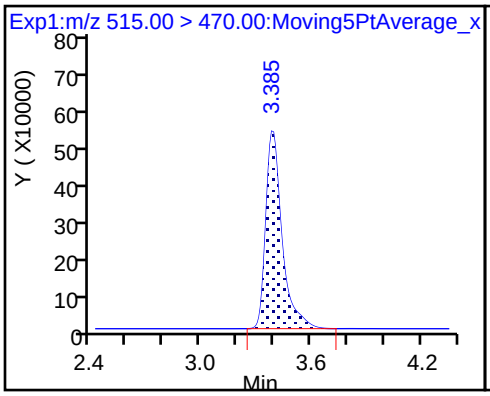
68 Perfluorononanesulfonic acid



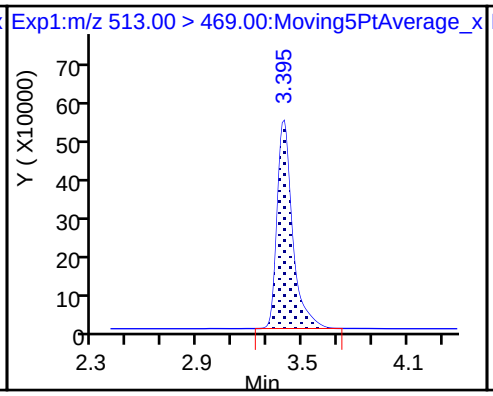
25 Sodium 1H,1H,2H,2H-perfluorodecane



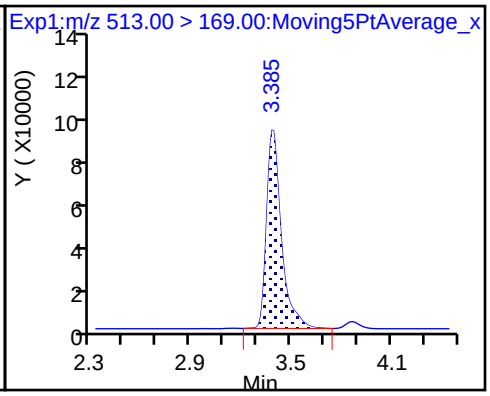
D 23 13C2 PFDA



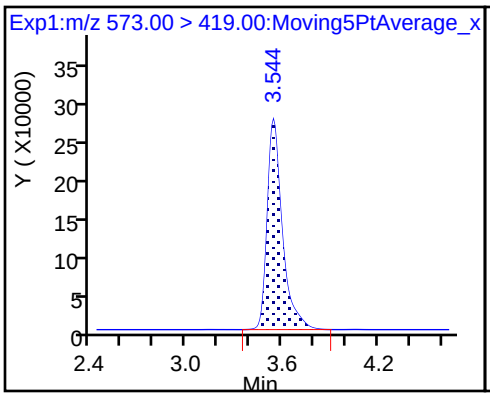
24 Perfluorodecanoic acid



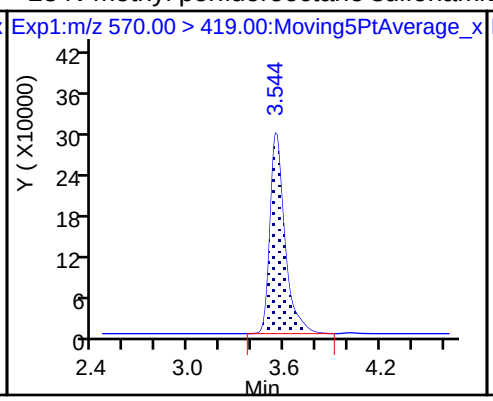
24 Perfluorodecanoic acid



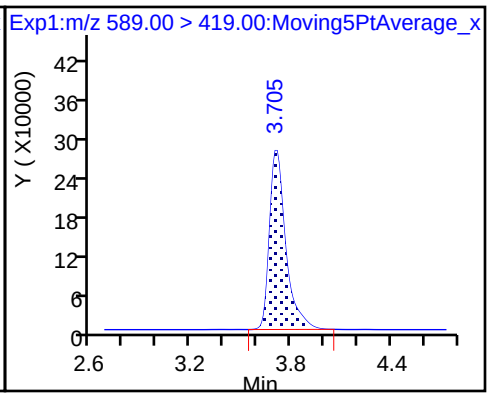
D 27 d3-NMeFOSAA



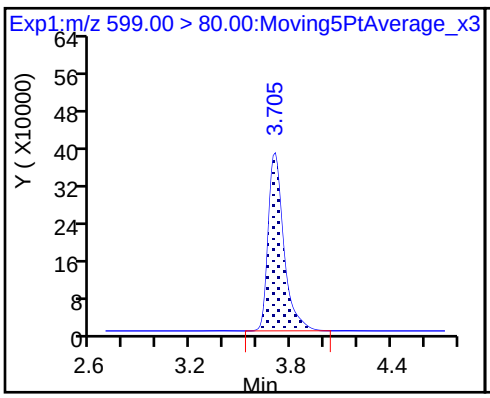
28 N-methyl perfluorooctane sulfonami



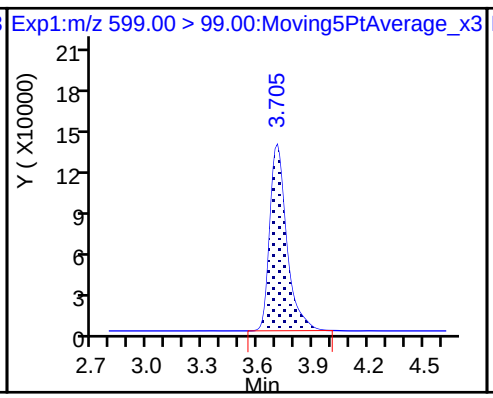
D 32 d5-NEtFOSAA



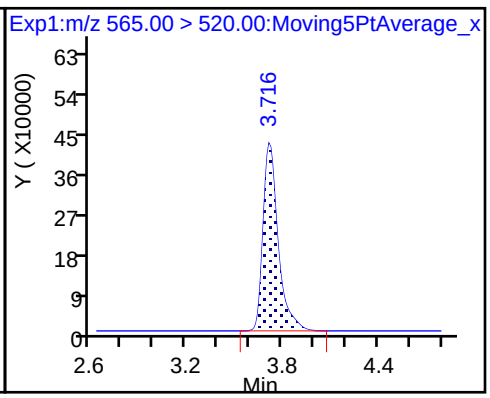
29 Perfluorodecane Sulfonic acid



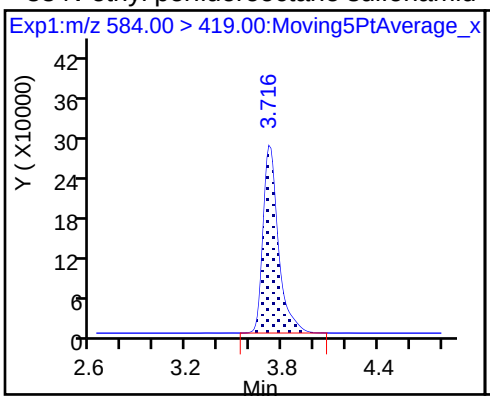
29 Perfluorodecane Sulfonic acid



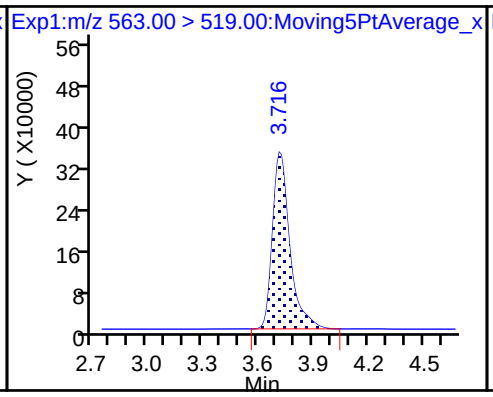
D 30 13C2 PFUnA



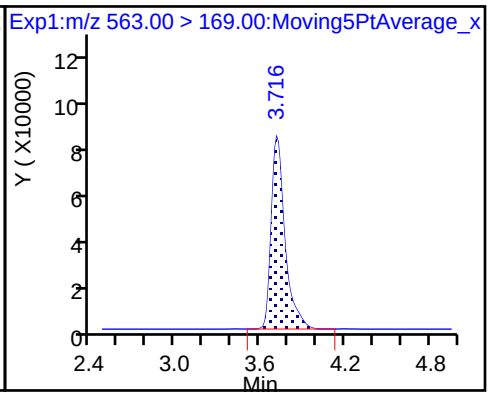
33 N-ethyl perfluorooctane sulfonamid



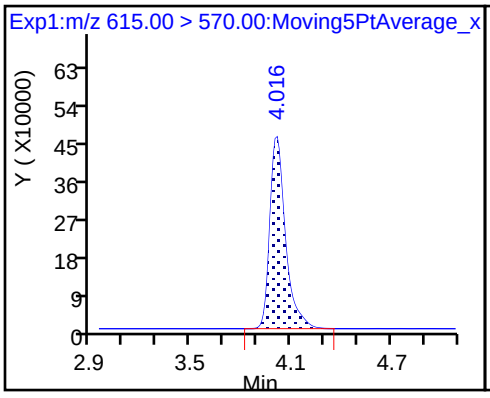
31 Perfluoroundecanoic acid



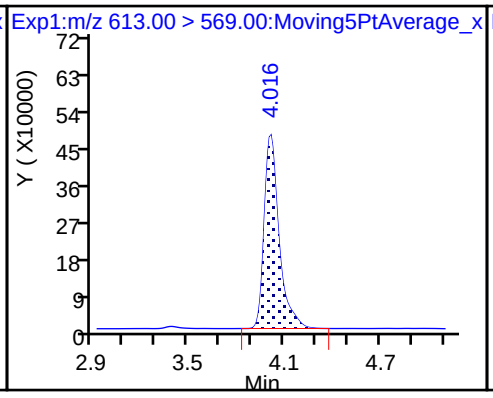
31 Perfluoroundecanoic acid



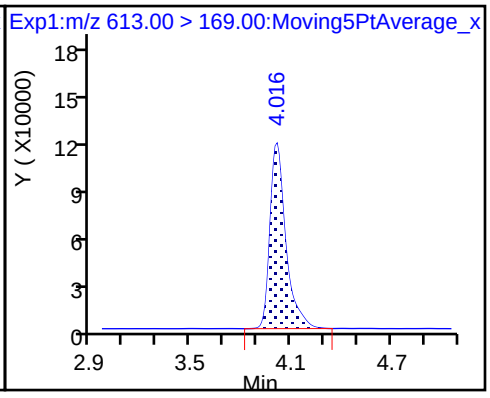
D 36 13C2 PFDoA



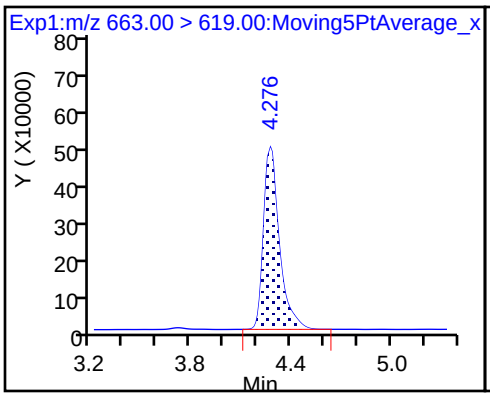
37 Perfluorododecanoic acid



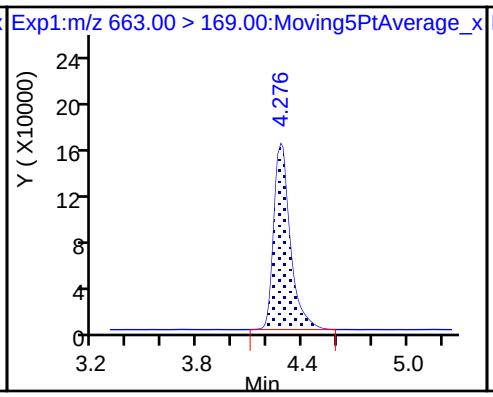
37 Perfluorododecanoic acid



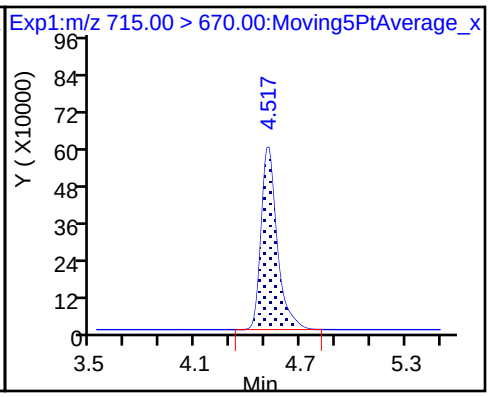
41 Perfluorotridecanoic acid



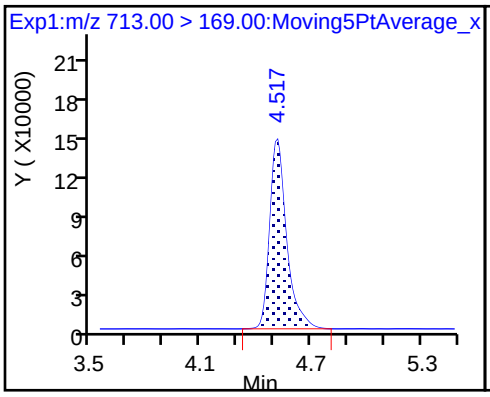
41 Perfluorotridecanoic acid



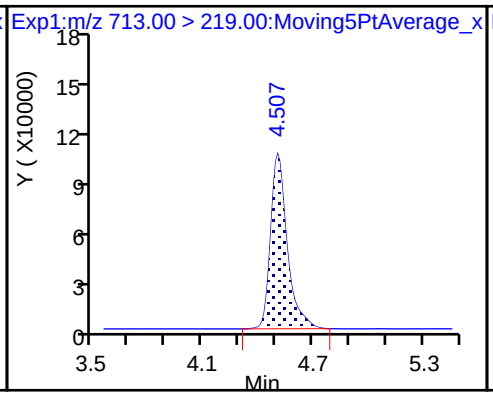
D 43 13C2-PFTeDA



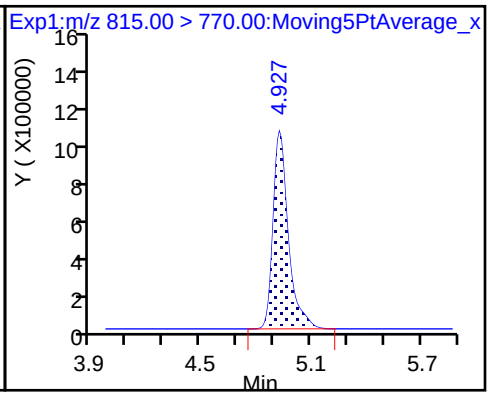
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216821/22 Calibration Date: 04/07/2018 11:45

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9242	0.9057		0.980	1.00	-2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.197	1.163		0.972	1.00	-2.8	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	78.89	78.64		0.881	0.884	-0.3	30.0
4:2 FTS	AveID	17.26	17.06		0.924	0.934	-1.1	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.023	0.9673		0.945	1.00	-5.5	30.0
Perfluoropentanesulfonic acid	AveID	71.20	72.57		0.956	0.938	1.9	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.087	1.011		0.931	1.00	-6.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.117	1.050		0.856	0.910	-5.9	30.0
6:2FTS	AveID	1.868	1.869		0.949	0.948	0.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.333	1.317		0.941	0.952	-1.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.058		0.892	1.00	-10.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.029	1.018		0.989	1.00	-1.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.143	1.043		0.847	0.928	-8.8	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9877	0.9583		0.970	1.00	-3.0	30.0
Perfluorononanesulfonic acid	AveID	0.8018	0.7679		0.919	0.960	-4.2	30.0
8:2FTS	AveID	1.349	1.260		0.895	0.958	-6.6	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9893	0.9694		0.980	1.00	-2.0	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.054	1.016		0.964	1.00	-3.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6938	0.6543		0.909	0.964	-5.7	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9171	0.8896		0.970	1.00	-3.0	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8023	0.8216		1.02	1.00	2.4	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.081	1.023		0.946	1.00	-5.4	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.156	1.069		0.925	1.00	-7.5	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2497	0.2471		0.989	1.00	-1.1	30.0
13C4 PFBA	Ave	1.382	1.327		2.40	2.50	-4.0	30.0
13C5-PFPeA	Ave	0.8994	0.8621		2.40	2.50	-4.1	30.0
13C3-PFBS	Ave	0.0206	0.0194		2.19	2.33	-5.8	30.0
13C2 PFHxA	Ave	0.9916	0.9671		2.44	2.50	-2.5	30.0
13C4-PFHpA	Ave	0.9533	0.9558		2.51	2.50	0.3	30.0
18O2 PFHxS	Ave	1.189	1.154		2.30	2.37	-2.9	30.0
M2-6:2FTS	Ave	0.2203	0.2212		2.39	2.38	0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216821/22 Calibration Date: 04/07/2018 11:45

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9372	0.9595		2.56	2.50	2.4	30.0
13C4 PFOS	Ave	0.8257	0.8417		2.44	2.39	1.9	30.0
13C5 PFNA	Ave	0.7930	0.8258		2.60	2.50	4.1	30.0
13C8 FOSA	Ave	1.166	1.097		2.35	2.50	-5.9	30.0
M2-8:2FTS	Ave	0.2562	0.2649		2.48	2.40	3.4	30.0
13C2 PFDA	Ave	0.6698	0.7435		2.78	2.50	11.0	30.0
d3-NMeFOSAA	Ave	0.3583	0.4144		2.89	2.50	15.7	30.0
d5-NEtFOSAA	Ave	0.3760	0.4383		2.91	2.50	16.6	30.0
13C2 PFUnA	Ave	0.5468	0.6216		2.84	2.50	13.7	30.0
13C2 PFDoA	Ave	0.6087	0.6918		2.84	2.50	13.7	30.0
13C2-PFTeDA	Ave	0.7733	0.8320		2.69	2.50	7.6	30.0
13C2-PFHxDA	Ave	1.194	1.303		2.73	2.50	9.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216849/1 Calibration Date: 04/07/2018 11:45

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9242	0.9057		0.980	1.00	-2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.197	1.163		0.972	1.00	-2.8	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	78.89	78.64		0.881	0.884	-0.3	30.0
4:2 FTS	AveID	17.26	17.06		0.924	0.934	-1.1	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.023	0.9673		0.945	1.00	-5.5	30.0
Perfluoropentanesulfonic acid	AveID	71.20	72.57		0.956	0.938	1.9	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.087	1.011		0.931	1.00	-6.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.117	1.050		0.856	0.910	-5.9	30.0
6:2FTS	AveID	1.868	1.869		0.949	0.948	0.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.333	1.317		0.941	0.952	-1.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.058		0.892	1.00	-10.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.029	1.018		0.989	1.00	-1.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.143	1.043		0.847	0.928	-8.8	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9877	0.9583		0.970	1.00	-3.0	30.0
Perfluorononanesulfonic acid	AveID	0.8018	0.7679		0.919	0.960	-4.2	30.0
8:2FTS	AveID	1.349	1.260		0.895	0.958	-6.6	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9893	0.9694		0.980	1.00	-2.0	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.054	1.016		0.964	1.00	-3.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6938	0.6543		0.909	0.964	-5.7	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9171	0.8896		0.970	1.00	-3.0	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8023	0.8216		1.02	1.00	2.4	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.081	1.023		0.946	1.00	-5.4	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.156	1.069		0.925	1.00	-7.5	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2497	0.2471		0.989	1.00	-1.1	30.0
13C4 PFBA	Ave	1.382	1.327		2.40	2.50	-4.0	30.0
13C5-PFPeA	Ave	0.8994	0.8621		2.40	2.50	-4.1	30.0
13C3-PFBS	Ave	0.0206	0.0194		2.19	2.33	-5.8	30.0
13C2 PFHxA	Ave	0.9916	0.9671		2.44	2.50	-2.5	30.0
13C4-PFHpA	Ave	0.9533	0.9558		2.51	2.50	0.3	30.0
18O2 PFHxS	Ave	1.189	1.154		2.30	2.37	-2.9	30.0
M2-6:2FTS	Ave	0.2203	0.2212		2.39	2.38	0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216849/1 Calibration Date: 04/07/2018 11:45

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9372	0.9595		2.56	2.50	2.4	30.0
13C4 PFOS	Ave	0.8257	0.8417		2.44	2.39	1.9	30.0
13C5 PFNA	Ave	0.7930	0.8258		2.60	2.50	4.1	30.0
13C8 FOSA	Ave	1.166	1.097		2.35	2.50	-5.9	30.0
M2-8:2FTS	Ave	0.2562	0.2649		2.48	2.40	3.4	30.0
13C2 PFDA	Ave	0.6698	0.7435		2.78	2.50	11.0	30.0
d3-NMeFOSAA	Ave	0.3583	0.4144		2.89	2.50	15.7	30.0
d5-NEtFOSAA	Ave	0.3760	0.4383		2.91	2.50	16.6	30.0
13C2 PFUnA	Ave	0.5468	0.6216		2.84	2.50	13.7	30.0
13C2 PFDoA	Ave	0.6087	0.6918		2.84	2.50	13.7	30.0
13C2-PFTeDA	Ave	0.7733	0.8320		2.69	2.50	7.6	30.0
13C2-PFHxDA	Ave	1.194	1.303		2.73	2.50	9.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_025.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2018 11:45:36 ALS Bottle#: 13 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:27:10 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:26:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.425	-0.001	1.000	6429663	2.40		96.0	49425	
2 Perfluorobutyric acid										
212.90 > 169.00	1.424	1.424	0.0	1.000	2329435	0.9800		98.0	931	
D 3 13C5-PFPeA										
267.90 > 223.00	1.693	1.694	-0.001	0.560	4178138	2.40		95.9	91263	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.693	1.693	0.0	1.000	1943359	0.9715		97.2	1191	
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	87443	2.19		94.2	628	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.729	1.729	0.0	1.000	2614483	0.8812		99.7	11149	
298.90 > 99.00	1.729	1.729	0.0	1.000	1101150		2.37(1.25-3.74)		8019	
D 60 M2-4:2FTS										
329.00 > 81.00	1.938	1.950	-0.012	1.000	658599	NC			6127	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.938	1.938	0.0	1.000	599445	0.9237		98.9	32213	
D 7 13C2 PFHxA										
315.00 > 270.00	1.970	1.982	-0.012	1.000	4687037	2.44		97.5	91483	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.970	1.970	0.0	1.000	1813562	0.9453		94.5	3122	
313.00 > 119.00	1.970	1.970	0.0	1.000	169517		10.70(5.03-15.10)		2390	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	1.992	1.992	0.0	1.000	2560179	0.9560		102	18017	
349.00 > 99.00	1.992	1.992	0.0	1.000	930904		2.75(1.36-4.07)		11926	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.071	2.073	-0.002	1.000	217023	NC			4696	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.071	2.071	0.0	1.000	286923	NC			2194	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.308	-0.001	1.000	4632390	2.51		100	81855	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.307	2.307	0.0	1.000	1874254	0.9309		93.1	2293	
363.00 > 169.00	2.307	2.307	0.0	1.000	720916		2.60(1.13-3.40)		3784	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.321	-0.001	1.000	5289816	2.30		97.1	74367	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.307	2.307	0.0	0.994	2138156	0.8559		94.1	5850	
399.00 > 99.00	2.320	2.307	0.013	1.000	715530		2.99(1.50-4.49)		2792	
65 Adona										
377.00 > 251.00	2.346	2.346	0.0	1.000	5685506	NC			101940	
377.00 > 85.00	2.346	2.346	0.0	1.000	3235284		1.76(0.84-2.53)		38909	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.637	-0.008	1.000	1018635	2.39		100	11177	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.629	2.629	0.0	1.000	759807	0.9486		100	6315	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.660	-0.007	1.000	4650356	2.56		102	92915	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.653	0.0		4846592	2.50			144150	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.660	0.0	1.003	1967236	0.8919		89.2	903	
413.00 > 169.00	2.660	2.660	0.0	1.003	1009345		1.95(0.84-2.52)		2891	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.660	2.660	0.0	1.000	2045481	0.9406		98.8	15551	
449.00 > 99.00	2.660	2.660	0.0	1.000	547114		3.74(1.94-5.82)		8163	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.023	0.0	1.000	3899857	2.44		102	23635	
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.030	-0.007	1.000	4002239	2.60		104	91242	
20 Perfluorononanoic acid										
463.00 > 419.00	3.023	3.023	0.0	1.000	1629507	0.9892		98.9	3067	
463.00 > 169.00	3.023	3.023	0.0	1.000	394264		4.13(1.90-5.69)		12017	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.023	3.023	0.0	1.000	1578848	0.8468		91.2	6627	
499.00 > 99.00	3.023	3.023	0.0	1.000	350561		4.50(2.31-6.93)		3238	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.238	0.0	1.000	2762472	NC			50334	
D 21 13C8 FOSA										
506.00 > 78.00	3.359	3.360	-0.001	1.000	5318320	2.35		94.1	74518	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.359	3.359	0.0	1.000	2038628	0.9702		97.0	41177	
D 26 M2-8:2FTS										
529.00 > 81.00	3.369	3.378	-0.009	1.000	1229863	2.48		103	10578	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.369	3.369	0.0	1.000	1202809	0.9194		95.8	9147	
549.00 > 99.00	3.369	3.369	0.0	1.000	440989		2.73(1.33-3.97)		6098	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.378	3.378	0.0	1.003	620071	0.8952		93.4	16244	
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.387	0.0	1.000	3603324	2.78		111	84983	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.387	0.0	1.000	1397226	0.9799		98.0	5296	
513.00 > 169.00	3.387	3.387	0.0	1.000	250461		5.58(2.36-7.09)		5843	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.537	3.537	0.0	1.000	2008458	2.89		116	35556	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.546	3.546	0.0	1.003	816372	0.9640		96.4	5558	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.707	3.707	0.0	1.000	2124030	2.91		117	17818	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.696	0.0	1.000	1029256	0.9091		94.3	5781	
599.00 > 99.00	3.696	3.696	0.0	1.000	341567		3.01(1.39-4.16)		10590	
D 30 13C2 PFUnA										
565.00 > 520.00	3.718	3.718	0.0	1.000	3012512	2.84		114	59088	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.718	3.718	0.0	1.003	755809	0.9700		97.0	10175	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.718	3.718	0.0	1.000	990012	1.02		102	2465	
563.00 > 169.00	3.718	3.718	0.0	1.000	244210		4.05(2.12-6.36)		7389	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.875	3.875	0.0	1.000	4461867	NC			60011	
D 36 13C2 PFDoA										
615.00 > 570.00	4.007	4.008	-0.001	1.000	3352733	2.84		114	23029	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.007	4.007	0.0	1.000	1371279	0.9461		94.6	788	
613.00 > 169.00	4.007	4.007	0.0	1.000	328852		4.17(2.13-6.40)		3950	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.270	4.270	0.0	1.000	1433363	0.9246		92.5	679	
663.00 > 169.00	4.270	4.270	0.0	1.000	466987		3.07(1.25-3.76)		4204	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.511	0.0	1.000	4032448	2.69		108	21068	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.511	4.511	0.0	1.000	398505	0.9892		98.9	2875	
713.00 > 219.00	4.511	4.511	0.0	1.000	285543		1.40(0.71-2.13)		2264	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.922	4.922	0.0	1.000	6313283	2.73		109	14972	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.922	4.922	0.0	1.000	2379470	NC			497	
813.00 > 169.00	4.922	4.922	0.0	1.000	393728		6.04(2.86-8.58)		1742	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.276	5.276	0.0	1.000	2360027	NC			481	
913.00 > 169.00	5.276	5.276	0.0	1.000	289281		8.16(3.83-11.48)		1645	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA_025.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2018 11:45:36 ALS Bottle#: 13 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:44:01 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:43:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.424	0.0	1.000	6429663	2.40		96.0	49425	
2 Perfluorobutyric acid										
212.90 > 169.00	1.424	1.424	0.0	1.000	2329435	0.9800		98.0	931	
D 3 13C5-PFPeA										
267.90 > 223.00	1.693	1.693	0.0	0.560	4178138	2.40		95.9	91263	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.693	1.693	0.0	1.000	1943359	0.9715		97.2	1191	
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.729	0.0	1.000	87443	2.19		94.2	628	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.729	1.729	0.0	1.000	2614483	0.8812		99.7	11149	
298.90 > 99.00	1.729	1.729	0.0	1.000	1101150		2.37(1.25-3.74)		8019	
D 60 M2-4:2FTS										
329.00 > 81.00	1.938	1.938	0.0	1.000	658599	NC			6127	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.938	1.938	0.0	1.000	599445	0.9237		98.9	32213	
D 7 13C2 PFHxA										
315.00 > 270.00	1.970	1.970	0.0	1.000	4687037	2.44		97.5	91483	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.970	1.970	0.0	1.000	1813562	0.9453		94.5	3122	
313.00 > 119.00	1.970	1.970	0.0	1.000	169517		10.70(5.03-15.10)		2390	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	1.992	1.992	0.0	1.000	2560179	0.9560		102	18017	
349.00 > 99.00	1.992	1.992	0.0	1.000	930904		2.75(1.36-4.07)		11926	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.071	2.071	0.0	1.000	217023	NC			4696	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.071	2.071	0.0	1.000	286923	NC			2194	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.307	0.0	1.000	4632390	2.51		100	81855	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.307	2.307	0.0	1.000	1874254	0.9309		93.1	2293	
363.00 > 169.00	2.307	2.307	0.0	1.000	720916		2.60(1.13-3.40)		3784	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.307	2.307	0.0	0.994	2138156	0.8559		94.1	5850	
399.00 > 99.00	2.320	2.307	0.013	1.000	715530		2.99(1.50-4.49)		2792	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.320	0.0	1.000	5289816	2.30		97.1	74367	
65 Adona										
377.00 > 251.00	2.346	2.346	0.0	1.000	5685506	NC			101940	
377.00 > 85.00	2.346	2.346	0.0	1.000	3235284		1.76(0.84-2.53)		38909	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.629	0.0	1.000	1018635	2.39		100	11177	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.629	2.629	0.0	1.000	759807	0.9486		100	6315	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.653	0.0	1.000	4650356	2.56		102	92915	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.653	0.0		4846592	2.50			144150	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.660	0.0	1.003	1967236	0.8919		89.2	903	
413.00 > 169.00	2.660	2.660	0.0	1.003	1009345		1.95(0.84-2.52)		2891	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.660	2.660	0.0	1.000	2045481	0.9406		98.8	15551	
449.00 > 99.00	2.660	2.660	0.0	1.000	547114		3.74(1.94-5.82)		8163	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.023	0.0	1.000	3899857	2.44		102	23635	
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.023	0.0	1.000	4002239	2.60		104	91242	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.023	3.023	0.0	1.000	1578848	0.8468		91.2	6627	
499.00 > 99.00	3.023	3.023	0.0	1.000	350561		4.50(2.31-6.93)		3238	
20 Perfluorononanoic acid										
463.00 > 419.00	3.023	3.023	0.0	1.000	1629507	0.9892		98.9	3067	
463.00 > 169.00	3.023	3.023	0.0	1.000	394264		4.13(1.90-5.69)		12017	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.238	0.0	1.000	2762472	NC			50334	
D 21 13C8 FOSA										
506.00 > 78.00	3.359	3.359	0.0	1.000	5318320	2.35		94.1	74518	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.359	3.359	0.0	1.000	2038628	0.9702		97.0	41177	
D 26 M2-8:2FTS										
529.00 > 81.00	3.369	3.369	0.0	1.000	1229863	2.48		103	10578	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.369	3.369	0.0	1.000	1202809	0.9194		95.8	9147	
549.00 > 99.00	3.369	3.369	0.0	1.000	440989		2.73(1.33-3.97)		6098	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.378	3.378	0.0	1.003	620071	0.8952		93.4	16244	
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.387	0.0	1.000	3603324	2.78		111	84983	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.387	0.0	1.000	1397226	0.9799		98.0	5296	
513.00 > 169.00	3.387	3.387	0.0	1.000	250461		5.58(2.36-7.09)		5843	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.537	3.537	0.0	1.000	2008458	2.89		116	35556	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.546	3.546	0.0	1.003	816372	0.9640		96.4	5558	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.696	0.0	1.000	1029256	0.9091		94.3	5781	
599.00 > 99.00	3.696	3.696	0.0	1.000	341567		3.01(1.39-4.16)		10590	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.707	3.707	0.0	1.000	2124030	2.91		117	17818	
D 30 13C2 PFUnA										
565.00 > 520.00	3.718	3.718	0.0	1.000	3012512	2.84		114	59088	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.718	3.718	0.0	1.000	990012	1.02		102	2465	
563.00 > 169.00	3.718	3.718	0.0	1.000	244210		4.05(2.12-6.36)		7389	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.718	3.718	0.0	1.003	755809	0.9700		97.0	10175	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.875	3.875	0.0	1.000	4461867	NC			60011	
D 36 13C2 PFDoA										
615.00 > 570.00	4.007	4.007	0.0	1.000	3352733	2.84		114	23029	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.007	4.007	0.0	1.000	1371279	0.9461		94.6	788	
613.00 > 169.00	4.007	4.007	0.0	1.000	328852		4.17(2.13-6.40)		3950	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.270	4.270	0.0	1.000	1433363	0.9246		92.5	679	
663.00 > 169.00	4.270	4.270	0.0	1.000	466987		3.07(1.25-3.76)		4204	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.511	0.0	1.000	4032448	2.69		108	21068	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.511	4.511	0.0	1.000	398505	0.9892		98.9	2875	
713.00 > 219.00	4.511	4.511	0.0	1.000	285543		1.40(0.71-2.13)		2264	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.922	4.922	0.0	1.000	6313283	2.73		109	14972	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.922	4.922	0.0	1.000	2379470	NC			497	
813.00 > 169.00	4.922	4.922	0.0	1.000	393728		6.04(2.86-8.58)		1742	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.276	5.276	0.0	1.000	2360027	NC			481	
913.00 > 169.00	5.276	5.276	0.0	1.000	289281		8.16(3.83-11.48)		1645	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004 Amount Added: 1.00 Units: mL

Report Date: 09-Apr-2018 08:27:12 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_025.d

Injection Date: 07-Apr-2018 11:45:36 Instrument ID: A8_N

Lims ID: CCV L4

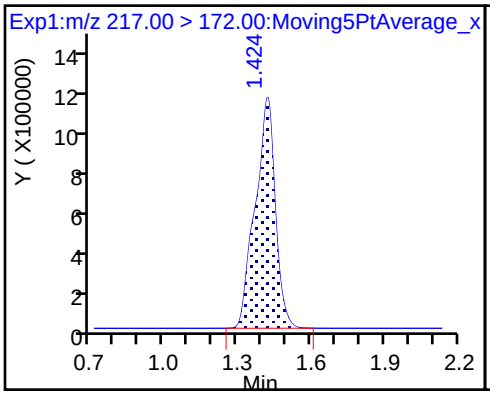
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 22

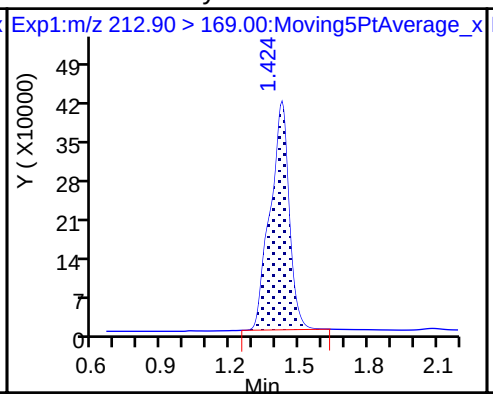
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

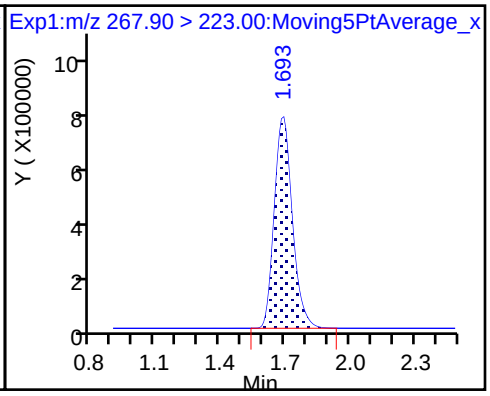
D 1 13C4 PFBA



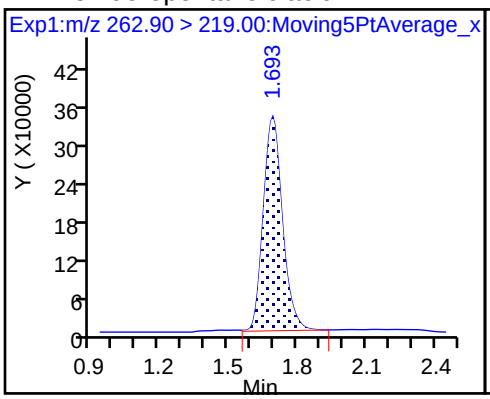
2 Perfluorobutyric acid



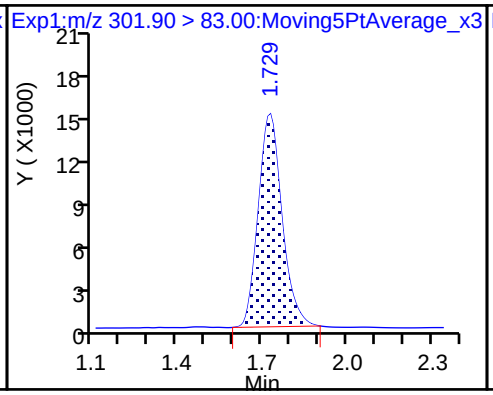
D 3 13C5-PFPeA



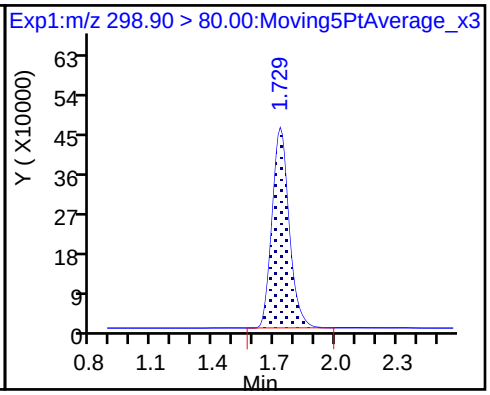
4 Perfluoropentanoic acid



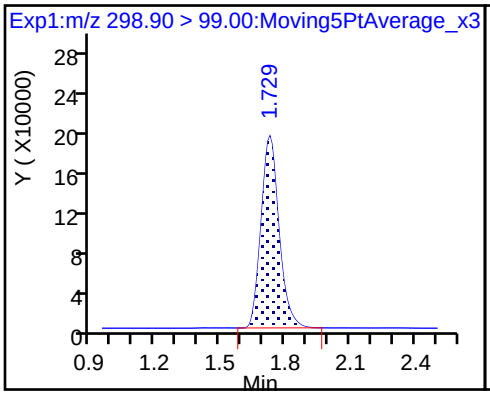
D 47 13C3-PFBS



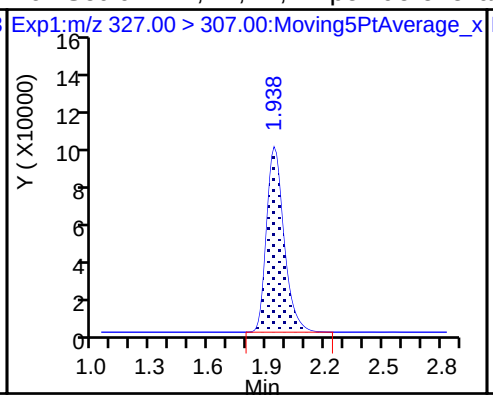
5 Perfluorobutanesulfonic acid



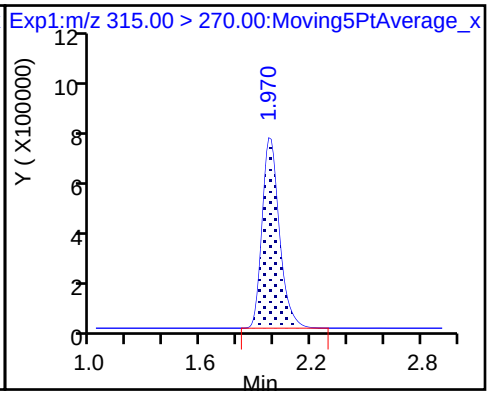
5 Perfluorobutanesulfonic acid



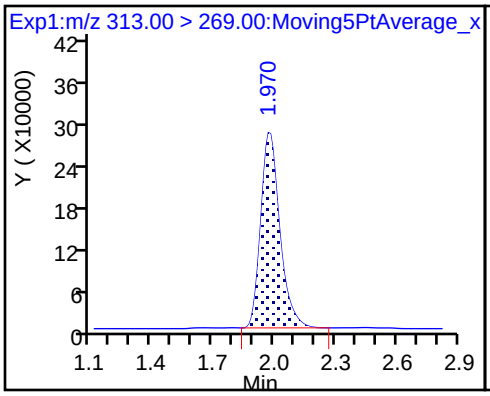
61 Sodium 1H,1H,2H,2H-perfluorohexa



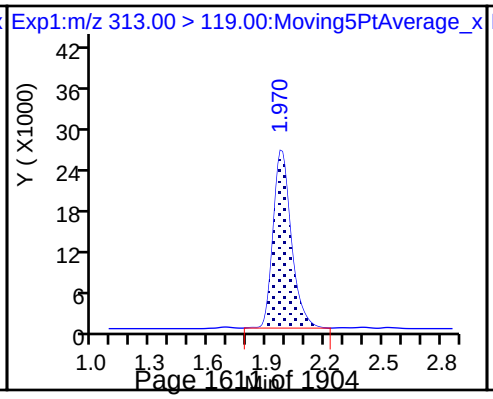
De 7 13C2 PFHxA



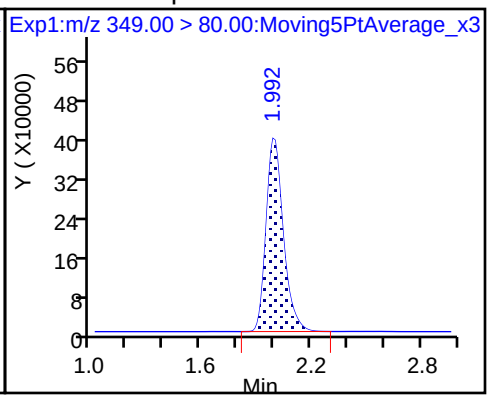
6 Perfluorohexanoic acid



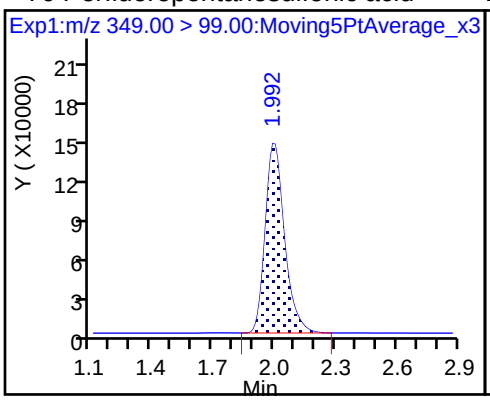
6 Perfluorohexanoic acid



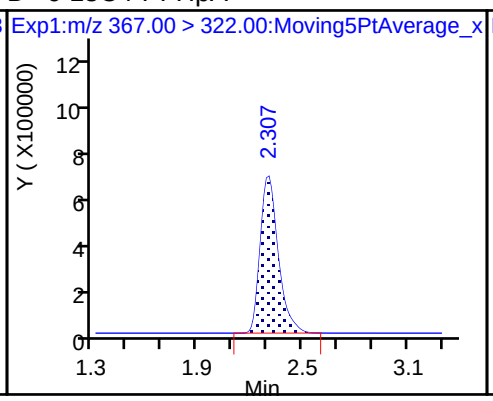
70 Perfluoropentanesulfonic acid



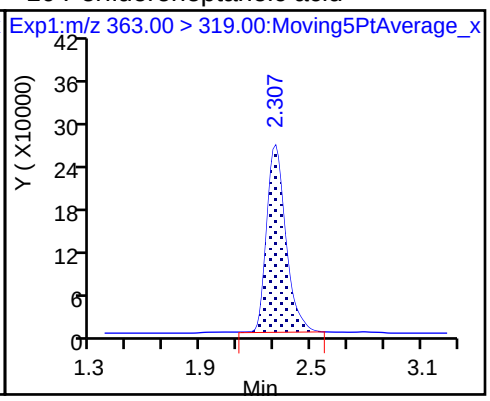
70 Perfluoropentanesulfonic acid



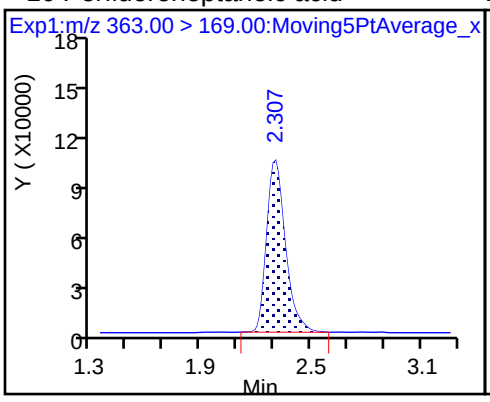
D 9 13C4-PFHpA



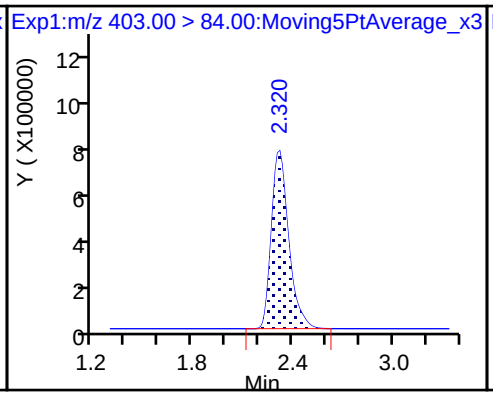
10 Perfluoroheptanoic acid



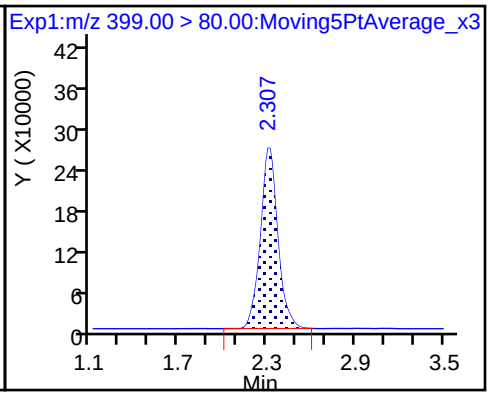
10 Perfluoroheptanoic acid



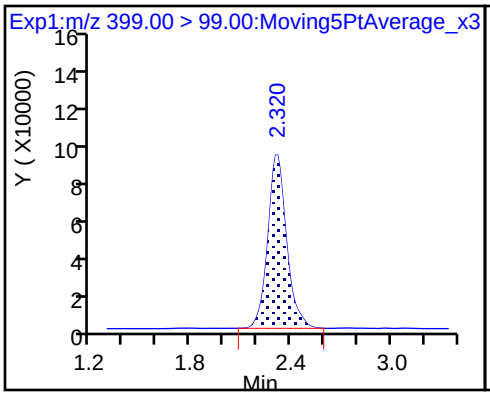
D 11 18O2 PFHxS



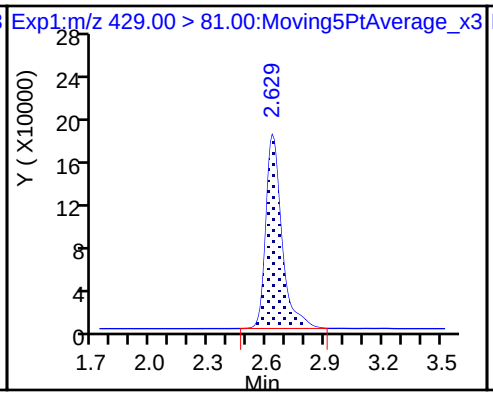
8 Perfluorohexanesulfonic acid



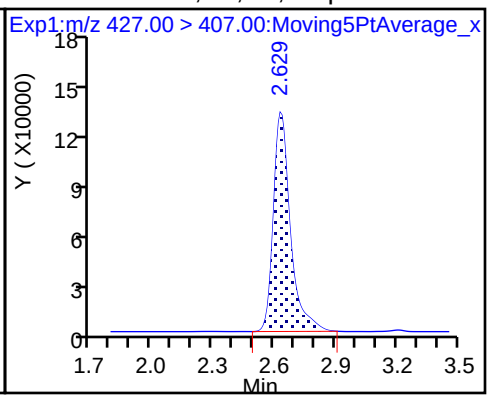
8 Perfluorohexanesulfonic acid



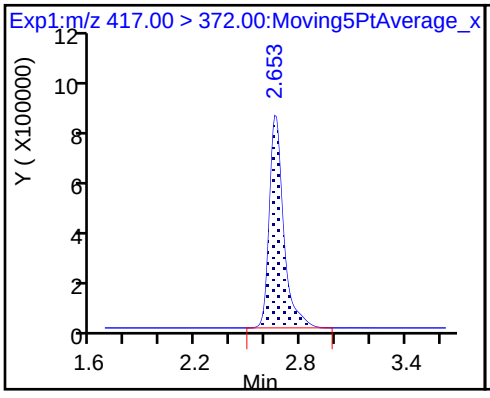
D 12 M2-6:2FTS



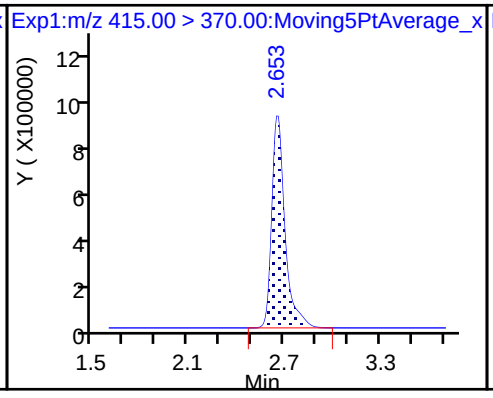
13 Sodium 1H,1H,2H,2H-perfluorooctane



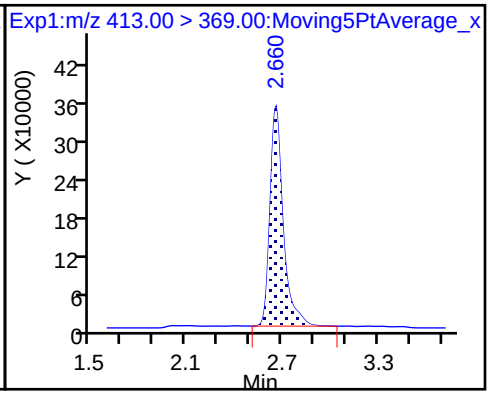
D 14 13C4 PFOA



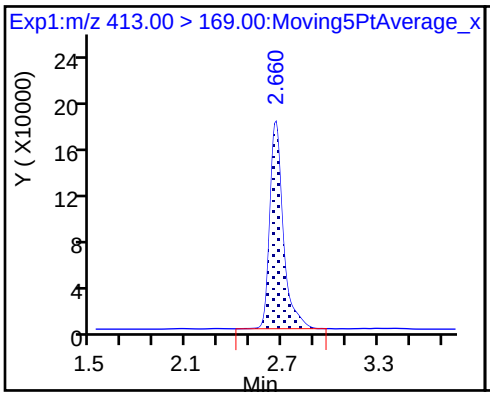
* 62 13C2-PFOA



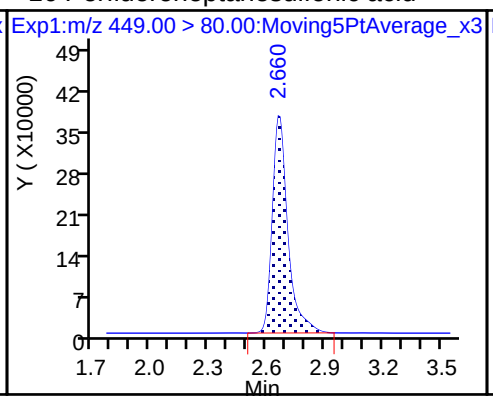
15 Perfluorooctanoic acid



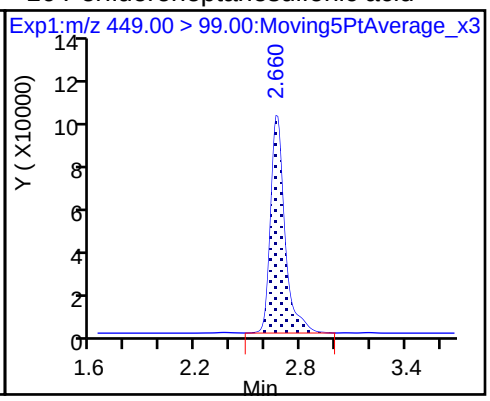
15 Perfluorooctanoic acid



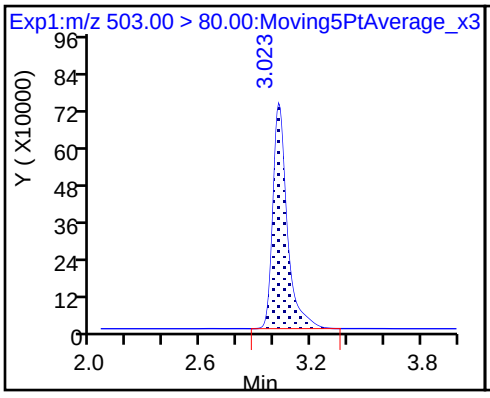
16 Perfluoroheptanesulfonic acid



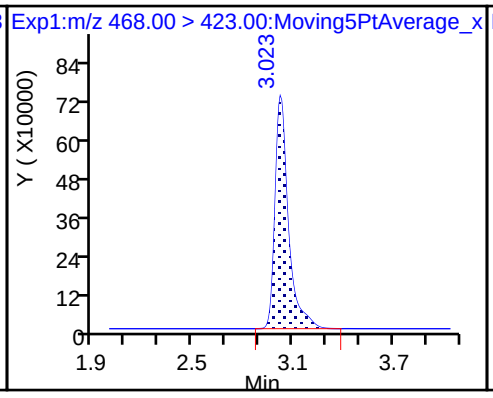
16 Perfluoroheptanesulfonic acid



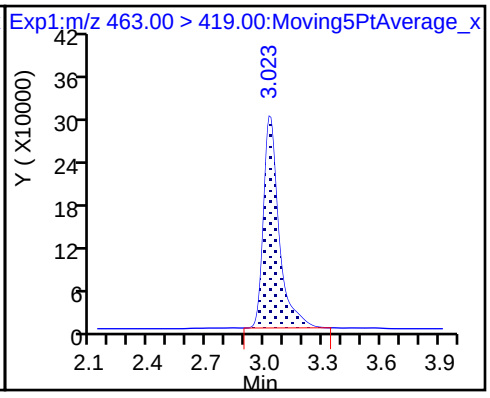
D 18 13C4 PFOS



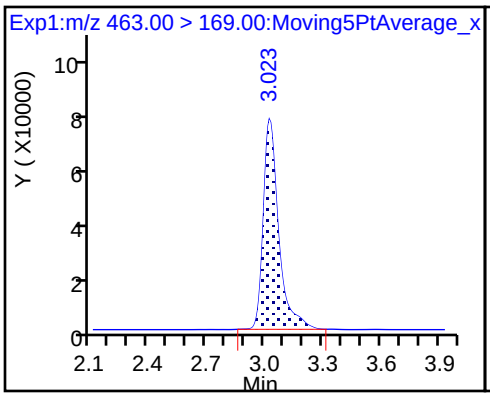
D 19 13C5 PFNA



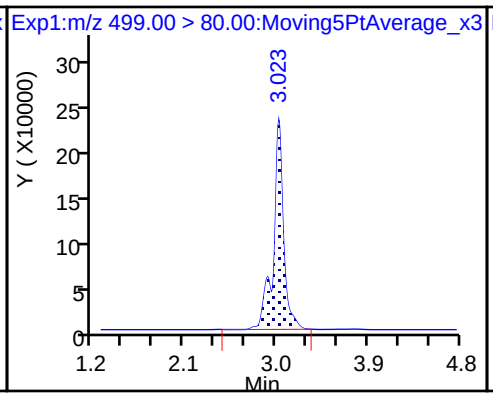
20 Perfluorononanoic acid



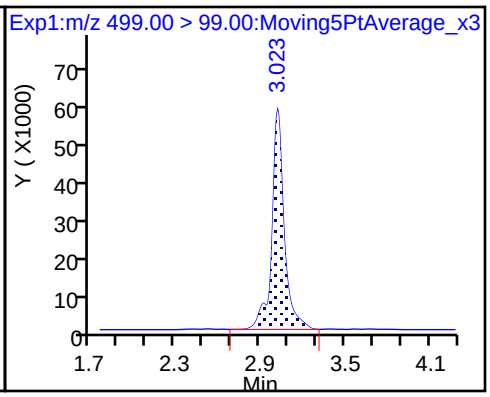
20 Perfluorononanoic acid



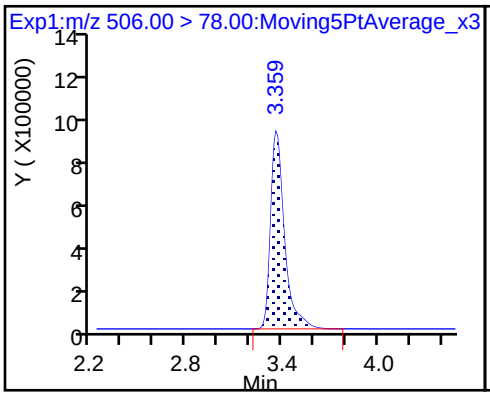
17 Perfluorooctane sulfonic acid



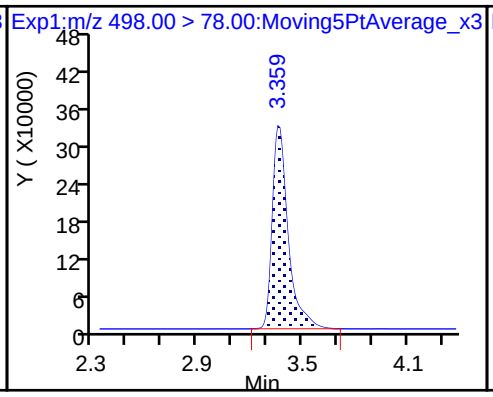
17 Perfluorooctane sulfonic acid



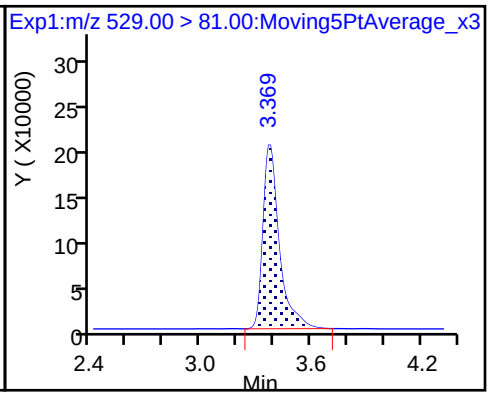
D 21 13C8 FOSA



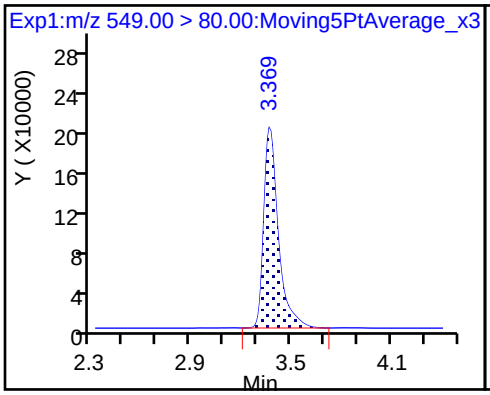
22 Perfluorooctane Sulfonamide



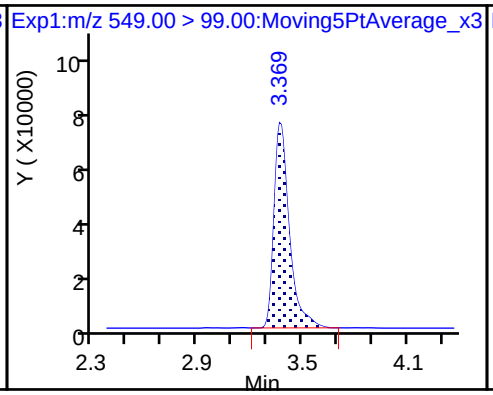
D 26 M2-8:2FTS



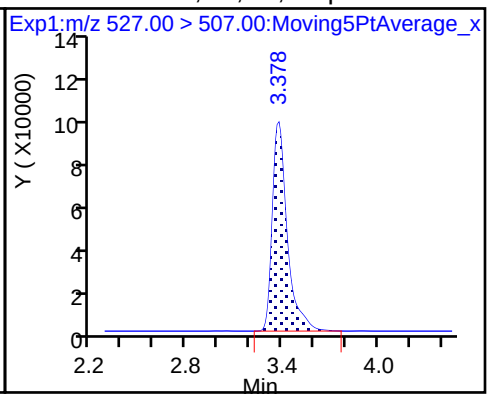
68 Perfluorononanesulfonic acid



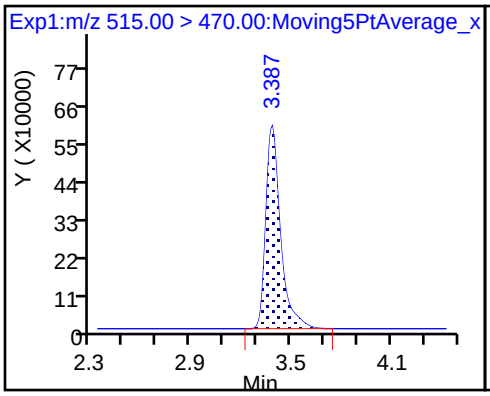
68 Perfluorononanesulfonic acid



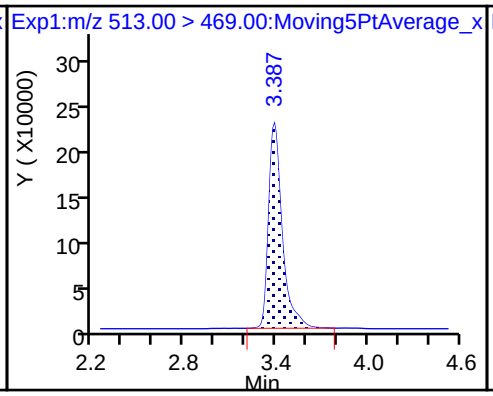
25 Sodium 1H,1H,2H,2H-perfluorodecane



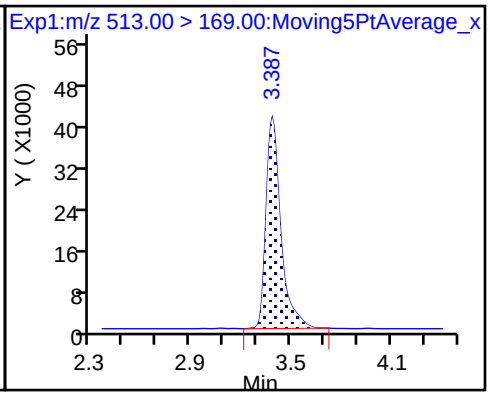
D 23 13C2 PFDA



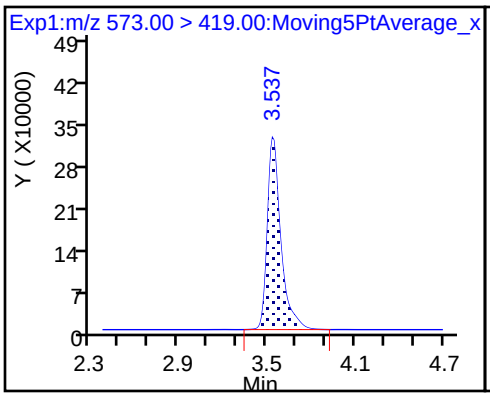
24 Perfluorodecanoic acid



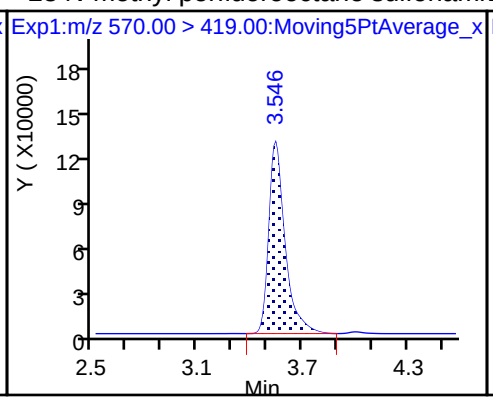
24 Perfluorodecanoic acid



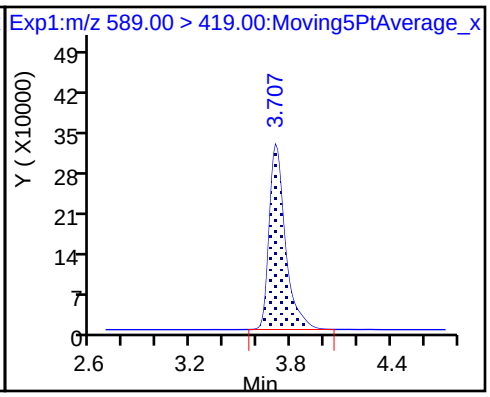
D 27 d3-NMeFOSAA



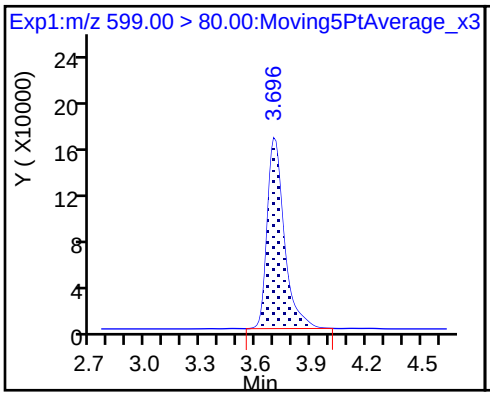
28 N-methyl perfluorooctane sulfonami



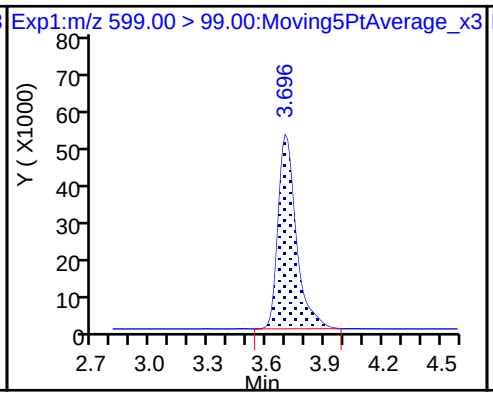
D 32 d5-NEtFOSAA



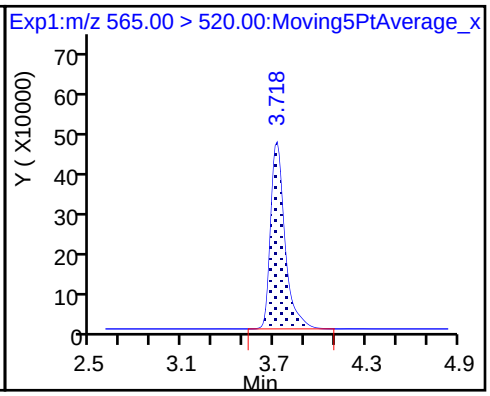
29 Perfluorodecane Sulfonic acid



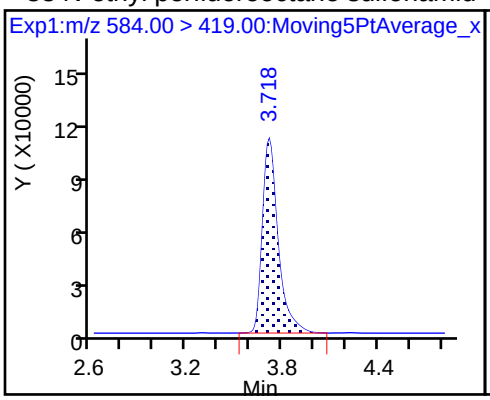
29 Perfluorodecane Sulfonic acid



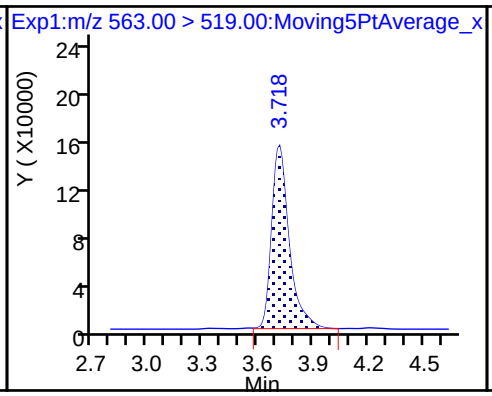
D 30 13C2 PFUnA



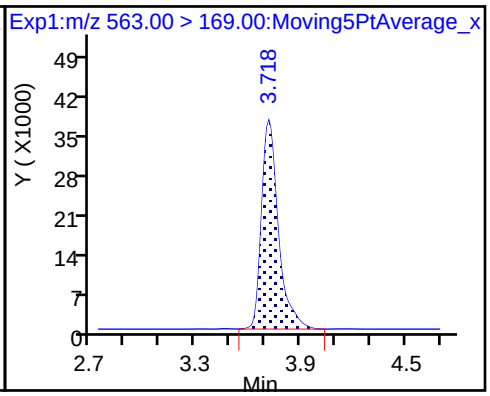
33 N-ethyl perfluorooctane sulfonamid



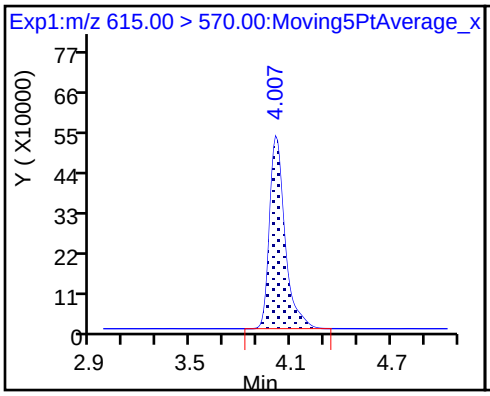
31 Perfluoroundecanoic acid



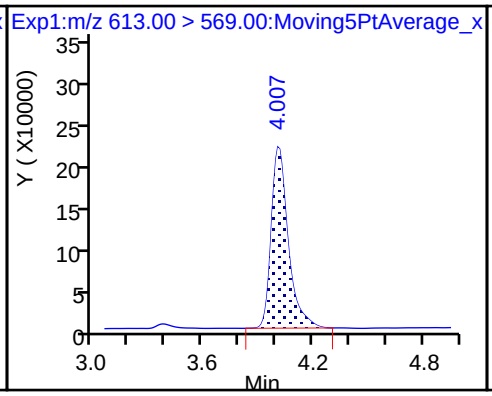
31 Perfluoroundecanoic acid



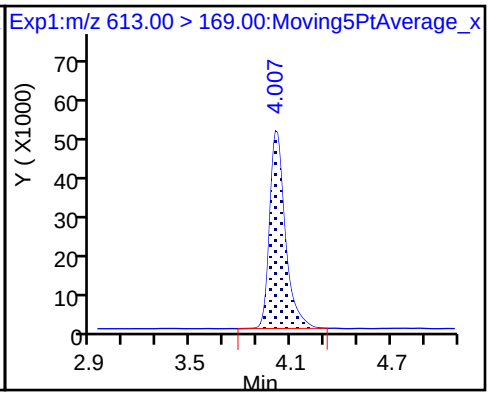
D 36 13C2 PFDoA



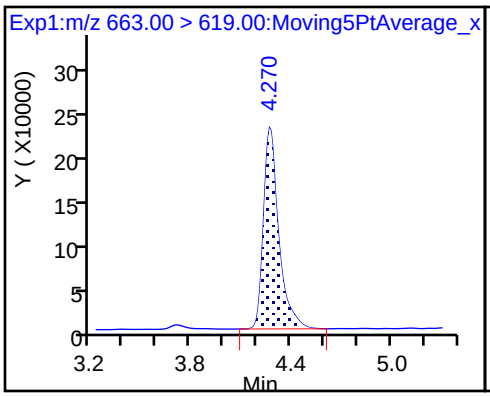
37 Perfluorododecanoic acid



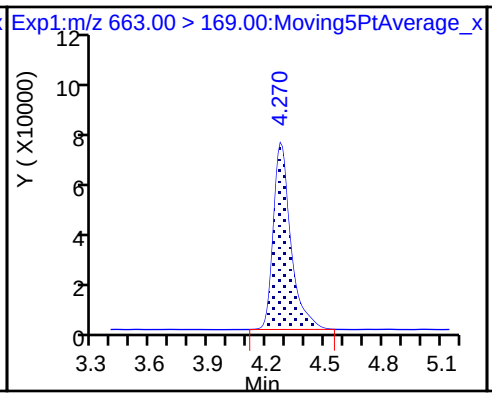
37 Perfluorododecanoic acid



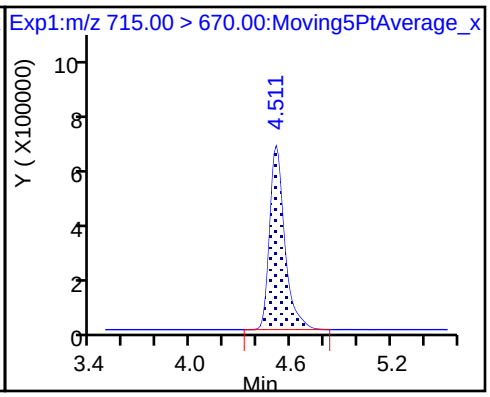
41 Perfluorotridecanoic acid



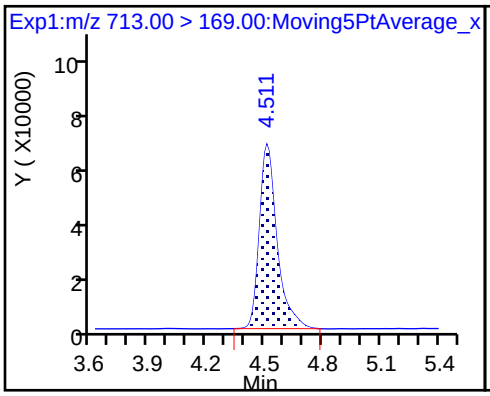
41 Perfluorotridecanoic acid



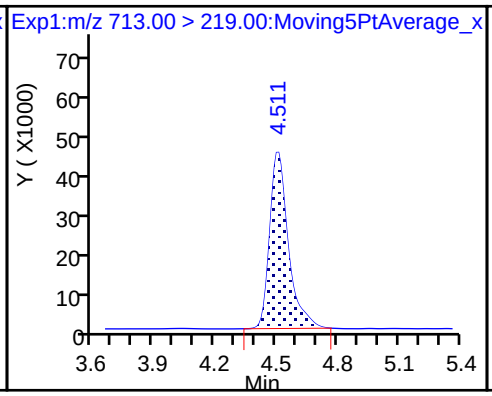
D 43 13C2-PFTeDA



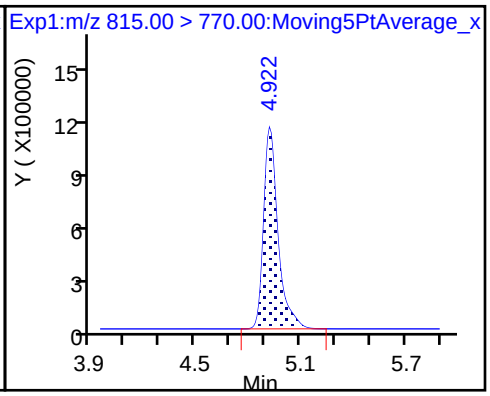
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



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TestAmerica Sacramento

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Injection Date: 07-Apr-2018 11:45:36 Instrument ID: A8_N

Lims ID: CCV L4

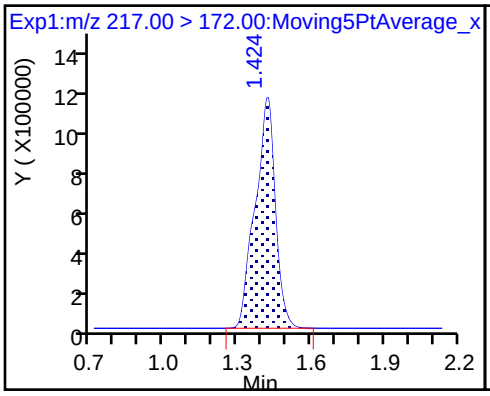
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 1

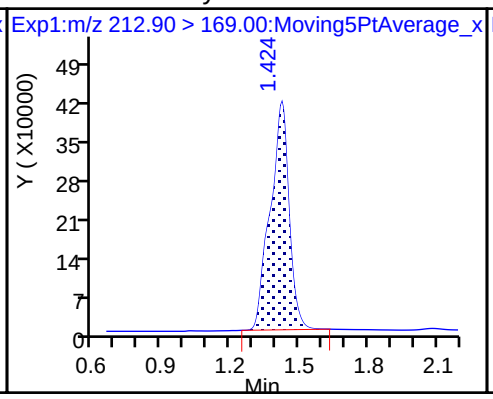
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

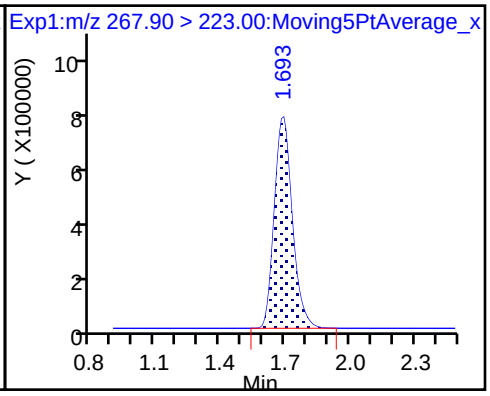
D 1 13C4 PFBA



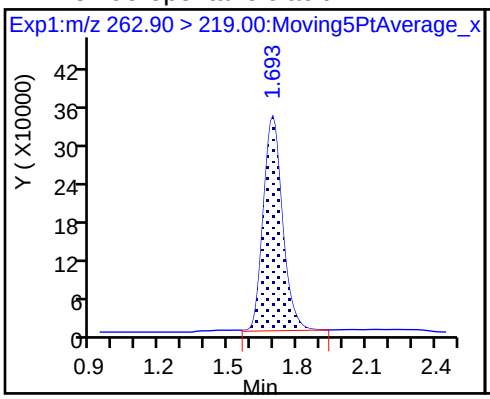
2 Perfluorobutyric acid



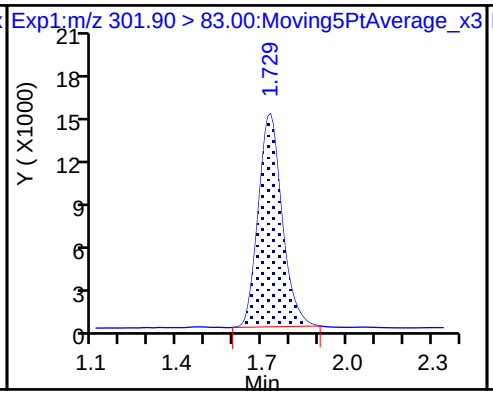
D 3 13C5-PFPeA



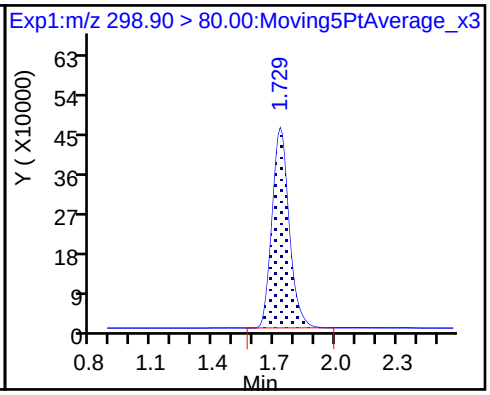
4 Perfluoropentanoic acid



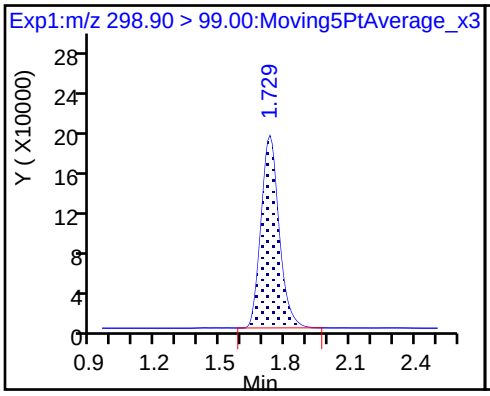
D 47 13C3-PFBS



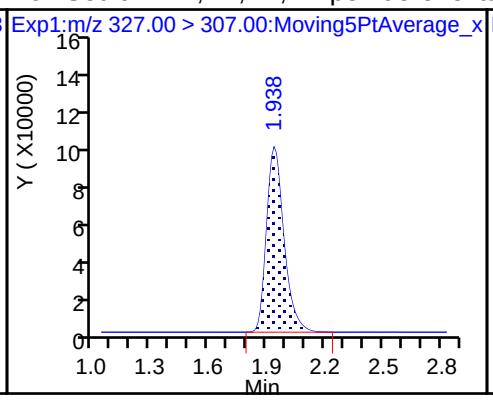
5 Perfluorobutanesulfonic acid



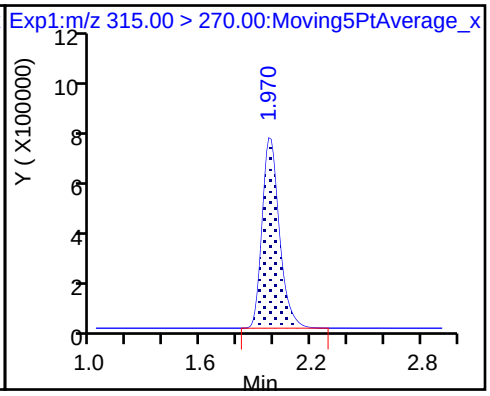
5 Perfluorobutanesulfonic acid



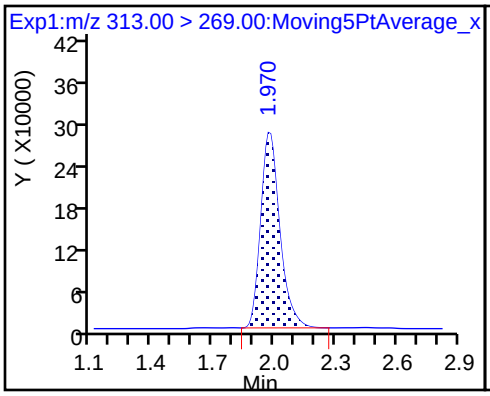
61 Sodium 1H,1H,2H,2H-perfluorohexa



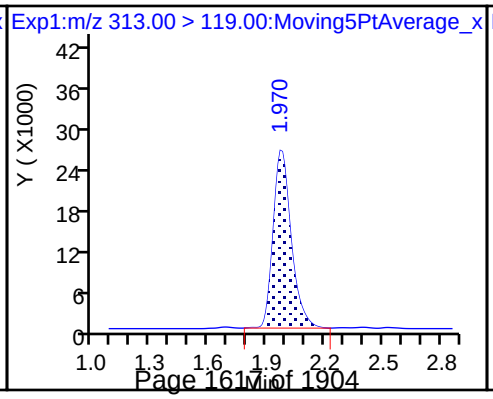
D 7 13C2 PFHxA



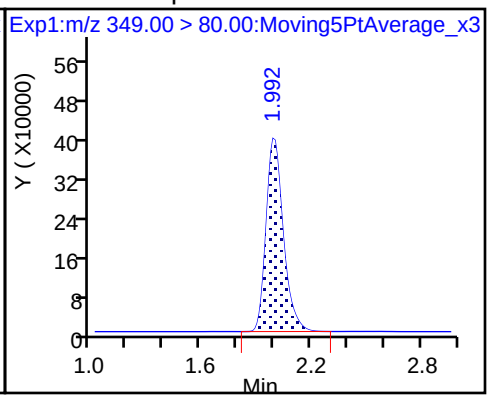
6 Perfluorohexanoic acid



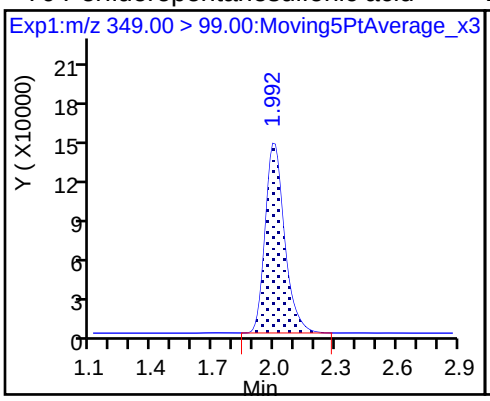
6 Perfluorohexanoic acid



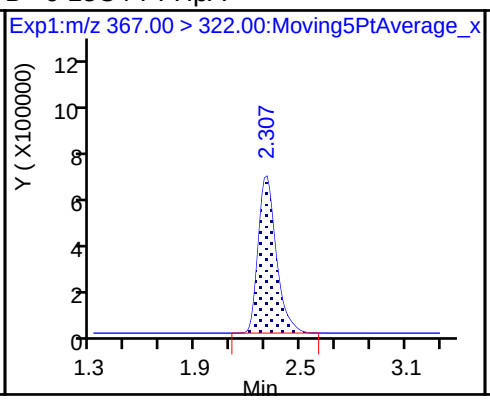
70 Perfluoropentanesulfonic acid



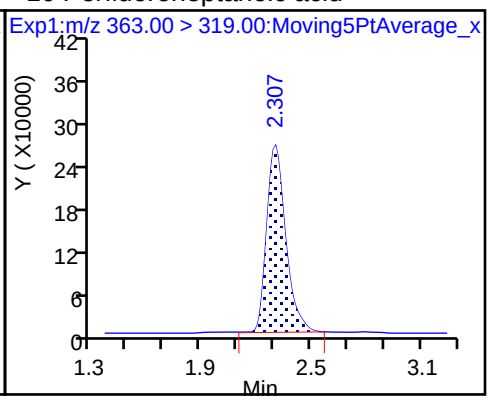
70 Perfluoropentanesulfonic acid



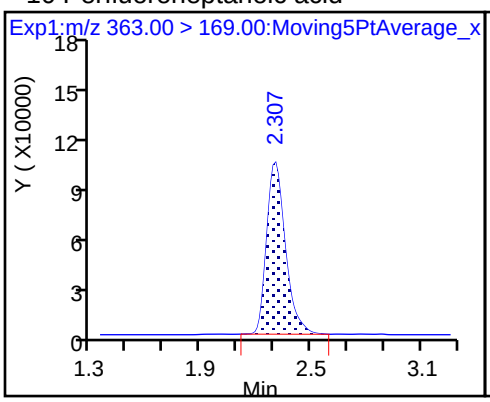
D 9 13C4-PFHpA



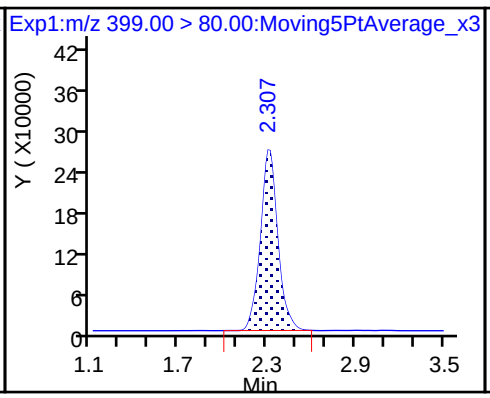
10 Perfluoroheptanoic acid



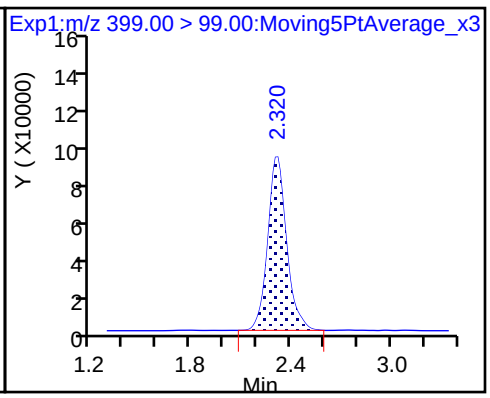
10 Perfluoroheptanoic acid



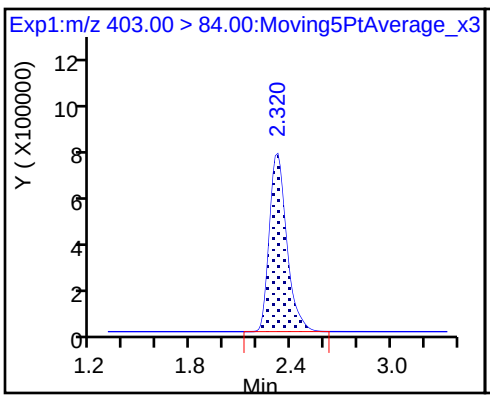
8 Perfluorohexanesulfonic acid



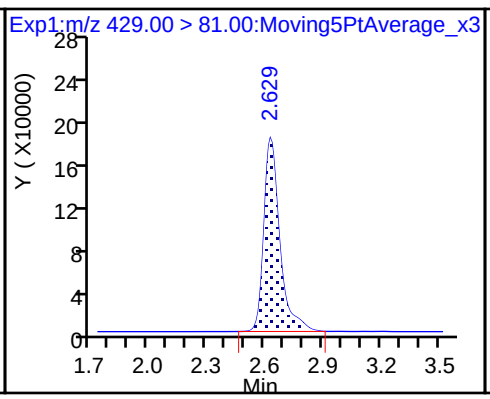
8 Perfluorohexanesulfonic acid



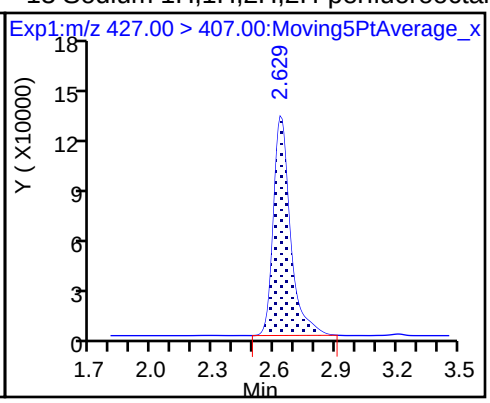
D 11 18O2 PFHxS



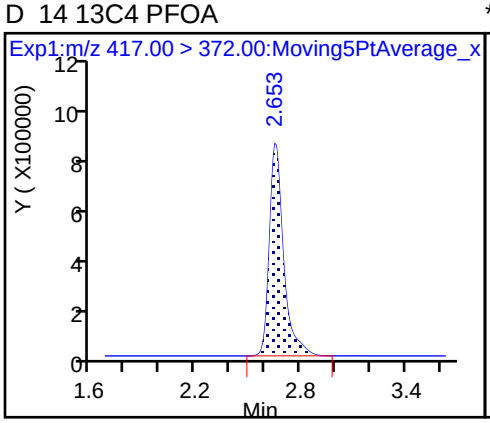
D 12 M2-6:2FTS



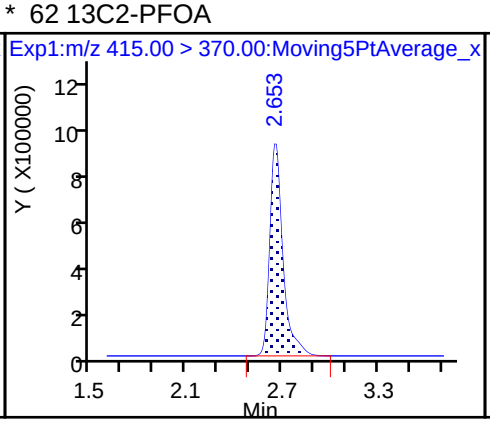
13 Sodium 1H,1H,2H,2H-perfluorooctane



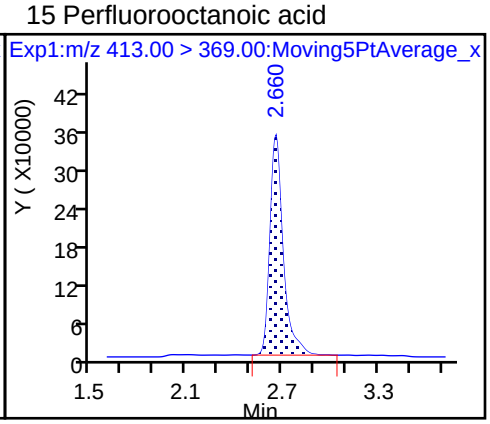
D 14 13C4 PFOA



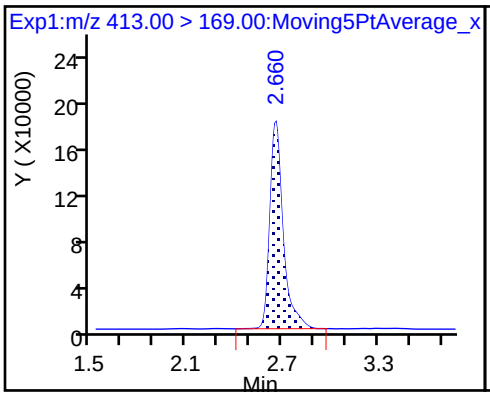
* 62 13C2-PFOA



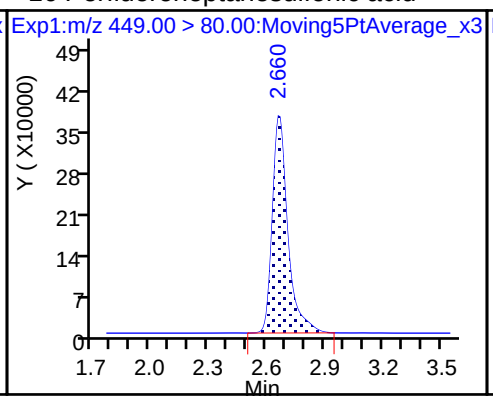
15 Perfluorooctanoic acid



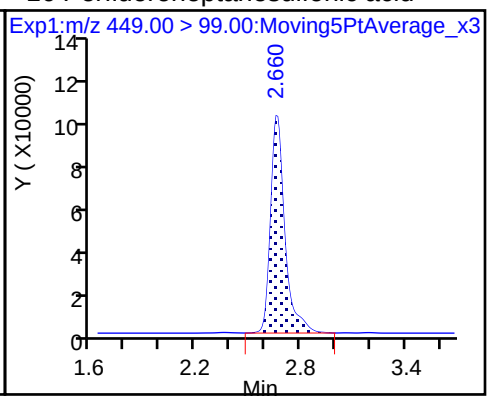
15 Perfluorooctanoic acid



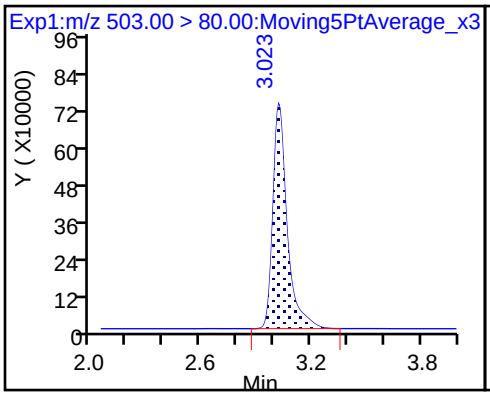
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS



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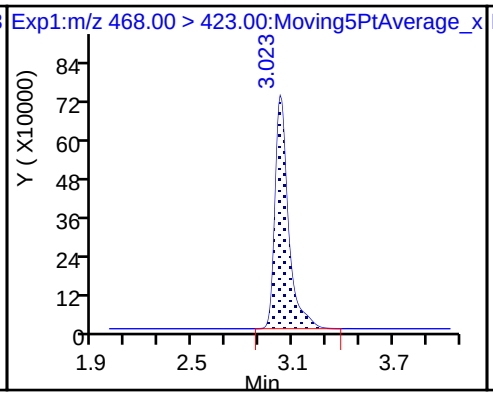
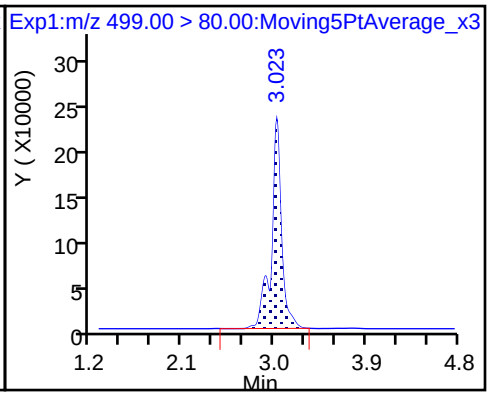
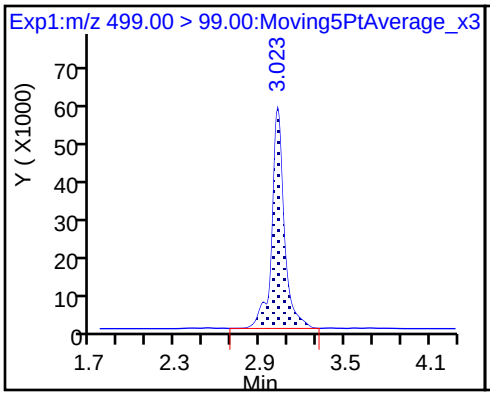


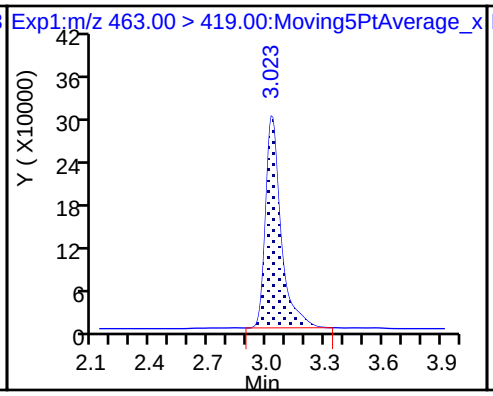
17 Perfluorooctane sulfonic acid



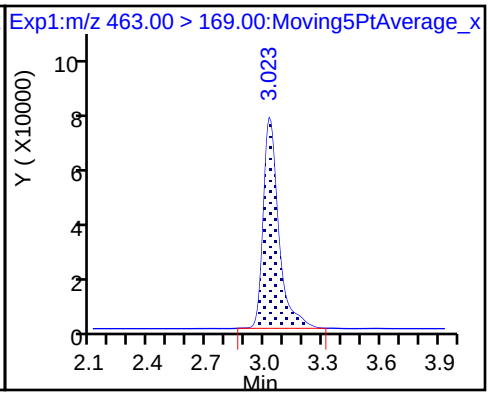
17 Perfluorooctane sulfonic acid



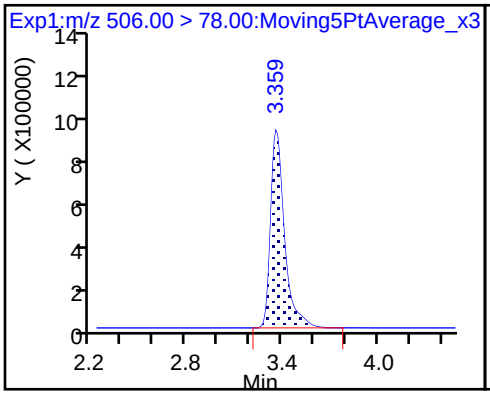
20 Perfluorononanoic acid



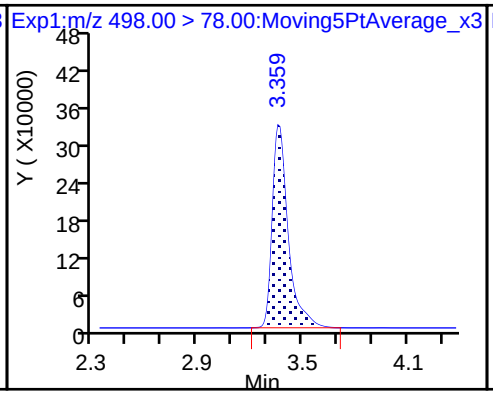
20 Perfluorononanoic acid



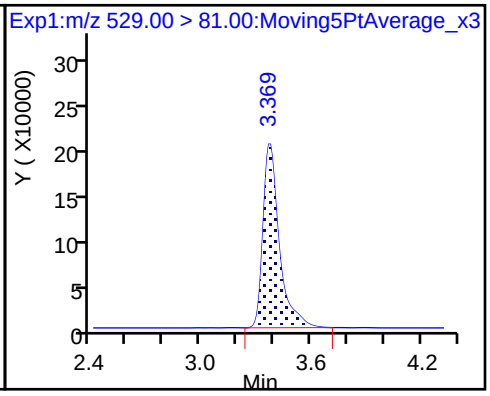
D 21 13C8 FOSA



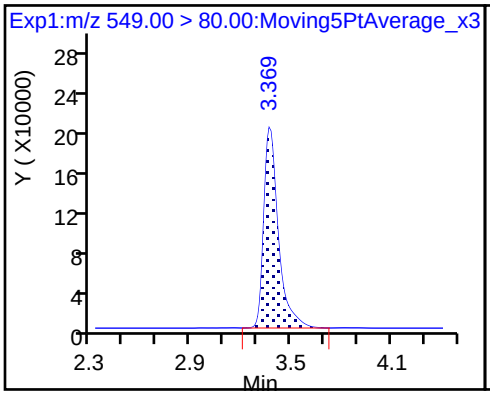
22 Perfluorooctane Sulfonamide



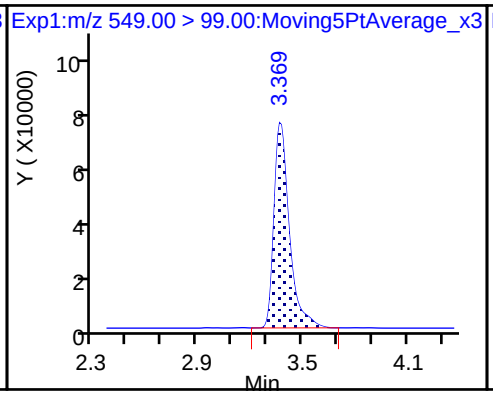
D 26 M2-8:2FTS



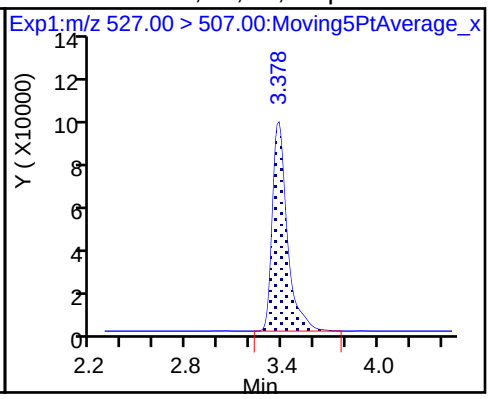
68 Perfluorononanesulfonic acid



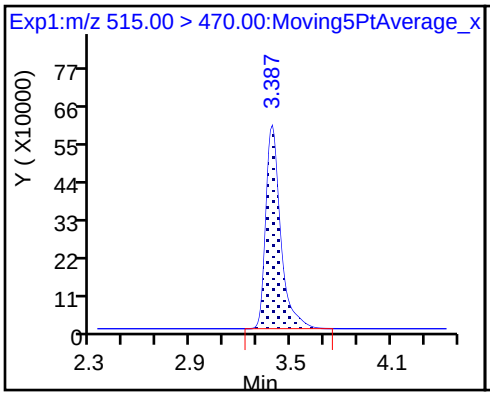
68 Perfluorononanesulfonic acid



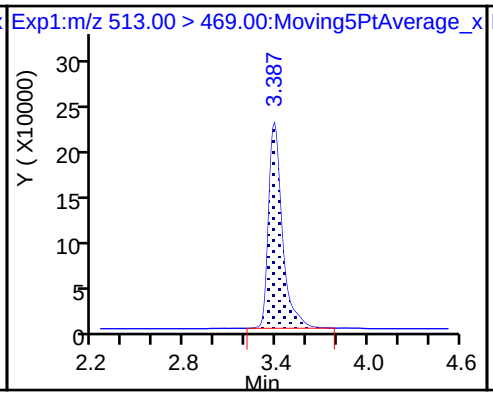
25 Sodium 1H,1H,2H,2H-perfluorodecane



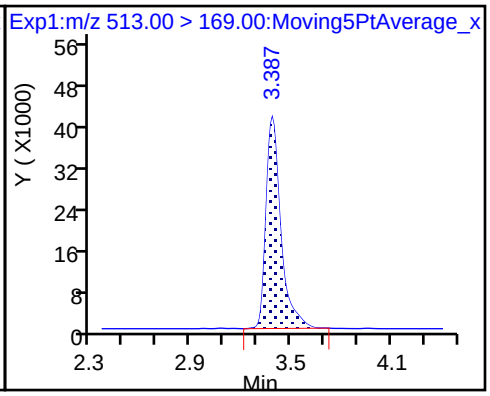
D 23 13C2 PFDA



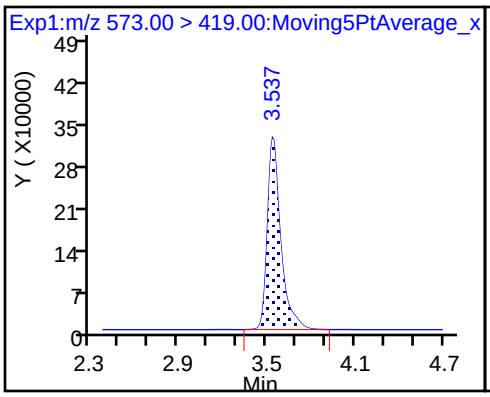
24 Perfluorodecanoic acid



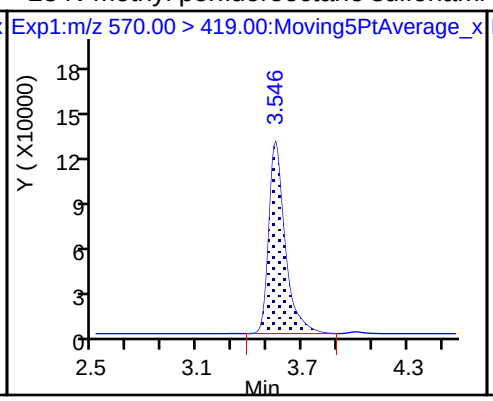
24 Perfluorodecanoic acid



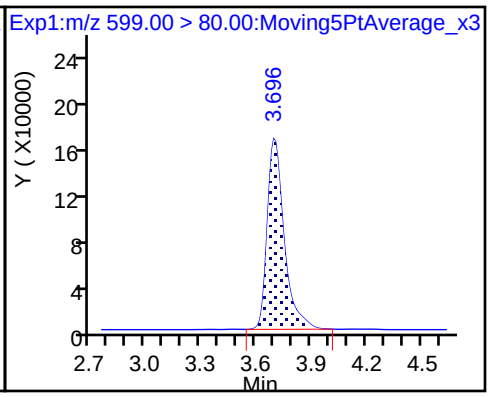
D 27 d3-NMeFOSAA



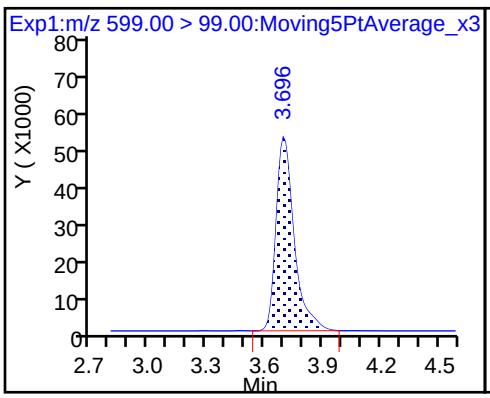
28 N-methyl perfluorooctane sulfonami



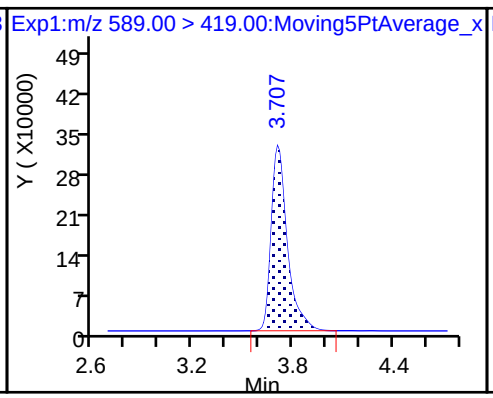
29 Perfluorodecane Sulfonic acid



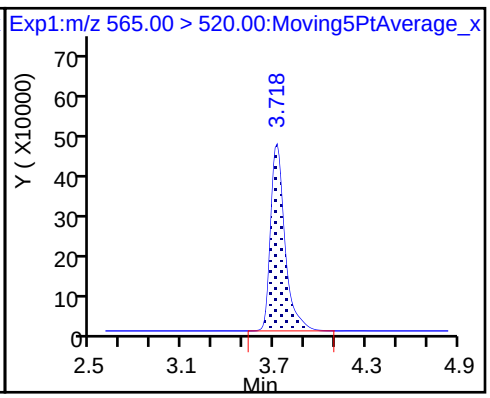
29 Perfluorodecane Sulfonic acid



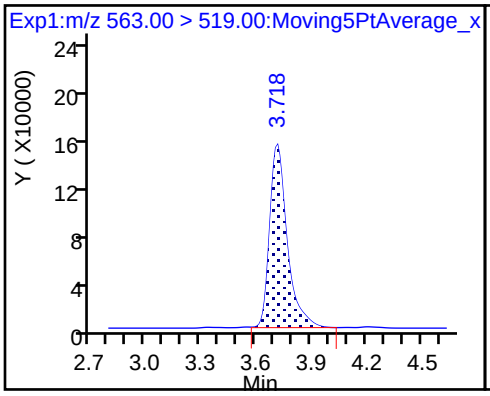
D 32 d5-NEtFOSAA



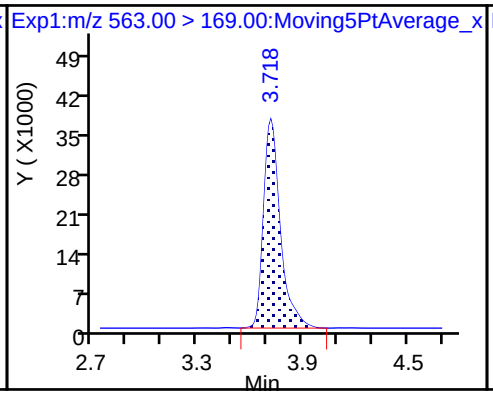
D 30 13C2 PFUnA



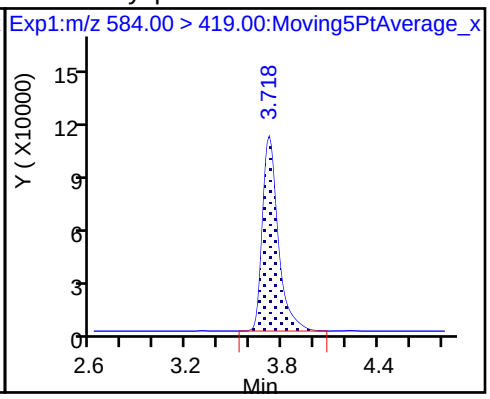
31 Perfluoroundecanoic acid



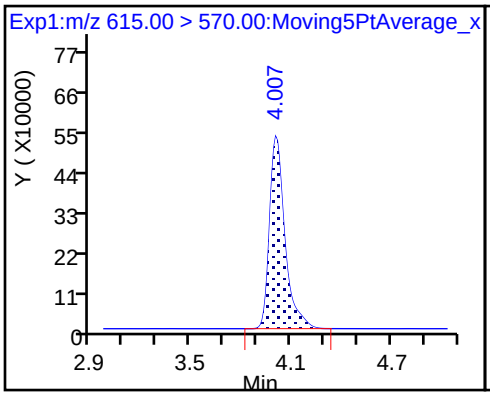
31 Perfluoroundecanoic acid



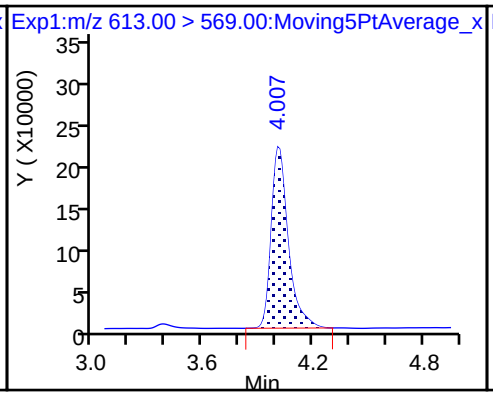
33 N-ethyl perfluorooctane sulfonamid



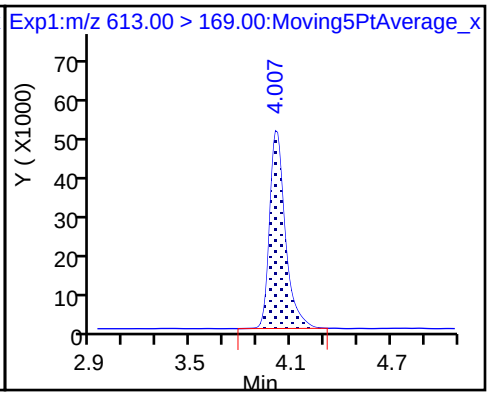
D 36 13C2 PFDoA



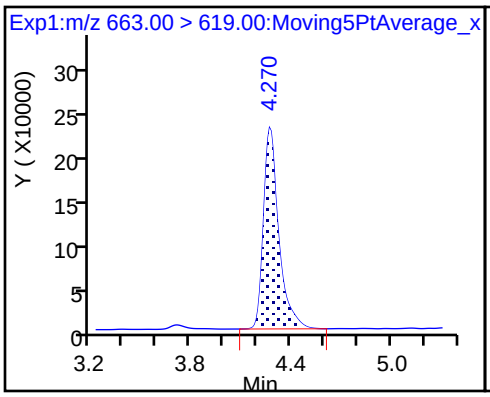
37 Perfluorododecanoic acid



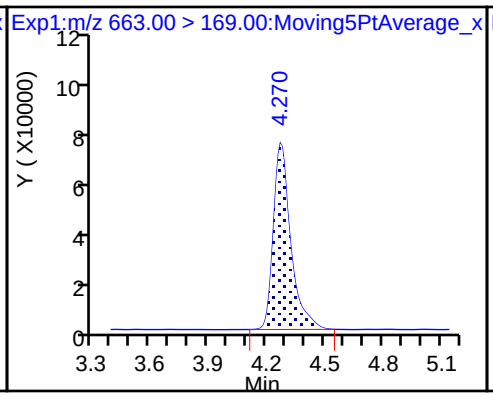
37 Perfluorododecanoic acid



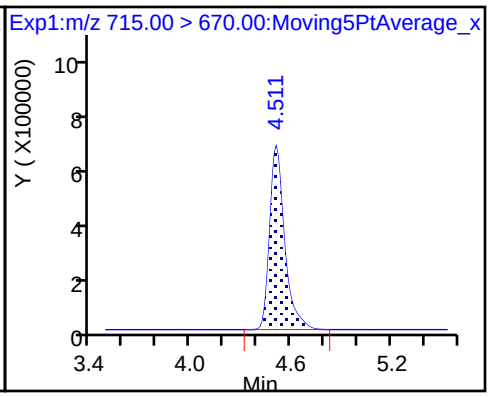
41 Perfluorotridecanoic acid



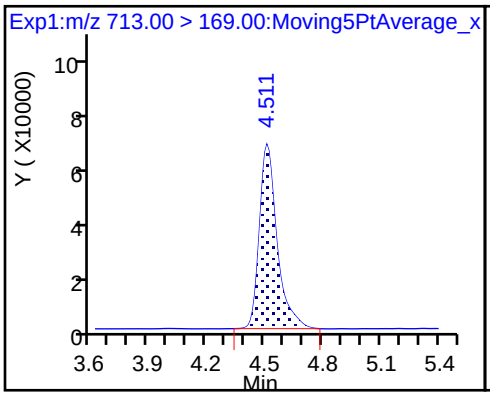
41 Perfluorotridecanoic acid



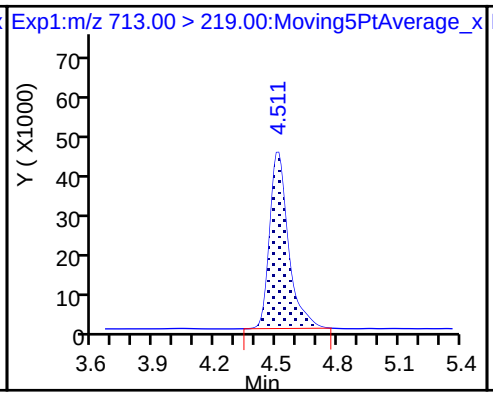
D 43 13C2-PFTeDA



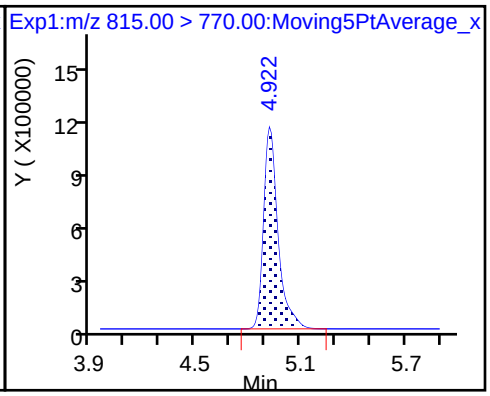
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216849/6 Calibration Date: 04/07/2018 12:24

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA1_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9242	0.9583		2.59	2.50	3.7	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.197	1.188		2.48	2.50	-0.7	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	78.89	77.54		2.17	2.21	-1.7	30.0
4:2 FTS	AveID	17.26	17.04		2.31	2.34	-1.3	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.023	1.004		2.45	2.50	-1.9	30.0
Perfluoropentanesulfonic acid	AveID	71.20	70.24		2.31	2.35	-1.4	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.087	1.101		2.53	2.50	1.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.117	1.049		2.14	2.28	-6.1	30.0
6:2FTS	AveID	1.868	1.674		2.12	2.37	-10.4	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.168		2.46	2.50	-1.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.333	1.325		2.37	2.38	-0.6	30.0
Perfluorononanoic acid (PFNA)	AveID	1.029	1.090		2.65	2.50	5.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.143	1.121		2.28	2.32	-1.9	30.0
Perfluorooctane Sulfonamide (PFOSA)	AveID	0.9877	1.055		2.67	2.50	6.8	30.0
8:2FTS	AveID	1.349	1.307		2.32	2.40	-3.1	30.0
Perfluorononanesulfonic acid	AveID	0.8018	0.7805		2.34	2.40	-2.7	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9893	1.013		2.56	2.50	2.4	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.054	1.079		2.56	2.50	2.3	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6938	0.6683		2.32	2.41	-3.7	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9171	0.9943		2.71	2.50	8.4	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8023	0.8049		2.51	2.50	0.3	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.081	1.026		2.37	2.50	-5.1	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.156	1.138		2.46	2.50	-1.5	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2497	0.2487		2.49	2.50	-0.4	30.0
13C4 PFBA	Ave	1.382	1.300		2.35	2.50	-5.9	30.0
13C5-PFPeA	Ave	0.8994	0.8403		2.34	2.50	-6.6	30.0
13C3-PFBS	Ave	0.0206	0.0200		2.26	2.33	-3.0	30.0
13C2 PFHxA	Ave	0.9916	0.9491		2.39	2.50	-4.3	30.0
13C4-PFHpA	Ave	0.9533	0.9196		2.41	2.50	-3.5	30.0
18O2 PFHxS	Ave	1.189	1.161		2.31	2.37	-2.3	30.0
M2-6:2FTS	Ave	0.2203	0.2109		2.27	2.38	-4.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Lab Sample ID: CCV 320-216849/6 Calibration Date: 04/07/2018 12:24

Instrument ID: A8_N Calib Start Date: 03/29/2018 17:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 03/29/2018 18:14

Lab File ID: 2018.04.07LLA1_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9372	0.9007		2.40	2.50	-3.9	30.0
13C4 PFOS	Ave	0.8257	0.8133		2.35	2.39	-1.5	30.0
13C5 PFNA	Ave	0.7930	0.8001		2.52	2.50	0.9	30.0
13C8 FOSA	Ave	1.166	1.029		2.21	2.50	-11.8	30.0
M2-8:2FTS	Ave	0.2562	0.2487		2.33	2.40	-2.9	30.0
13C2 PFDA	Ave	0.6698	0.6933		2.59	2.50	3.5	30.0
d3-NMeFOSAA	Ave	0.3583	0.3653		2.55	2.50	2.0	30.0
13C2 PFUnA	Ave	0.5468	0.5799		2.65	2.50	6.1	30.0
d5-NEtFOSAA	Ave	0.3760	0.3892		2.59	2.50	3.5	30.0
13C2 PFDoA	Ave	0.6087	0.6403		2.63	2.50	5.2	30.0
13C2-PFTeDA	Ave	0.7733	0.8039		2.60	2.50	4.0	30.0
13C2-PFHxDA	Ave	1.194	1.323		2.77	2.50	10.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_029.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2018 12:24:43 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub30

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:33:52 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:30:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.424	0.006	1.000	6007865	2.35		94.1	53305	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.424	0.006	1.000	5757368	2.59		104	2596	
D 3 13C5-PFPeA										
267.90 > 223.00	1.693	1.693	0.0	0.559	3883376	2.34		93.4	96083	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.702	1.693	0.009	1.005	4615176	2.48		99.3	4382	
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.729	0.0	1.000	85915	2.26		97.0	514	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.738	1.729	0.009	1.005	6332296	2.17		98.3	22729	
298.90 > 99.00	1.738	1.729	0.009	1.005	2602373		2.43(1.25-3.74)		24744	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.938	0.011	1.000	612254	NC			4730	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.949	1.938	0.011	1.000	1470028	2.31		98.7	78998	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.970	0.011	1.000	4386101	2.39		95.7	98299	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.981	1.970	0.011	1.000	4401869	2.45		98.1	9625	
313.00 > 119.00	1.981	1.970	0.011	1.000	408024		10.79(5.03-15.10)		6322	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.004	1.992	0.012	1.000	6086283	2.31		98.6	46958	
349.00 > 99.00	2.004	1.992	0.012	1.000	2148264		2.83(1.36-4.07)		27295	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.307	0.0	1.000	4249742	2.41		96.5	99815	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.307	2.307	0.0	1.000	4677786	2.53		101	6480	
363.00 > 169.00	2.307	2.307	0.0	1.000	1834086		2.55(1.13-3.40)		10011	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.307	0.013	1.000	5121370	2.14		93.9	11594	
399.00 > 99.00	2.320	2.307	0.013	1.000	1696891		3.02(1.50-4.49)		6960	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.320	0.0	1.000	5076989	2.31		97.7	79686	
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.629	0.008	1.000	926022	2.27		95.7	12750	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.637	2.629	0.008	1.000	1546704	2.12		89.6	13593	
D 14 13C4 PFOA										
417.00 > 372.00	2.661	2.653	0.008	1.000	4162474	2.40		96.1	89840	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.653	0.008		4621448	2.50			67776	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.661	2.660	0.001	1.000	4859997	2.46		98.5	2117	
413.00 > 169.00	2.661	2.660	0.001	1.000	2527233		1.92(0.84-2.52)		9642	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.668	2.660	0.008	1.000	4740505	2.37		99.4	37465	
449.00 > 99.00	2.668	2.660	0.008	1.000	1230652		3.85(1.94-5.82)		31107	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.023	0.006	1.000	3593346	2.35		98.5	21317	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.023	0.006	1.000	3697421	2.52		101	112572	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.029	3.023	0.006	1.000	3910389	2.28		98.1	15266	
499.00 > 99.00	3.029	3.023	0.006	1.000	867185		4.51(2.31-6.93)		11035	
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.023	0.006	1.000	4029280	2.65		106	12589	
463.00 > 169.00	3.029	3.023	0.006	1.000	957085		4.21(1.90-5.69)		42871	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.359	0.009	1.000	4755153	2.21		88.2	51498	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.368	3.359	0.009	1.000	5018458	2.67		107	69606	
D 26 M2-8:2FTS										
529.00 > 81.00	3.377	3.369	0.008	1.000	1101012	2.33		97.1	10603	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.377	3.369	0.008	1.000	2816376	2.34		97.3	33581	
549.00 > 99.00	3.377	3.369	0.008	1.000	1046393		2.69(1.33-3.97)		14357	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.377	3.378	-0.001	1.000	1439128	2.32		96.9	58387	
D 23 13C2 PFDA										
515.00 > 470.00	3.386	3.387	-0.001	1.000	3204049	2.59		104	64756	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.386	3.387	-0.001	1.000	3245109	2.56		102	14491	
513.00 > 169.00	3.386	3.387	-0.001	1.000	593836		5.46(2.36-7.09)		1786	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.545	3.537	0.008	1.000	1688335	2.55		102	29297	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.545	3.546	-0.001	1.000	1821479	2.56		102	9987	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.706	3.696	0.010	1.000	2421331	2.32		96.3	28992	
599.00 > 99.00	3.706	3.696	0.010	1.000	835670		2.90(1.39-4.16)		21564	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.717	3.707	0.010	1.000	1798545	2.59		104	10817	
D 30 13C2 PFUnA										
565.00 > 520.00	3.717	3.718	-0.001	1.000	2680055	2.65		106	45451	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.717	3.718	-0.001	1.000	2157087	2.51		100	10139	
563.00 > 169.00	3.717	3.718	-0.001	1.000	546978		3.94(2.12-6.36)		14205	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.717	3.718	-0.001	1.000	1788274	2.71		108	22497	
D 36 13C2 PFDoA										
615.00 > 570.00	4.017	4.007	0.010	1.000	2958881	2.63		105	33140	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.017	4.007	0.010	1.000	3034877	2.37		94.9	2420	
613.00 > 169.00	4.017	4.007	0.010	1.000	764264		3.97(2.13-6.40)		8652	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.280	4.270	0.010	1.000	3368048	2.46		98.5	2032	
663.00 > 169.00	4.280	4.270	0.010	1.000	1044156		3.23(1.25-3.76)		8241	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.510	4.511	-0.001	1.000	3714995	2.60		104	21028	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.510	4.511	-0.001	1.000	923882	2.49		99.6	8551	
713.00 > 219.00	4.510	4.511	-0.001	1.000	646946		1.43(0.71-2.13)		5682	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.930	4.922	0.008	1.000	6116036	2.77		111	13653	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.930	4.922	0.008	1.000	5998413	NC			1392	
813.00 > 169.00	4.930	4.922	0.008	1.000	977686		6.14(2.86-8.58)		4921	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.284	5.276	0.008	1.000	6379201	NC			1069	
913.00 > 169.00	5.284	5.276	0.008	1.000	786808		8.11(3.83-11.48)		3655	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00003 Amount Added: 1.00 Units: mL

Report Date: 09-Apr-2018 08:33:53 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_029.d

Injection Date: 07-Apr-2018 12:24:43 Instrument ID: A8_N

Lims ID: CCV L5

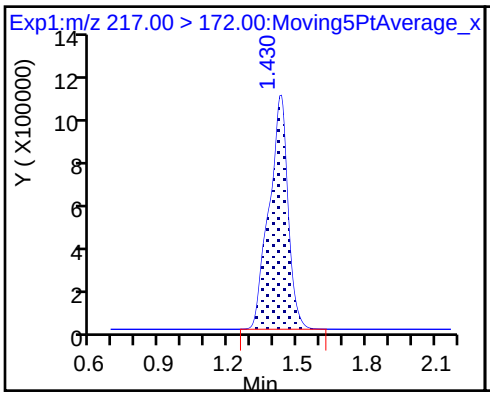
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 6

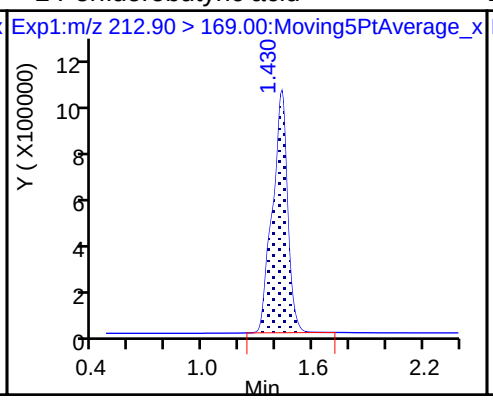
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

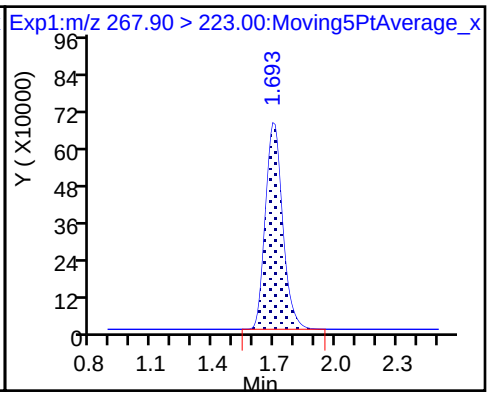
D 1 13C4 PFBA



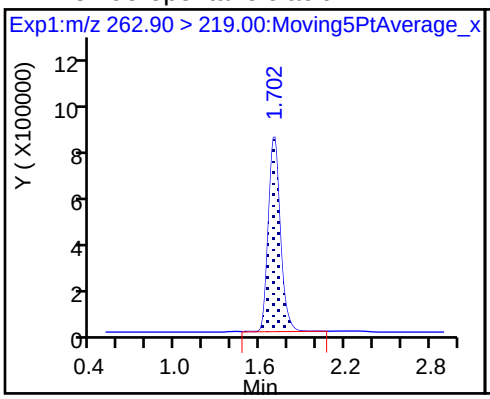
2 Perfluorobutyric acid



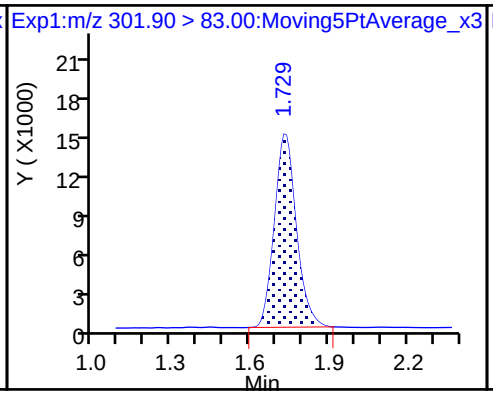
D 3 13C5-PFPeA



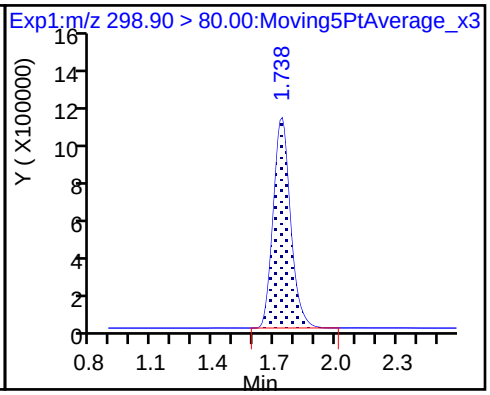
4 Perfluoropentanoic acid



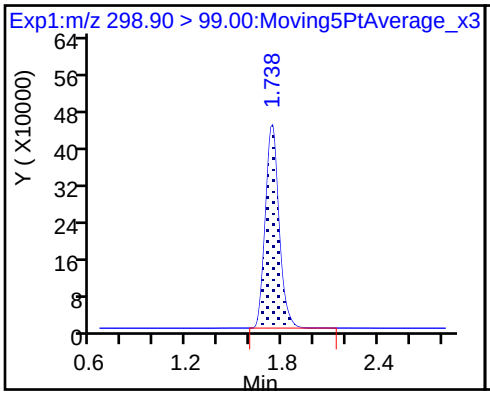
D 47 13C3-PFBS



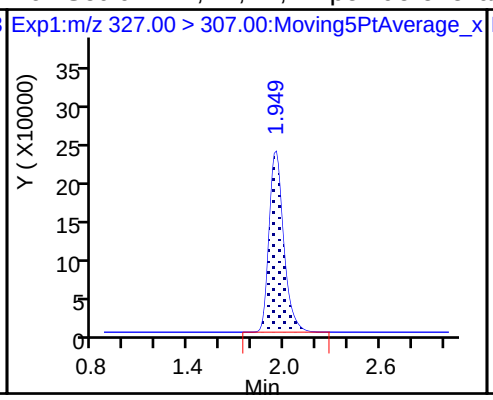
5 Perfluorobutanesulfonic acid



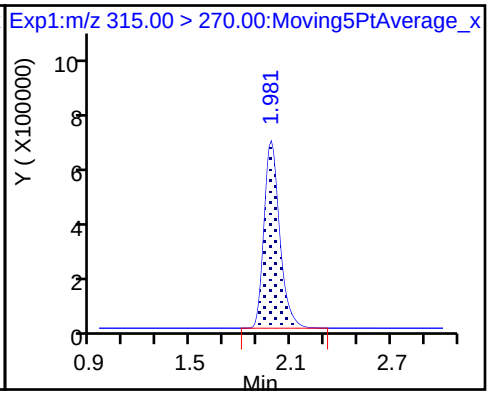
5 Perfluorobutanesulfonic acid



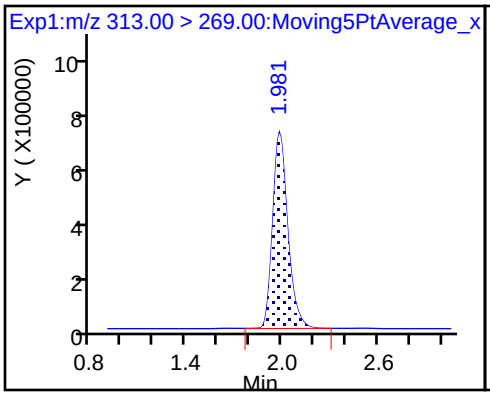
61 Sodium 1H,1H,2H,2H-perfluorohexa



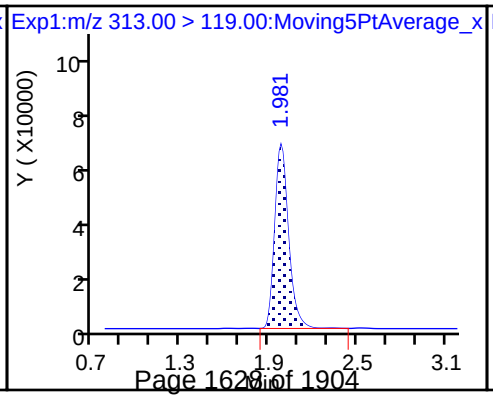
De 7 13C2 PFHxA



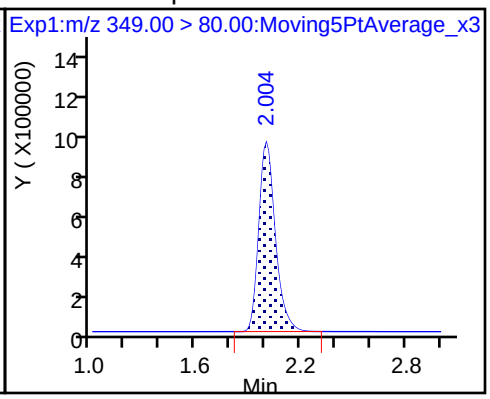
6 Perfluorohexanoic acid



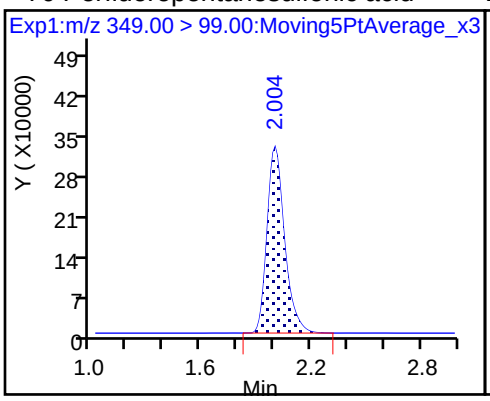
6 Perfluorohexanoic acid



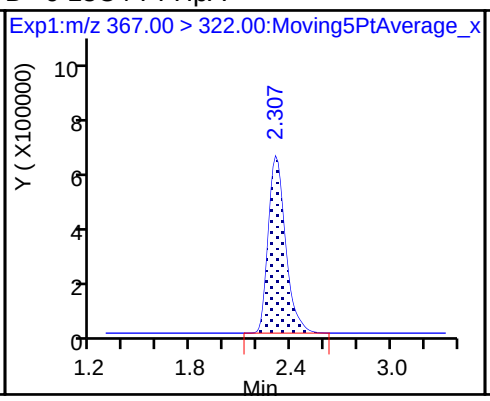
70 Perfluoropentanesulfonic acid



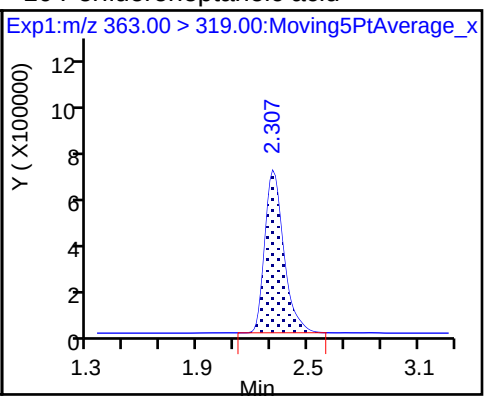
70 Perfluoropentanesulfonic acid



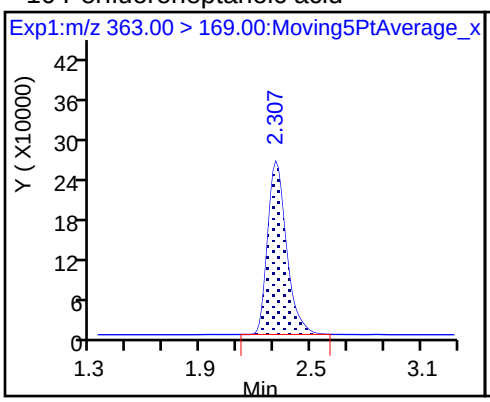
D 9 13C4-PFHpA



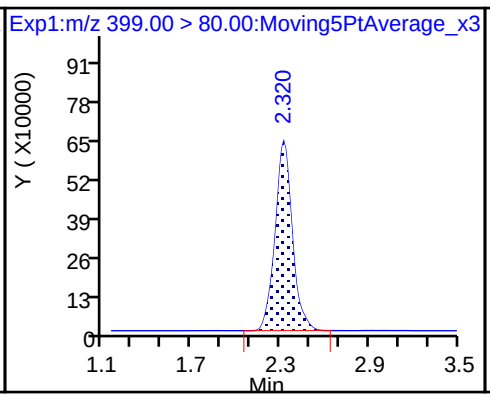
10 Perfluoroheptanoic acid



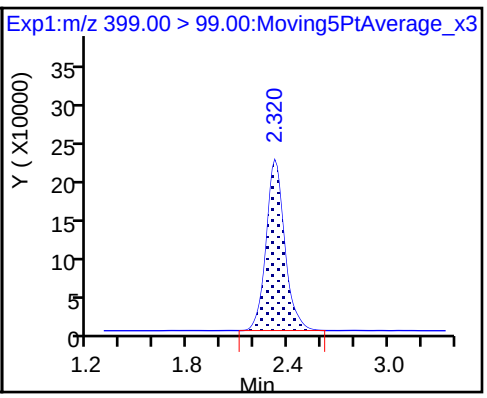
10 Perfluoroheptanoic acid



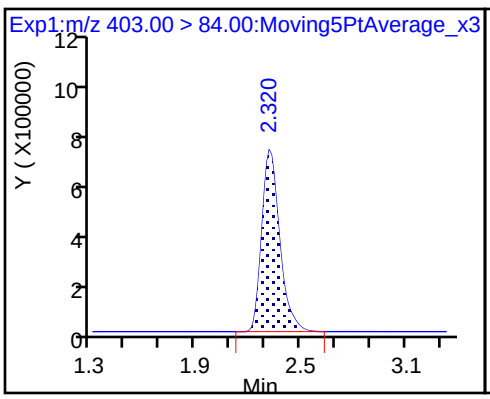
8 Perfluorohexanesulfonic acid



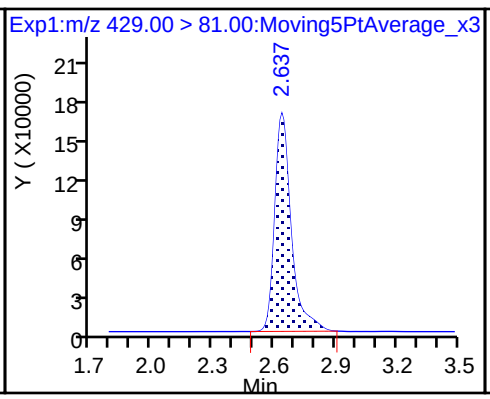
8 Perfluorohexanesulfonic acid



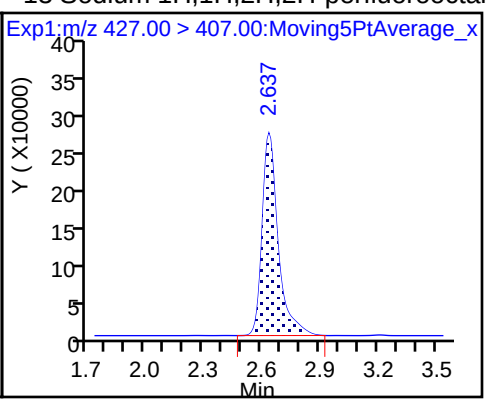
D 11 18O2 PFHxS



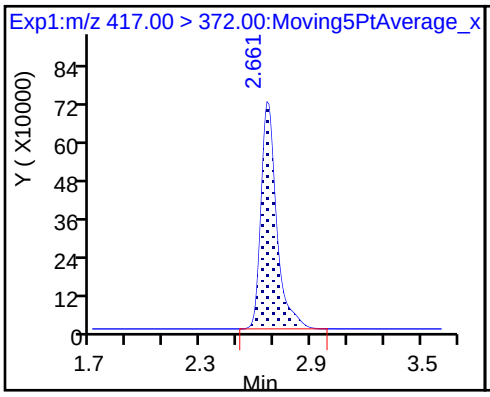
D 12 M2-6:2FTS



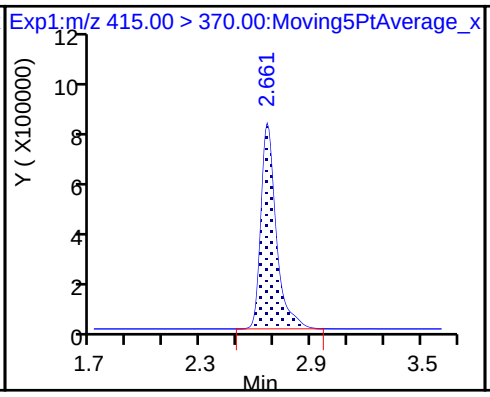
13 Sodium 1H,1H,2H,2H-perfluorooctane



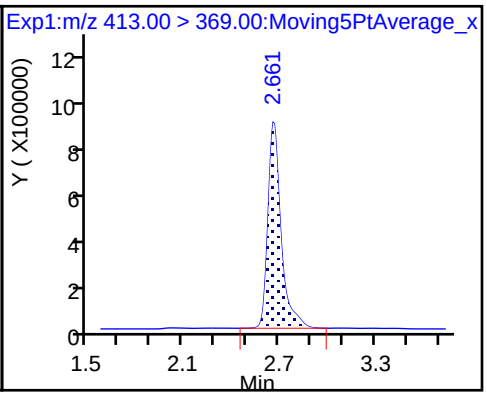
D 14 13C4 PFOA



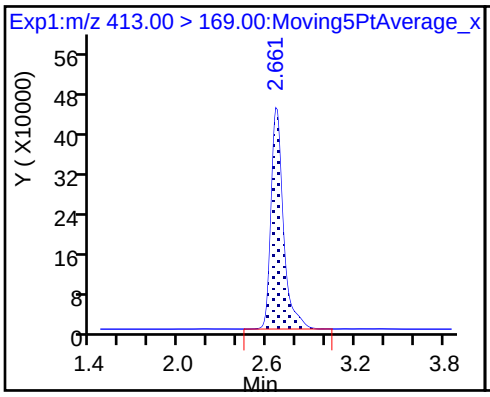
* 62 13C2-PFOA



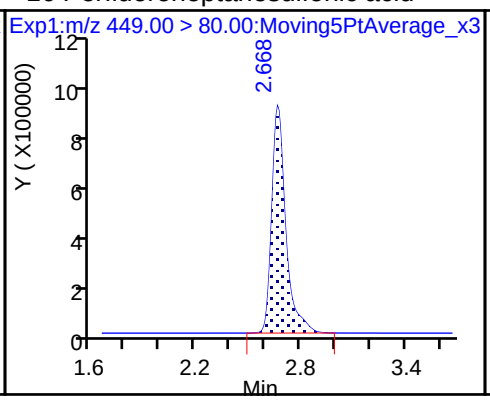
15 Perfluorooctanoic acid



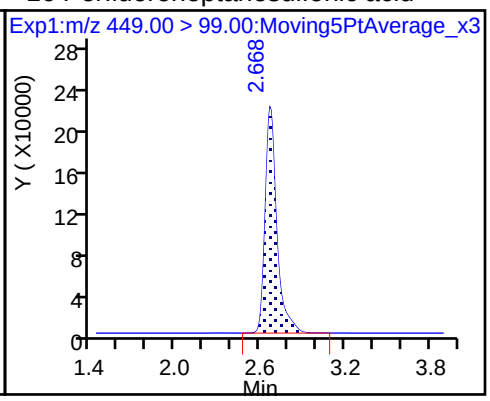
15 Perfluorooctanoic acid



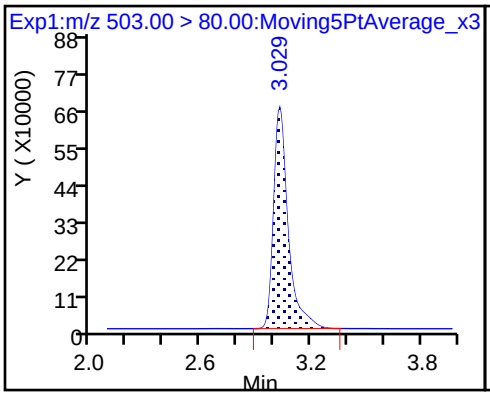
16 Perfluoroheptanesulfonic acid



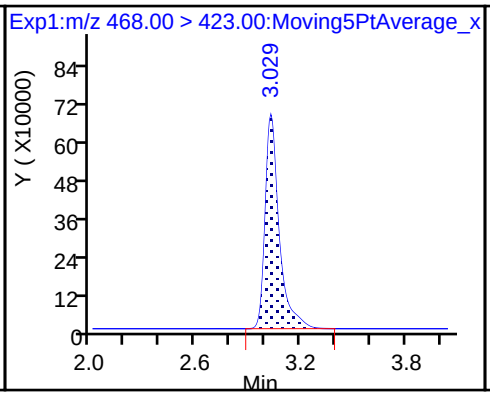
16 Perfluoroheptanesulfonic acid



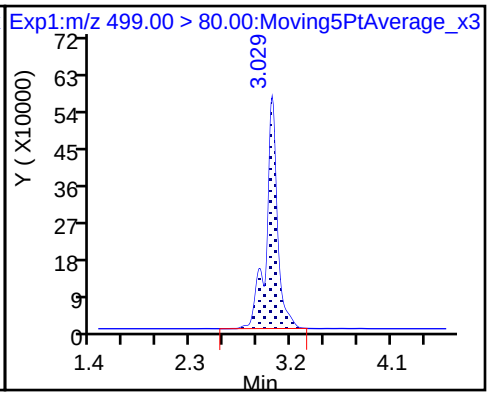
D 18 13C4 PFOS



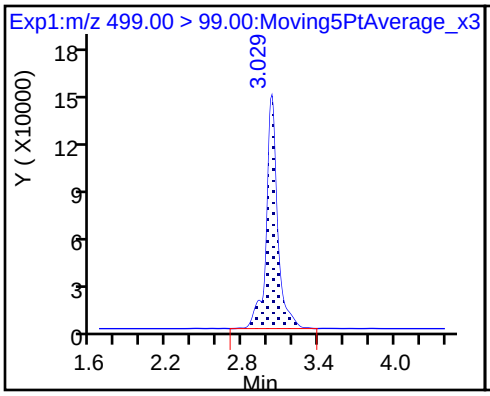
D 19 13C5 PFNA



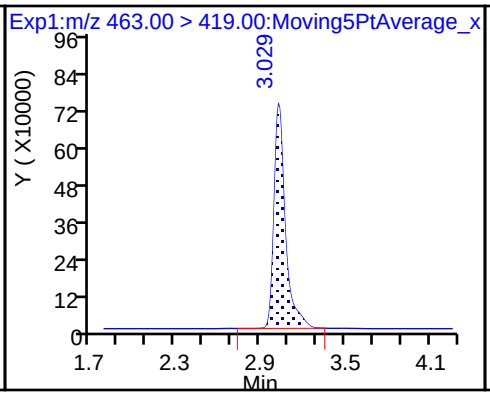
17 Perfluorooctane sulfonic acid



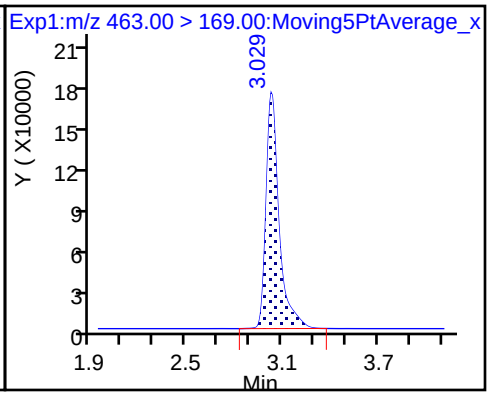
17 Perfluorooctane sulfonic acid



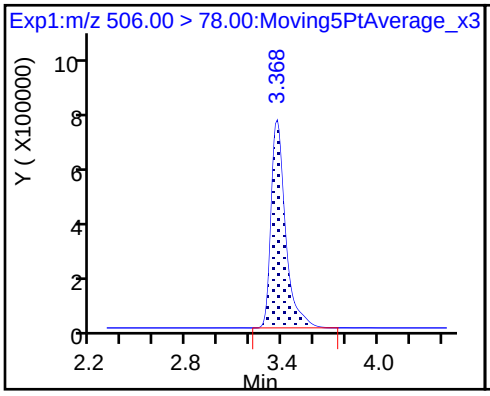
20 Perfluorononanoic acid



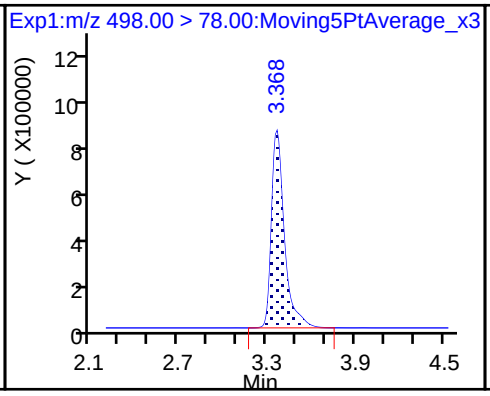
20 Perfluorononanoic acid



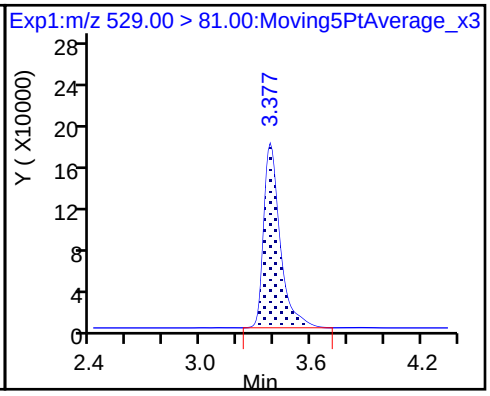
D 21 13C8 FOSA



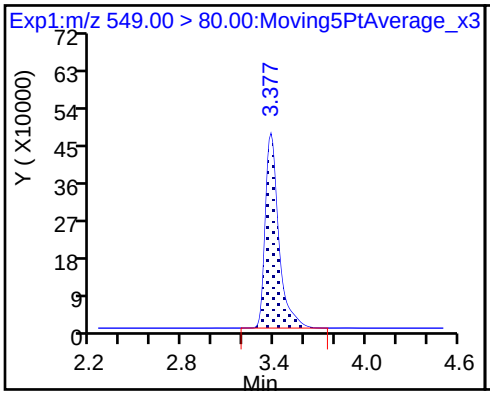
22 Perfluorooctane Sulfonamide



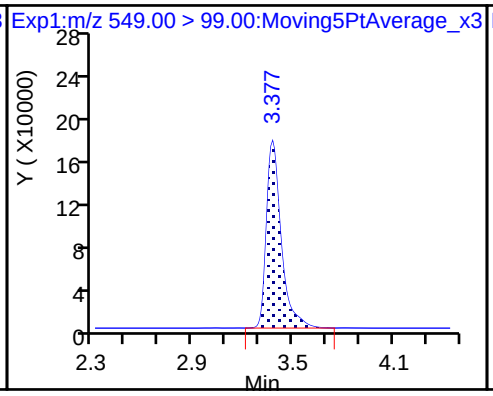
D 26 M2-8:2FTS



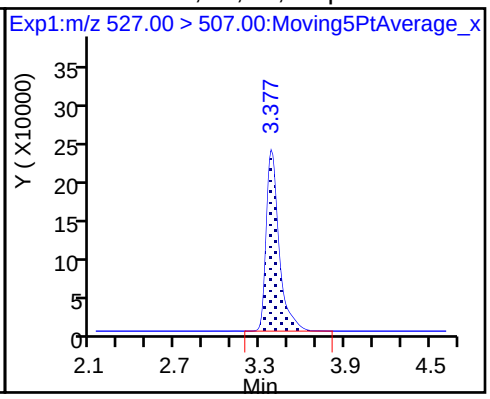
68 Perfluorononanesulfonic acid



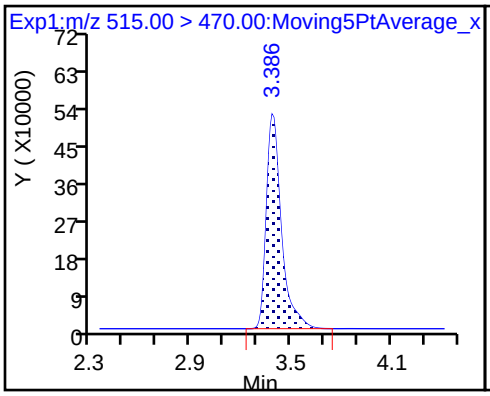
68 Perfluorononanesulfonic acid



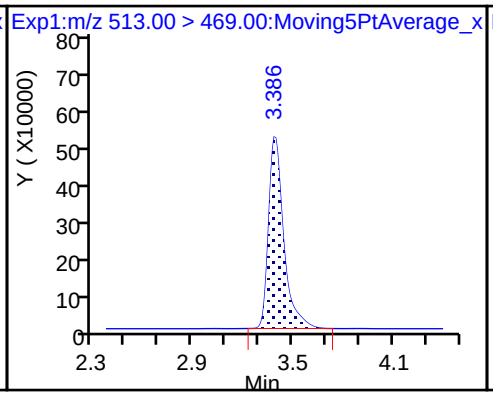
25 Sodium 1H,1H,2H,2H-perfluorodecane



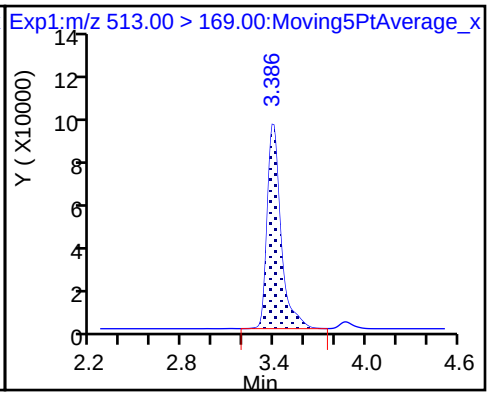
D 23 13C2 PFDA



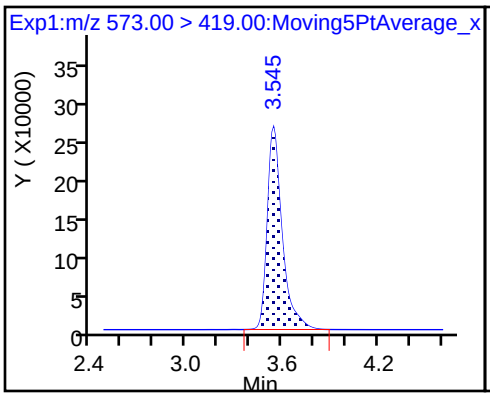
24 Perfluorodecanoic acid



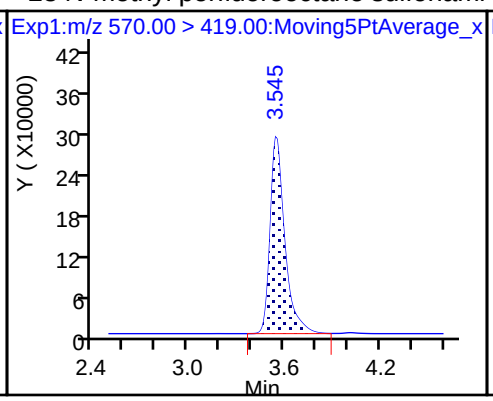
24 Perfluorodecanoic acid



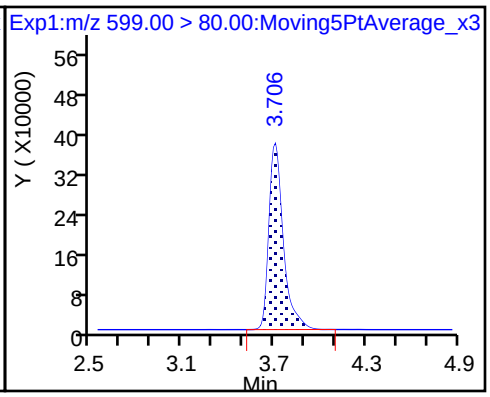
D 27 d3-NMeFOSAA



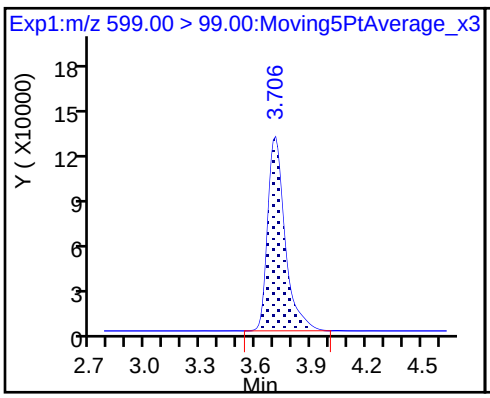
28 N-methyl perfluorooctane sulfonami



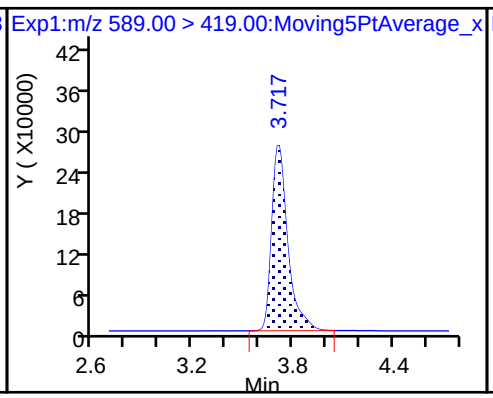
29 Perfluorodecane Sulfonic acid



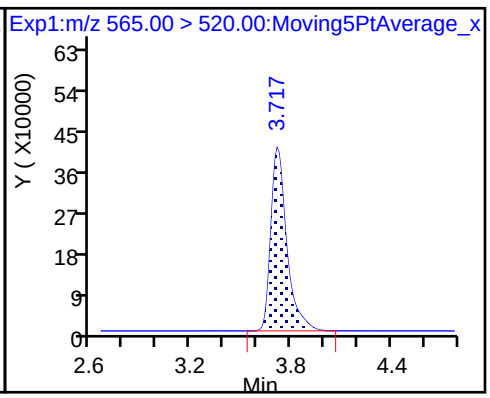
29 Perfluorodecane Sulfonic acid



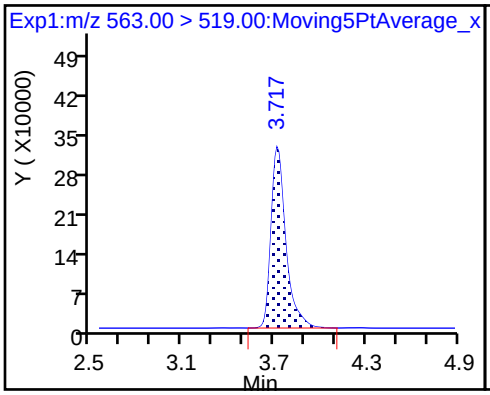
D 32 d5-NEtFOSAA



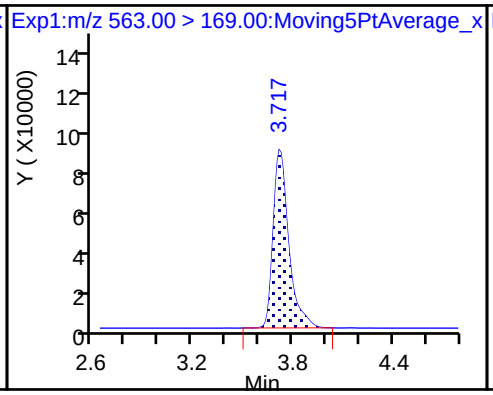
D 30 13C2 PFUnA



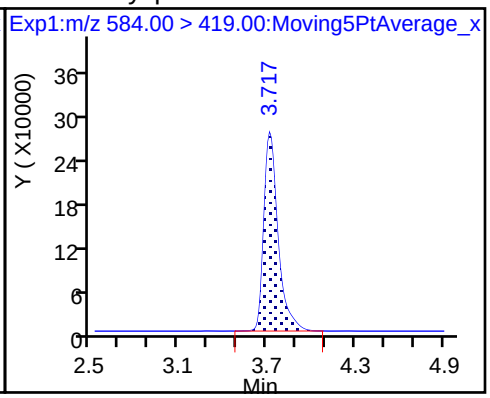
31 Perfluoroundecanoic acid



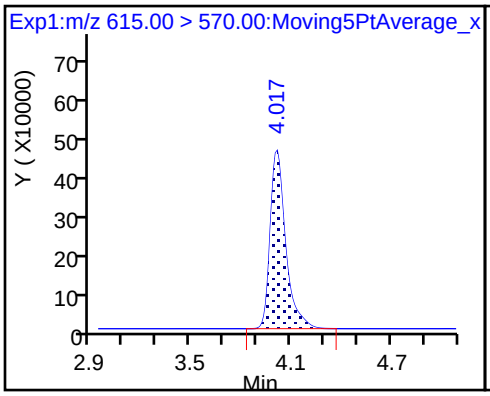
31 Perfluoroundecanoic acid



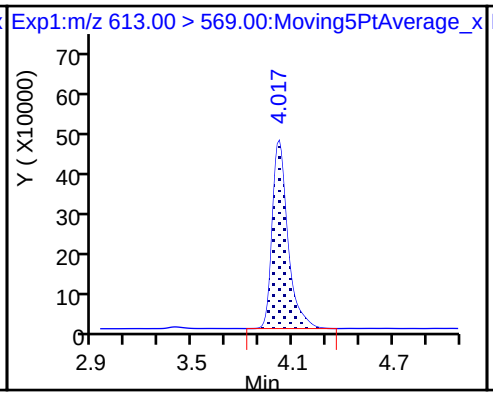
33 N-ethyl perfluorooctane sulfonamid



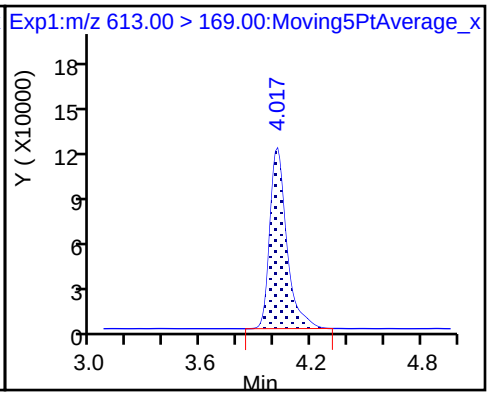
D 36 13C2 PFDoA



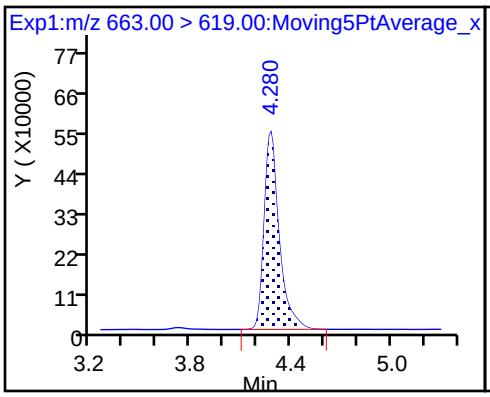
37 Perfluorododecanoic acid



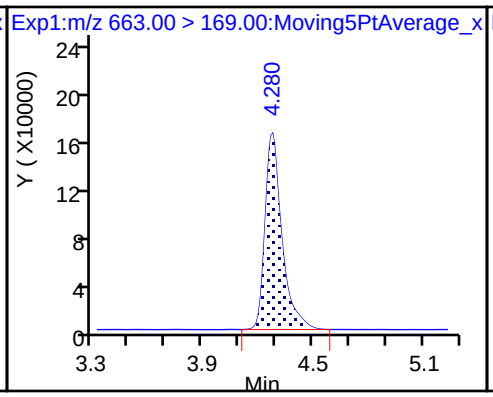
37 Perfluorododecanoic acid



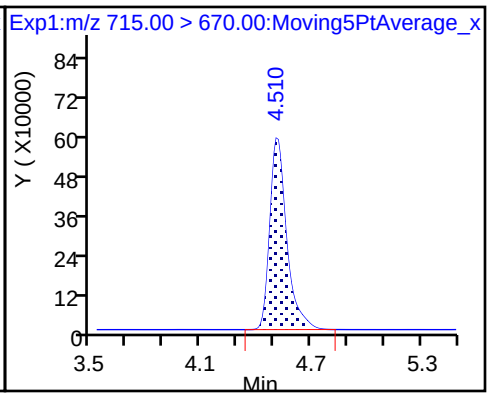
41 Perfluorotridecanoic acid



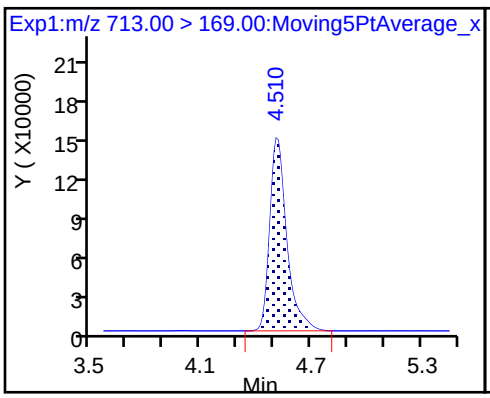
41 Perfluorotridecanoic acid



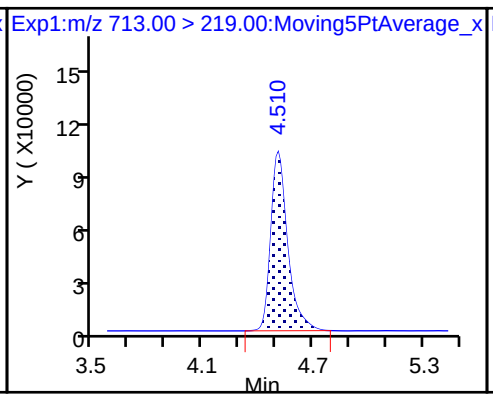
D 43 13C2-PFTeDA



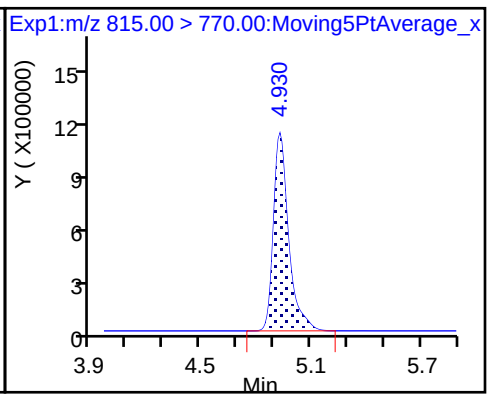
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-213387/1-A

Matrix: Water | Lab File ID: 2018.03.19LLA_027.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 250.0(mL) | Date Analyzed: 03/19/2018 11:20

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213672 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	1.0	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	90		50-150
STL01892	13C4-PFHpA	93		50-150
STL00990	13C4 PFOA	97		50-150
STL00995	13C5 PFNA	101		50-150
STL00994	18O2 PFHxS	92		50-150
STL00991	13C4 PFOS	91		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\2018.03.19LLA_027.d
Lims ID: MB 320-213387/1-A
Client ID:
Sample Type: MB
Inject. Date: 19-Mar-2018 11:20:51 ALS Bottle#: 14 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-213387/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 13:50:06 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK009

First Level Reviewer: barnettj Date: 19-Mar-2018 13:36:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.447	1.446	0.001	1.004	18889	0.009762			9.6	
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.446	-0.005	0.531	5215909	2.25		90.2	82004	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.709	0.0	0.630	3459130	2.12		84.8	75965	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.744	-0.008	0.640	84382	2.09		90.1	465	
D 7 13C2 PFHxA										
315.00 > 270.00	1.998	1.997	0.001	0.736	3955752	2.17		86.9	146898	
D 9 13C4-PFHpA										
367.00 > 322.00	2.341	2.341	0.0	0.863	4124017	2.33		93.2	102197	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.354	2.353	0.001	1.000	16655	0.006885			2.8	
399.00 > 99.00	2.354	2.353	0.001	1.000	5003		3.33(1.50-4.49)		2.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.354	0.0	0.868	5129150	2.17		91.8	100621	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.689	2.679	0.010	1.003	3066	0.004399			203	
D 12 M2-6:2FTS										
429.00 > 81.00	2.681	2.689	-0.008	0.988	994515	2.19		92.4	23825	
* 62 13C2-PFOA										
415.00 > 370.00	2.713	2.702	0.011		4531633	2.50			99020	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.713	2.710	0.003	1.000	20118	0.0109			7.1	
413.00 > 169.00	2.713	2.710	0.003	1.000	10698		1.88(0.84-2.52)		39.0	
D 14 13C4 PFOA										
417.00 > 372.00	2.713	2.712	0.001	1.000	4133320	2.42		96.7	110064	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.088	3.088	0.0	1.138	3597386	2.18		91.1	74163	
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.096	-0.008	1.138	3453209	2.52		101	94884	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.408	3.406	0.002	1.000	3959	0.001921			82.3	
D 21 13C8 FOSA										
506.00 > 78.00	3.408	3.406	0.002	1.256	5303400	2.22		88.7	48414	
D 26 M2-8:2FTS										
529.00 > 81.00	3.444	3.452	-0.008	1.270	1100629	2.58		108	24742	
D 23 13C2 PFDA										
515.00 > 470.00	3.453	3.461	-0.008	1.273	2794287	2.45		97.8	45295	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.611	3.620	-0.009	1.331	934519	2.48		99.1	39904	
31 Perfluoroundecanoic acid										R
563.00 > 519.00	3.800	3.780	0.020	1.003	5216	0.006979			13.1	R
563.00 > 169.00	3.789	3.780	0.009	1.000	2655		1.96(2.12-6.36)		343	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.789	3.780	0.009	1.003	1317	0.003479			33.4	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.779	3.789	-0.010	1.393	966753	2.68		107	1780	
D 30 13C2 PFUnA										
565.00 > 520.00	3.789	3.800	-0.011	1.397	2229613	2.49		99.7	58717	
D 36 13C2 PFDoA										
615.00 > 570.00	4.089	4.089	0.0	1.507	2022244	2.38		95.4	14618	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.595	4.606	-0.011	1.694	2070676	2.67		107	17489	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.017	5.008	0.009	1.000	20213	NC			2.7	
813.00 > 169.00	5.017	5.008	0.009	1.000	3892		5.19(2.86-8.58)		31.2	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.017	5.026	-0.009	1.849	2322025	2.05		82.0	8629	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Report Date: 19-Mar-2018 13:50:09 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b\2018.03.19LLA_027.d

Injection Date: 19-Mar-2018 11:20:51 Instrument ID: A8_N

Lims ID: MB 320-213387/1-A

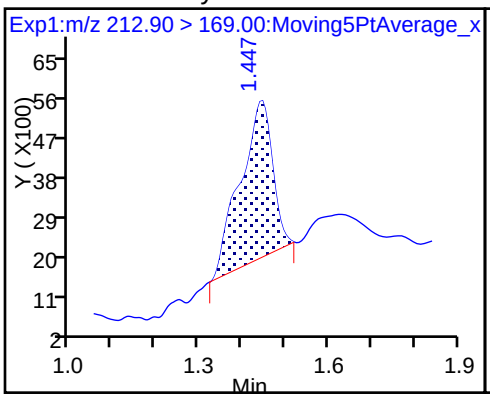
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 5

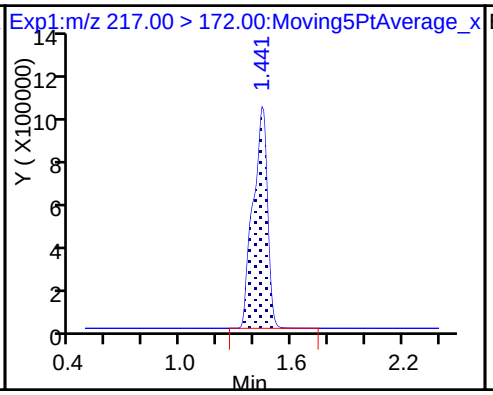
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

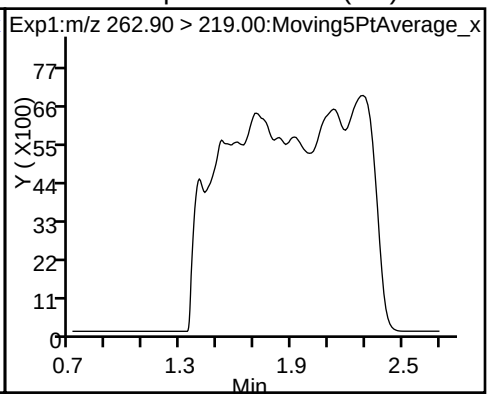
2 Perfluorobutyric acid



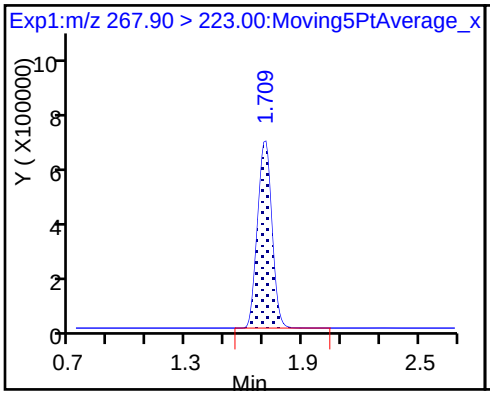
D 1 13C4 PFBA



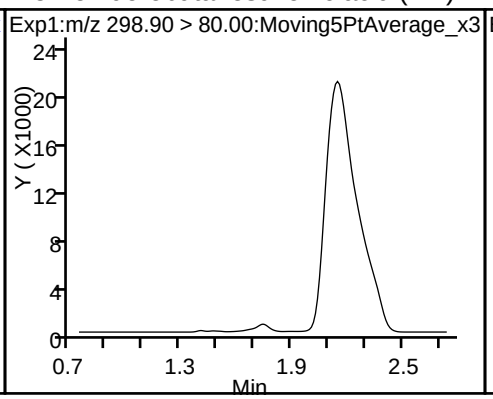
4 Perfluoropentanoic acid (ND)



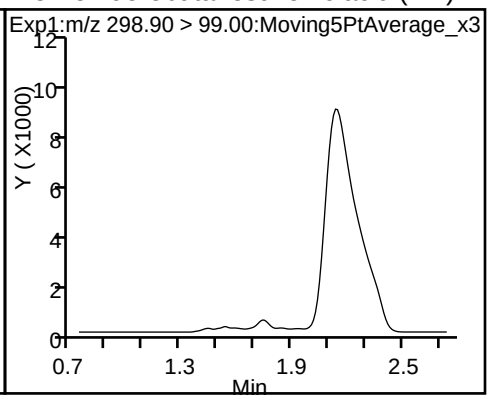
D 3 13C5-PFPeA



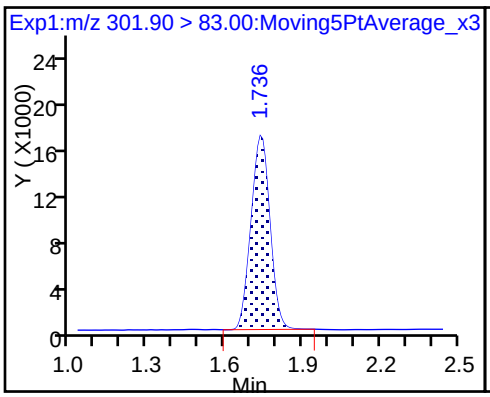
5 Perfluorobutanesulfonic acid (ND)



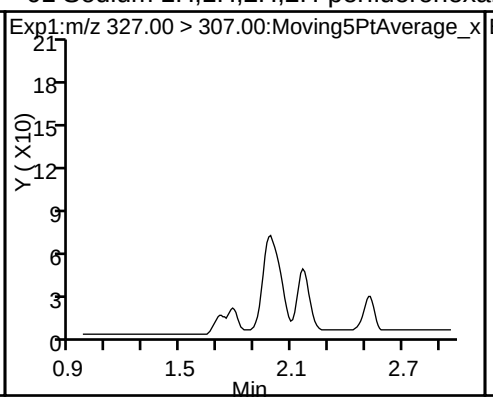
5 Perfluorobutanesulfonic acid (ND)



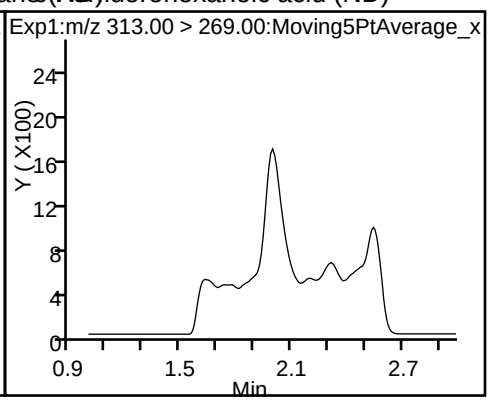
D 47 13C3-PFBS



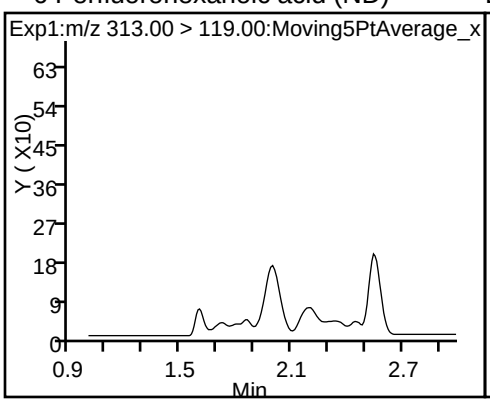
61 Sodium 1H,1H,2H,2H-perfluorohexane sulfonate



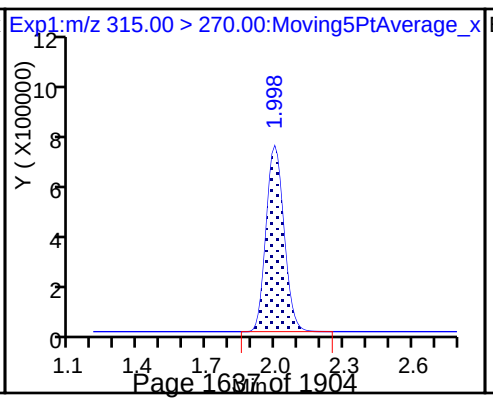
6 Perfluorohexanoic acid (ND)



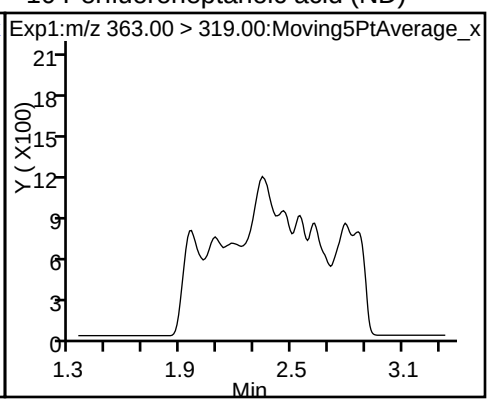
6 Perfluorohexanoic acid (ND)



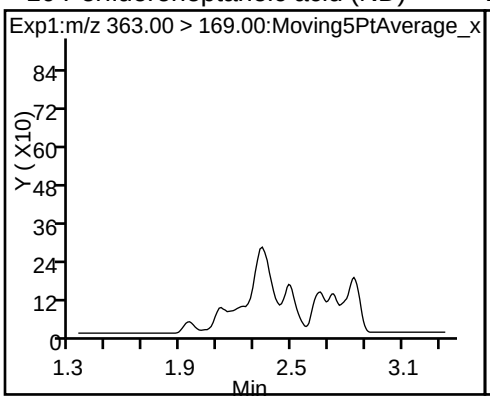
D 7 13C2 PFHxA



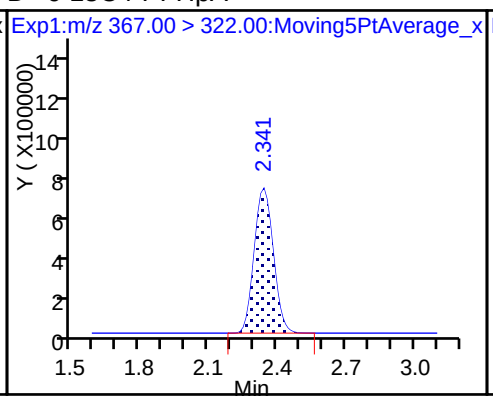
10 Perfluoroheptanoic acid (ND)



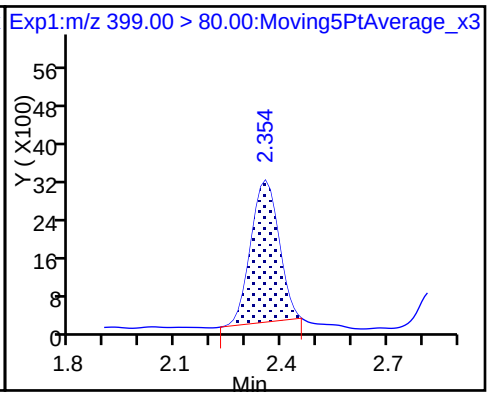
10 Perfluoroheptanoic acid (ND)



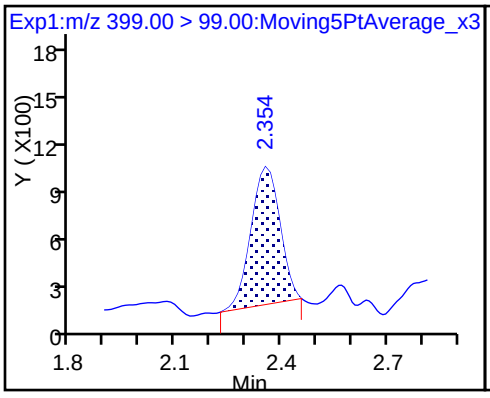
D 9 13C4-PFHpA



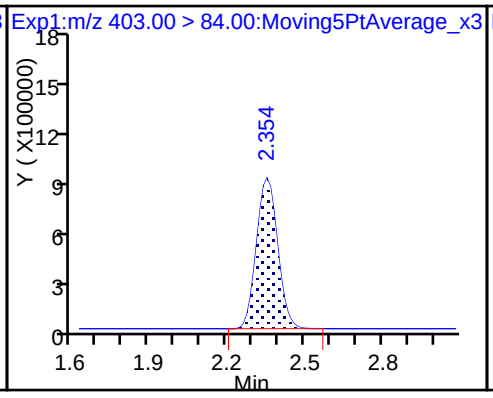
8 Perfluorohexanesulfonic acid



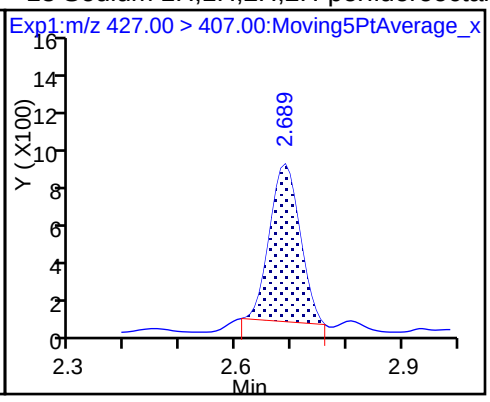
8 Perfluorohexanesulfonic acid



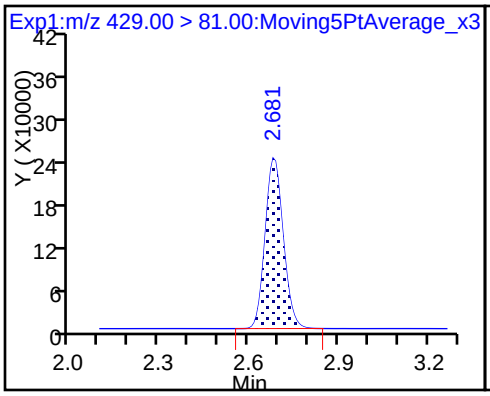
D 11 18O2 PFHxS



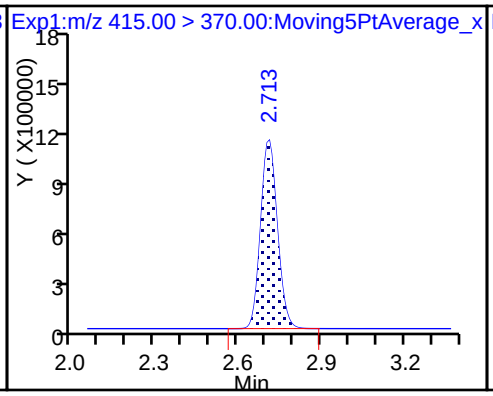
13 Sodium 1H,1H,2H,2H-perfluorooctane



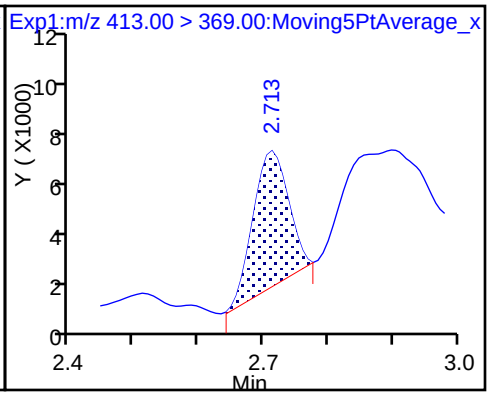
D 12 M2-6:2FTS



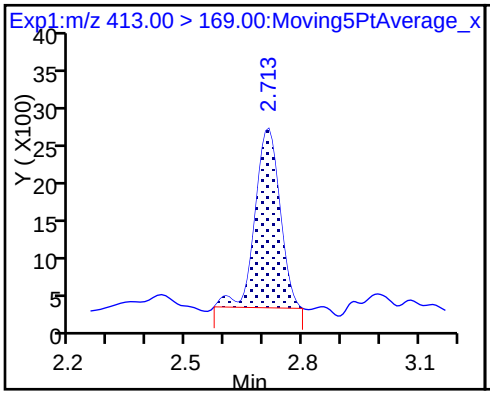
* 62 13C2-PFOA



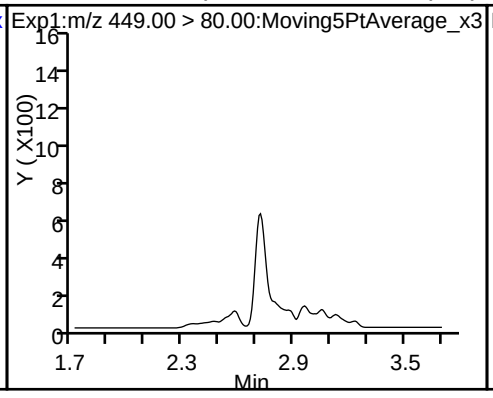
15 Perfluorooctanoic acid



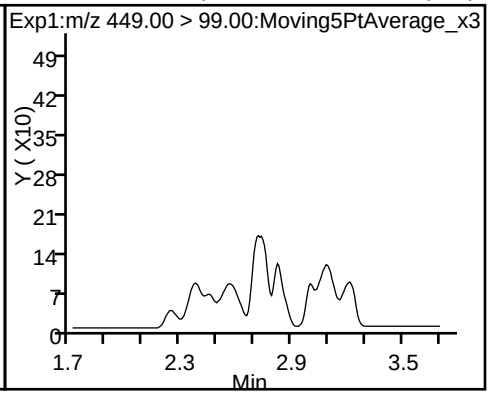
15 Perfluorooctanoic acid



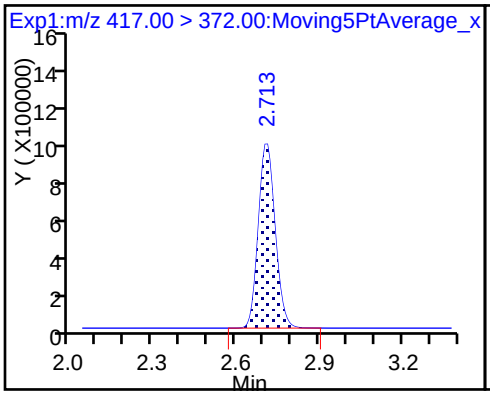
16 Perfluoroheptanesulfonic acid (ND)



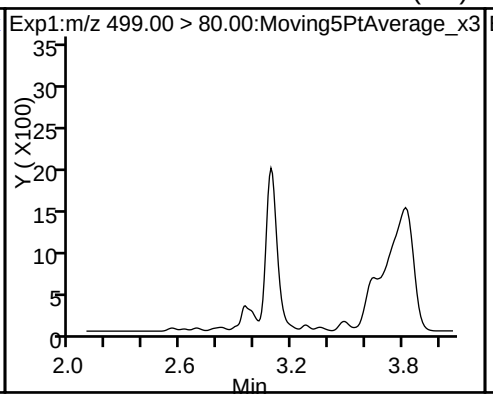
16 Perfluoroheptanesulfonic acid (ND)



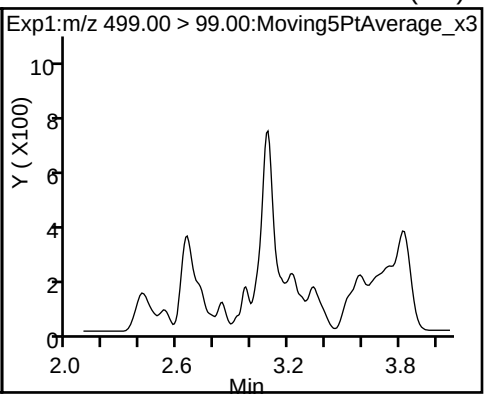
D 14 13C4 PFOA



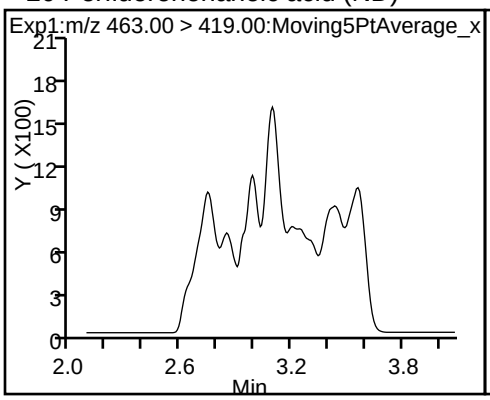
17 Perfluorooctane sulfonic acid (ND)



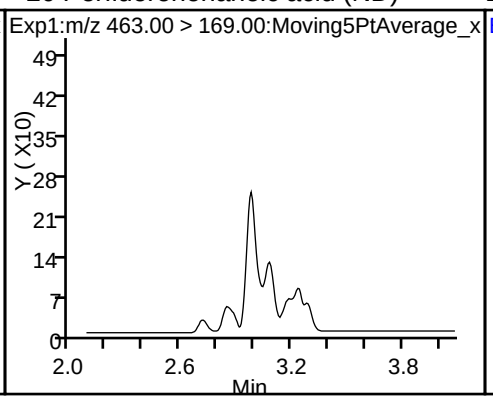
17 Perfluorooctane sulfonic acid (ND)



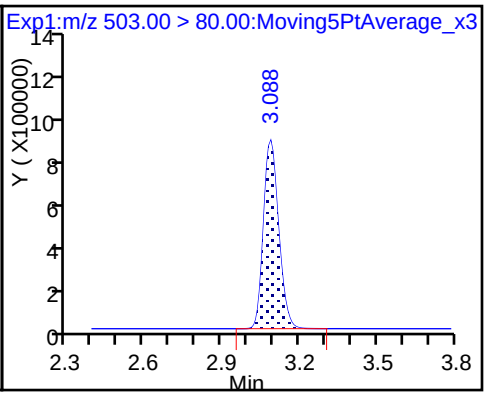
20 Perfluorononanoic acid (ND)



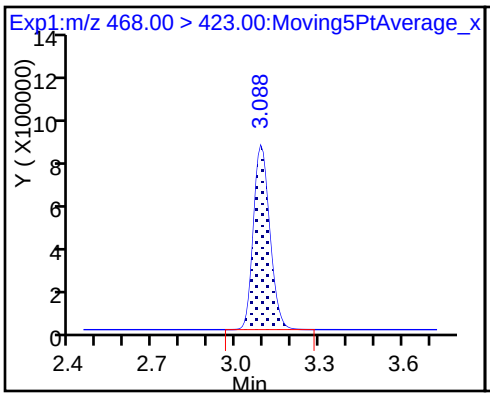
20 Perfluorononanoic acid (ND)



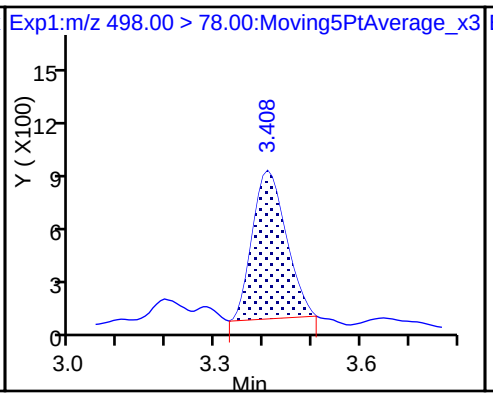
D 18 13C4 PFOS



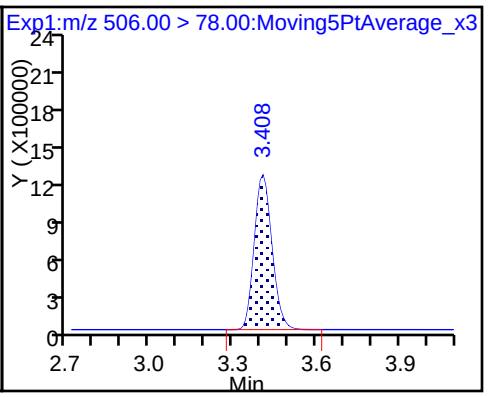
D 19 13C5 PFNA



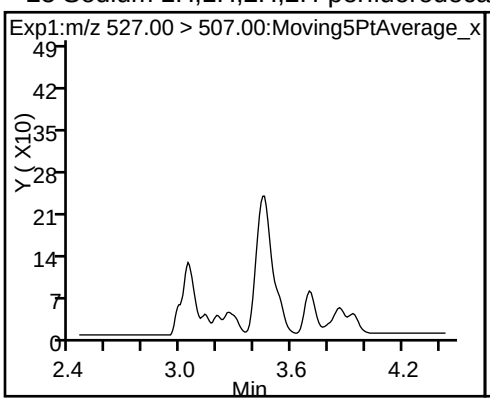
22 Perfluorooctane Sulfonamide



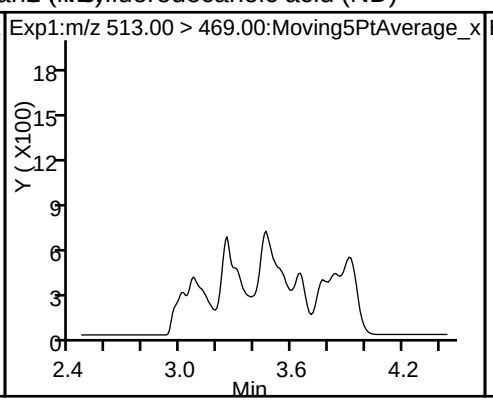
D 21 13C8 FOSA



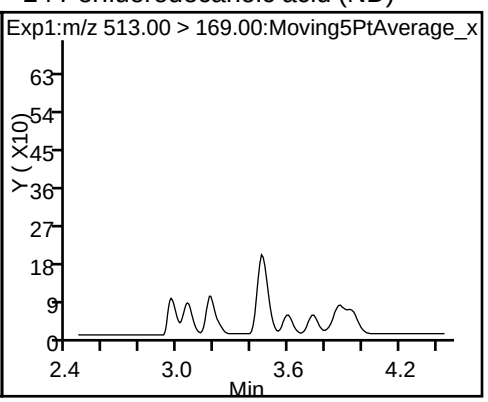
25 Sodium 1H,1H,2H,2H-perfluorodecane (ND)



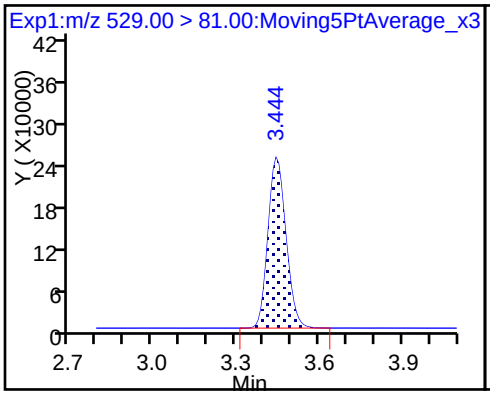
24 Perfluorodecanoic acid (ND)



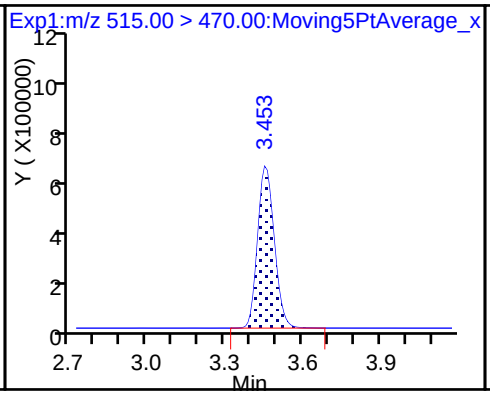
24 Perfluorodecanoic acid (ND)



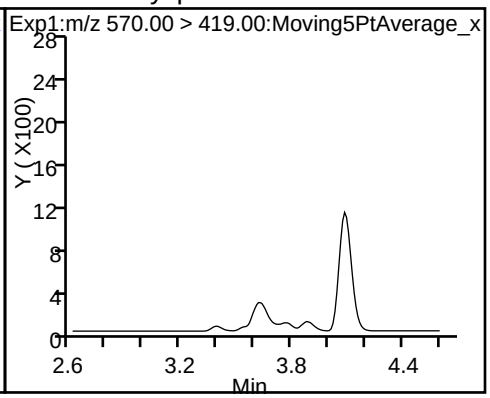
D 26 M2-8:2FTS



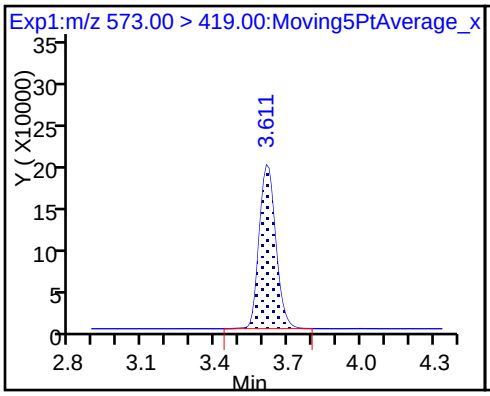
D 23 13C2 PFDA



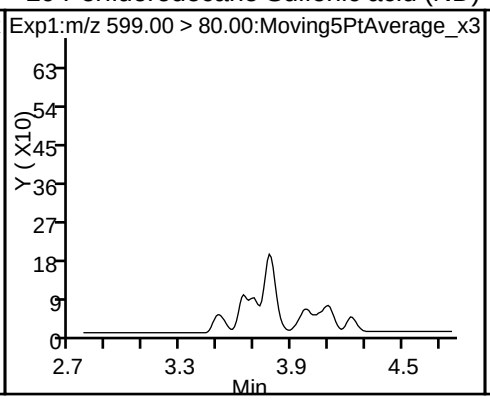
28 N-methyl perfluorooctane sulfonami (ND)



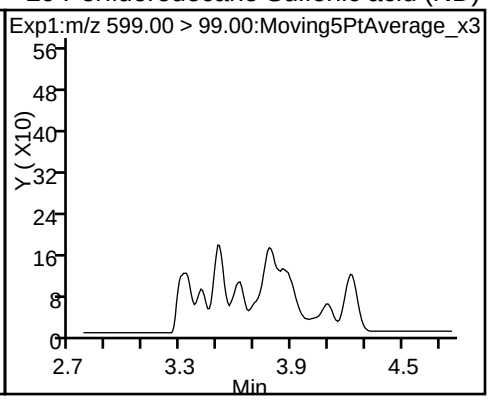
D 27 d3-NMeFOSAA



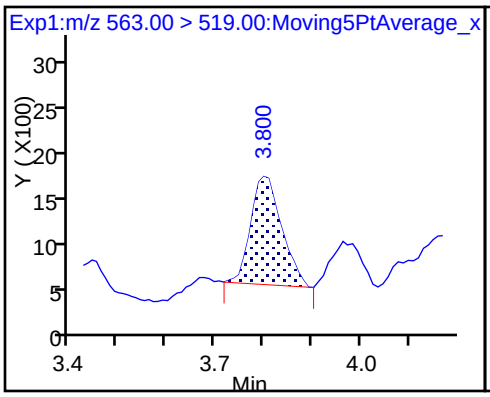
29 Perfluorodecane Sulfonic acid (ND)



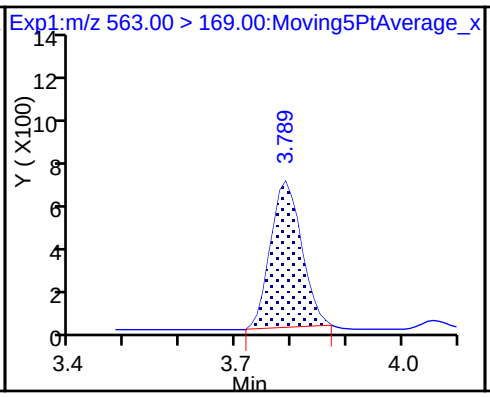
29 Perfluorodecane Sulfonic acid (ND)



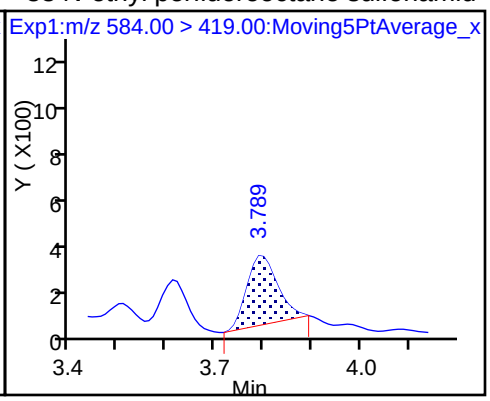
31 Perfluoroundecanoic acid



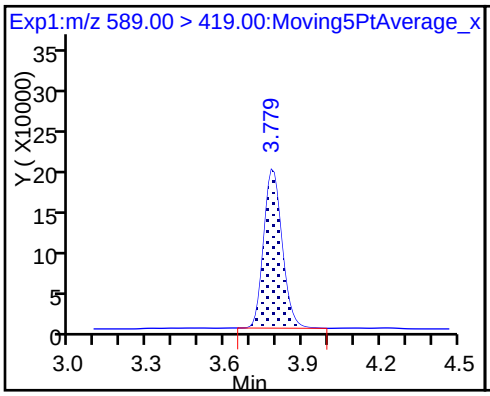
31 Perfluoroundecanoic acid



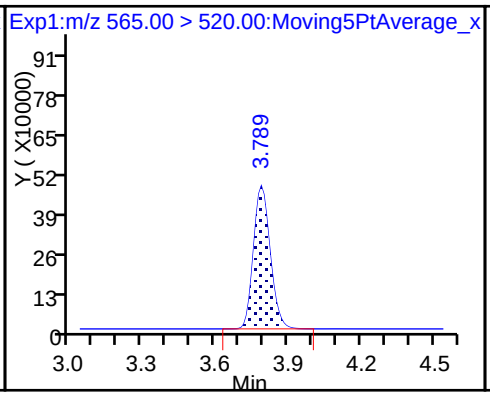
33 N-ethyl perfluorooctane sulfonamid



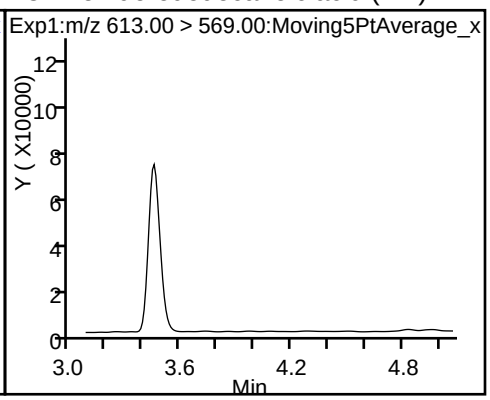
D 32 d5-NEtFOSAA



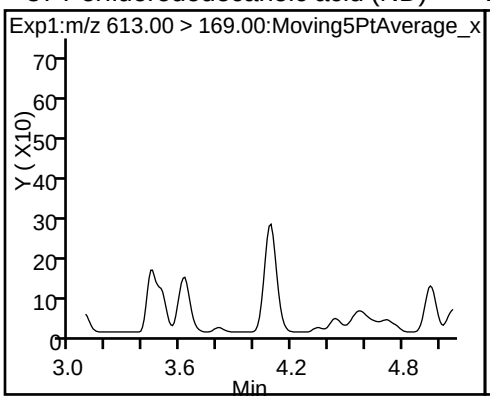
D 30 13C2 PFUnA



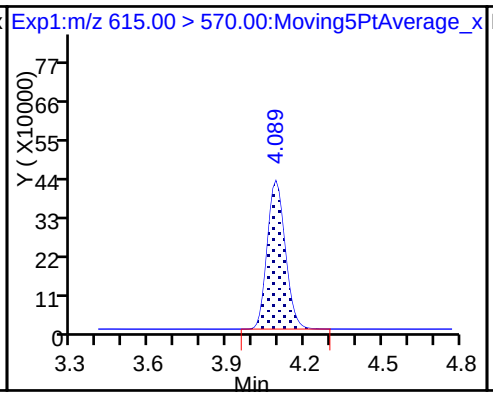
37 Perfluorododecanoic acid (ND)



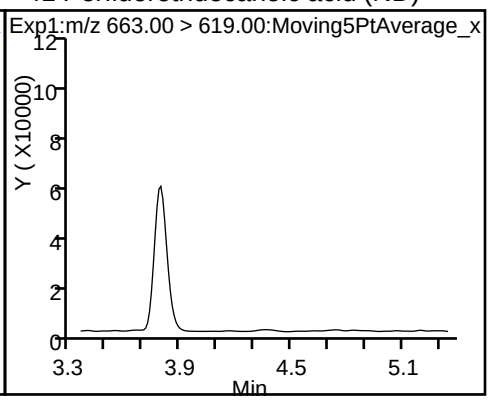
37 Perfluorododecanoic acid (ND)



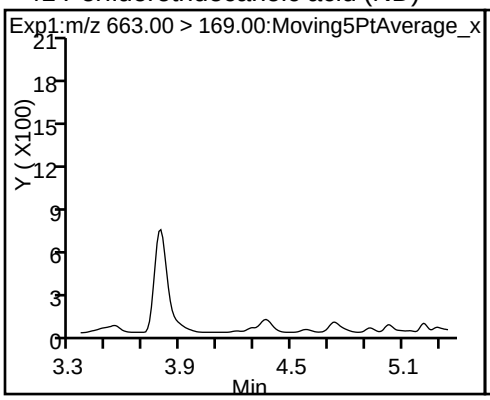
D 36 13C2 PFDoA



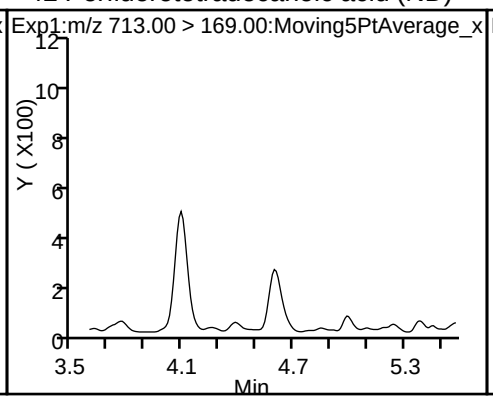
41 Perfluorotridecanoic acid (ND)



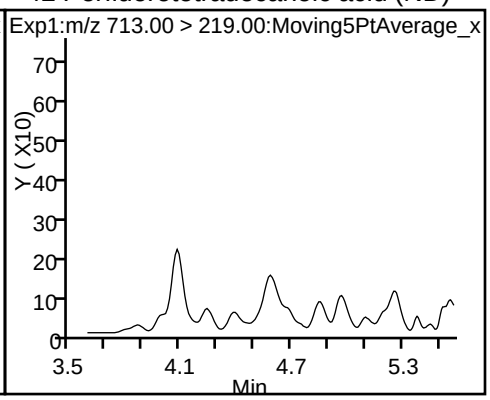
41 Perfluorotridecanoic acid (ND)



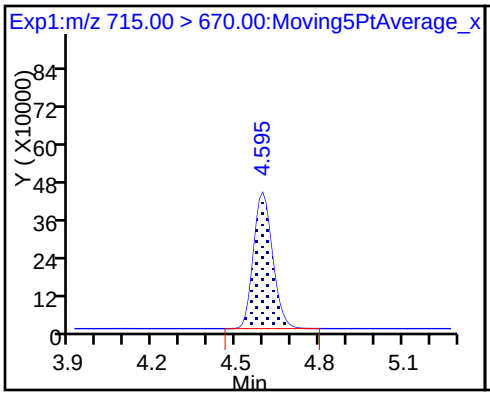
42 Perfluorotetradecanoic acid (ND)



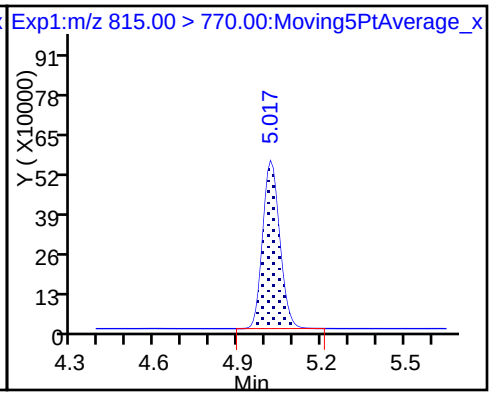
42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-213404/1-A

Matrix: Solid | Lab File ID: 2018.04.07LLA_007.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.00(g) | Date Analyzed: 04/07/2018 09:24

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.20	U	0.30	0.20	0.078
335-67-1	Perfluorooctanoic acid (PFOA)	0.20	U M	0.30	0.20	0.10
375-95-1	Perfluorononanoic acid (PFNA)	0.20	U	0.30	0.20	0.081
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.18	U	0.40	0.18	0.059
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.20	U	0.30	0.20	0.062
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.50	U	1.0	0.50	0.24

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	81		50-150
STL01892	13C4-PFHpA	87		50-150
STL00990	13C4 PFOA	87		50-150
STL00995	13C5 PFNA	94		50-150
STL00994	18O2 PFHxS	86		50-150
STL00991	13C4 PFOS	84		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_007.d
Lims ID: MB 320-213404/1-A
Client ID:
Sample Type: MB
Inject. Date: 07-Apr-2018 09:24:36 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-213404/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:19:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.422	1.425	-0.003	1.000	5339272	2.02		80.7	47907	
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.431	-0.003	1.004	50333	0.0255			14.4	
D 3 13C5-PFPeA										
267.90 > 223.00	1.692	1.694	-0.002	0.559	3556632	2.07		82.6	66561	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.692	1.704	-0.012	1.000	3874	0.002275			2.7	
D 47 13C3-PFBS										
301.90 > 83.00	1.728	1.730	-0.002	1.000	74007	1.88		80.7	418	
D 7 13C2 PFHxA										
315.00 > 270.00	1.980	1.982	-0.002	1.000	4049239	2.13		85.3	106263	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.081	2.073	0.008	1.000	189715	NC			4041	
D 9 13C4-PFHpA										
367.00 > 322.00	2.305	2.308	-0.003	1.000	3965727	2.17		86.9	94551	
D 11 18O2 PFHxS										
403.00 > 84.00	2.318	2.321	-0.003	1.000	4627170	2.03		86.0	93796	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.318	2.323	-0.005	1.000	10462	0.004787			32.0	
399.00 > 99.00	2.318	2.323	-0.005	1.000	3806		2.75(1.50-4.49)		12.7	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.637	-0.002	1.000	883650	2.10		88.2	9560	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.660	-0.001	1.000	3906593	2.18		87.1	97793	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.661	-0.002		4786207	2.50			106329	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.023	0.005	1.000	3174627	2.01		84.0	25829	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.030	-0.002	1.000	3577158	2.36		94.3	93327	
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.360	0.014	1.000	3935266	1.76		70.5	65762	
D 26 M2-8:2FTS										
529.00 > 81.00	3.393	3.378	0.015	1.000	1027016	2.09		87.4	12463	
D 23 13C2 PFDA										
515.00 > 470.00	3.402	3.387	0.015	1.000	2906201	2.27		90.7	82686	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.551	3.537	0.014	1.000	1535846	2.24		89.6	27570	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.711	3.707	0.004	1.000	1663336	2.31		92.4	16790	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.718	-0.007	1.000	2509803	2.40		95.9	64888	
D 36 13C2 PFDoA										
615.00 > 570.00	4.010	4.008	0.002	1.000	2725950	2.34		93.6	23910	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.511	0.0	1.000	3391951	2.29		91.7	17491	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.923	4.922	0.001	1.000	5422384	2.37		94.9	11654	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.923	4.932	-0.009	1.000	46865	NC			12.2	
813.00 > 169.00	4.931	4.932	-0.001	1.002	6020		7.78(2.86-8.58)		46.7	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 09-Apr-2018 08:26:46 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_007.d

Injection Date: 07-Apr-2018 09:24:36 Instrument ID: A8_N

Lims ID: MB 320-213404/1-A

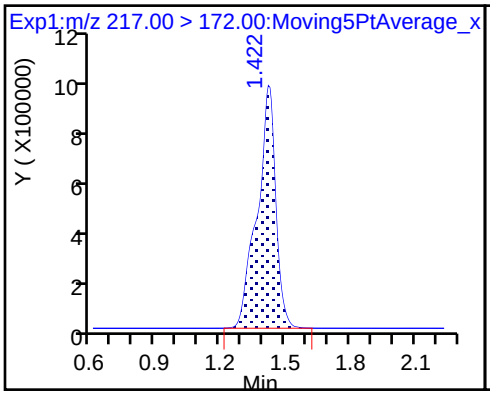
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4

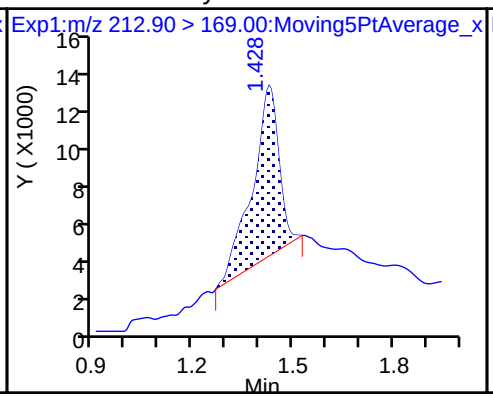
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

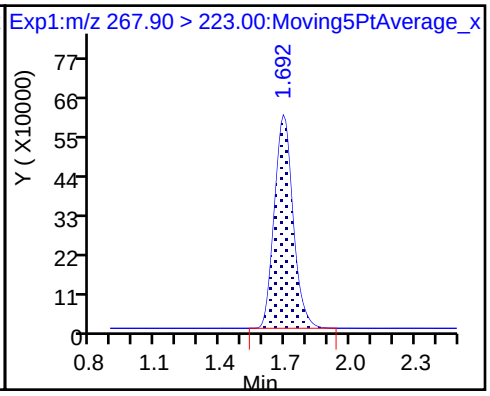
D 1 13C4 PFBA



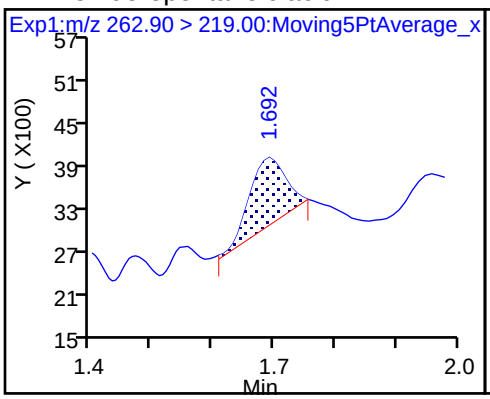
2 Perfluorobutyric acid



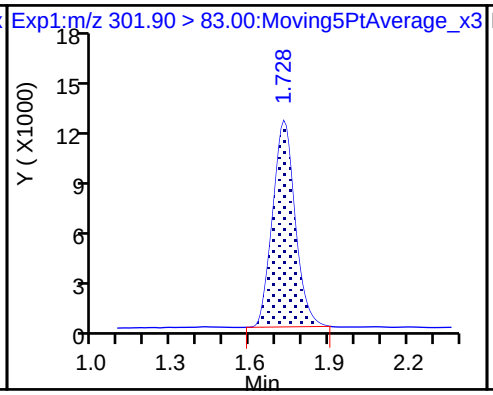
D 3 13C5-PFPeA



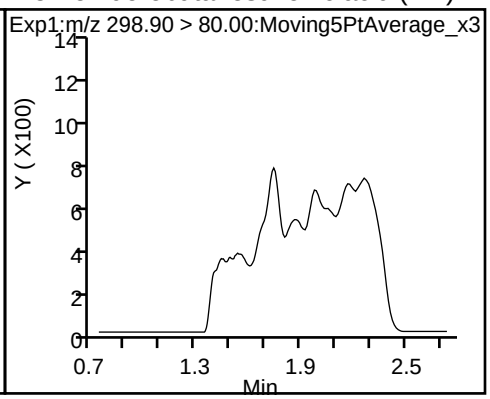
4 Perfluoropentanoic acid



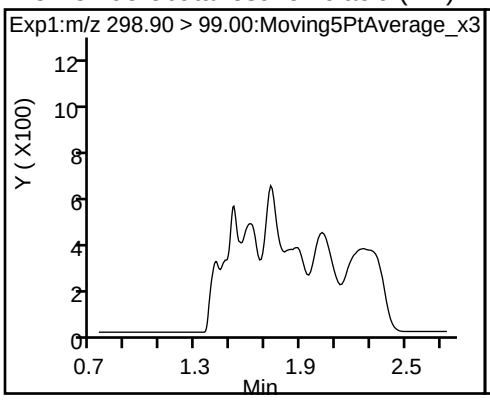
D 47 13C3-PFBS



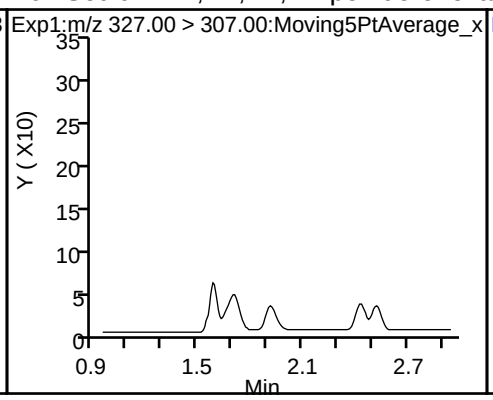
5 Perfluorobutanesulfonic acid (ND)



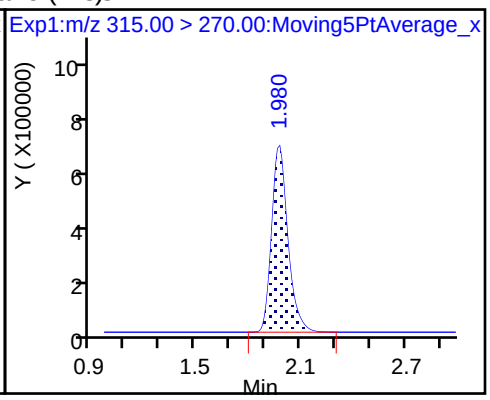
5 Perfluorobutanesulfonic acid (ND)



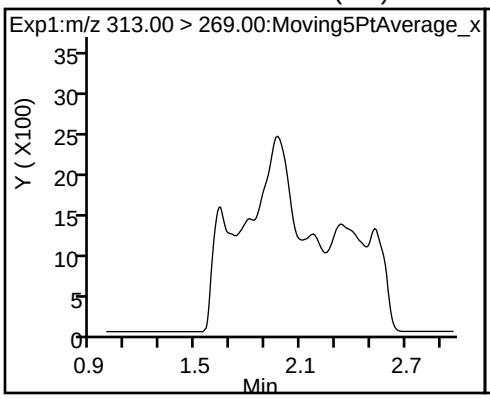
61 Sodium 1H,1H,2H,2H-perfluorohexane (ND)



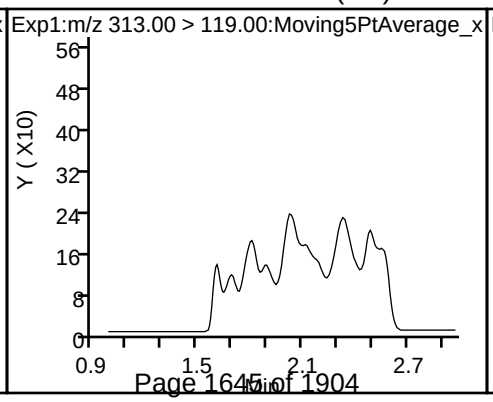
D 13C2 PFHxA



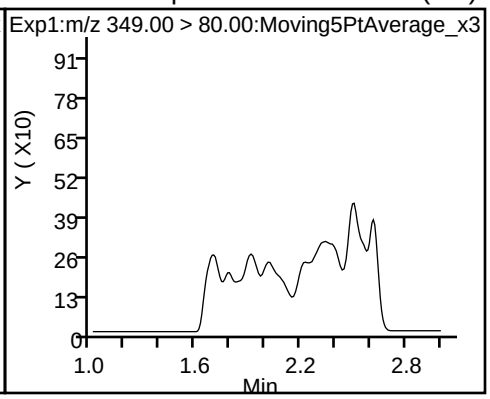
6 Perfluorohexanoic acid (ND)



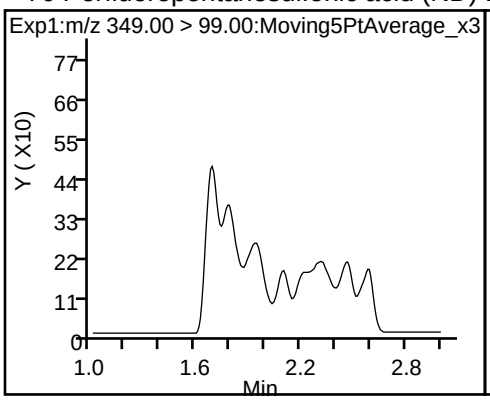
6 Perfluorohexanoic acid (ND)



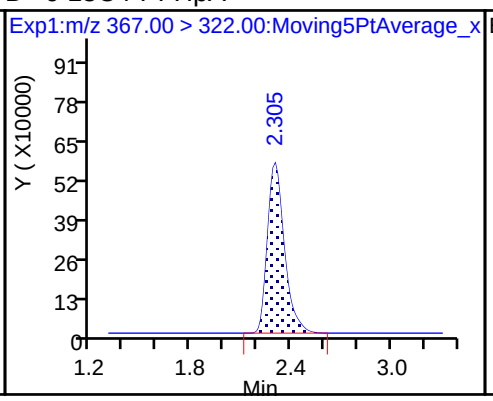
70 Perfluoropentanesulfonic acid (ND)



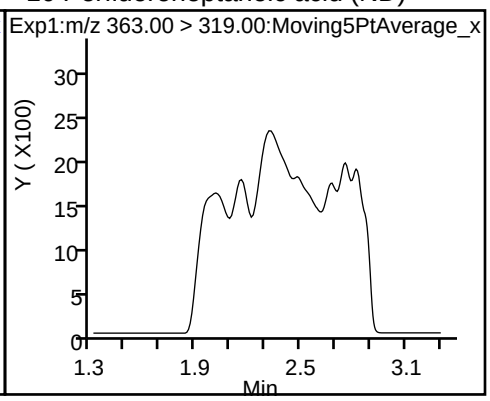
70 Perfluoropentanesulfonic acid (ND)



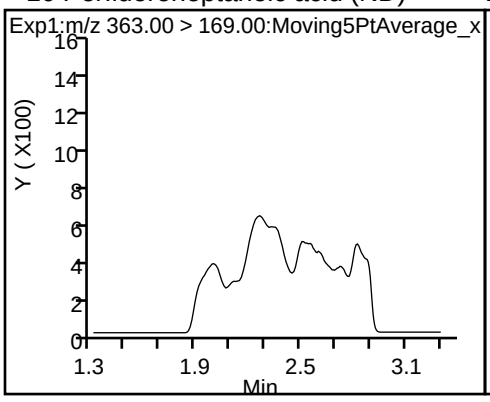
D 9 13C4-PFHpA



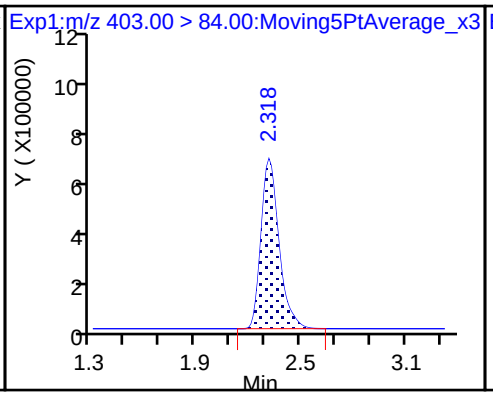
10 Perfluoroheptanoic acid (ND)



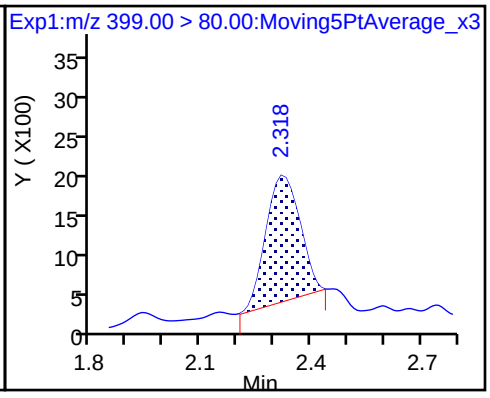
10 Perfluoroheptanoic acid (ND)



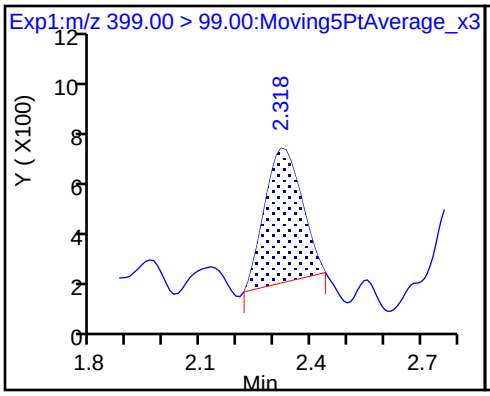
D 11 18O2 PFHxS



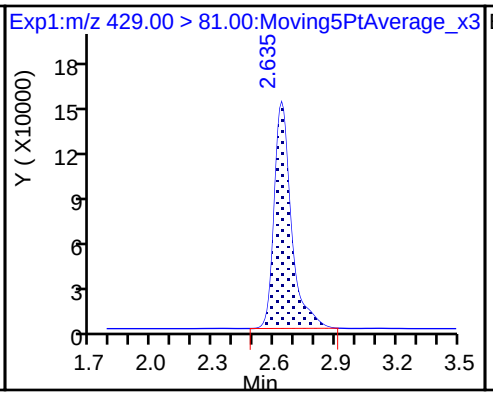
8 Perfluorohexanesulfonic acid



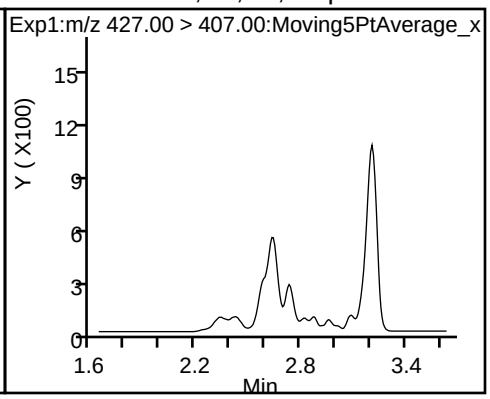
8 Perfluorohexanesulfonic acid



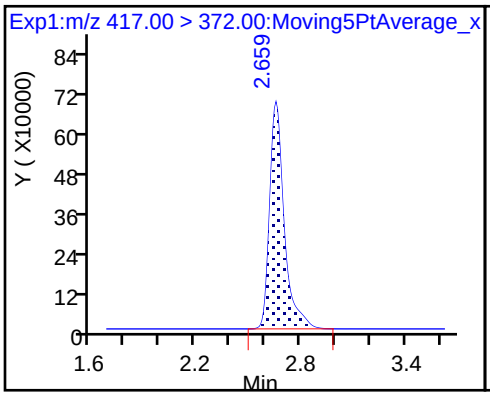
D 12 M2-6:2FTS



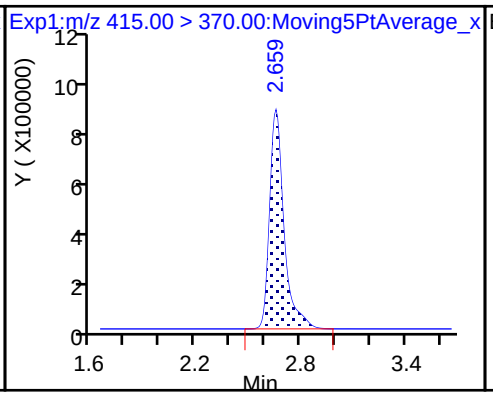
13 Sodium 1H,1H,2H,2H-perfluorooctane (ND)



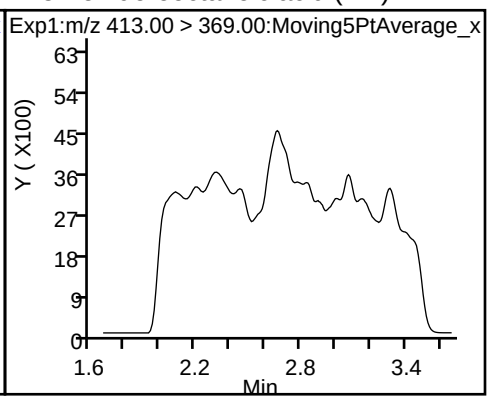
D 14 13C4 PFOA



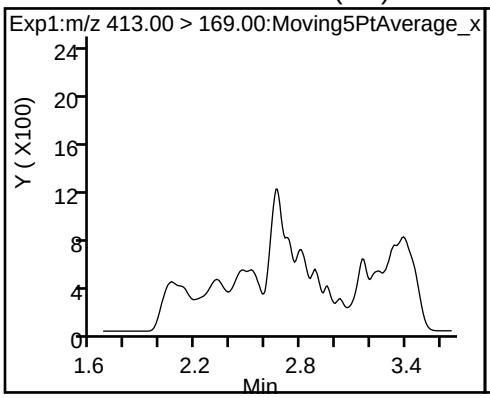
* 62 13C2-PFOA



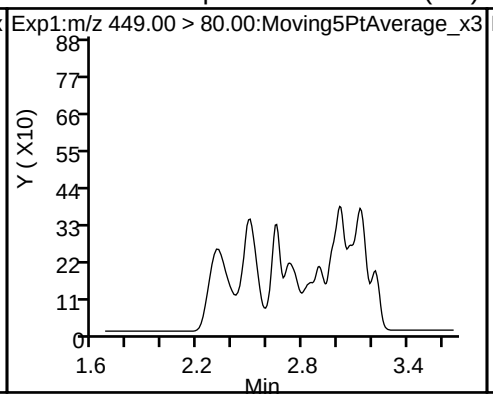
15 Perfluorooctanoic acid (ND)



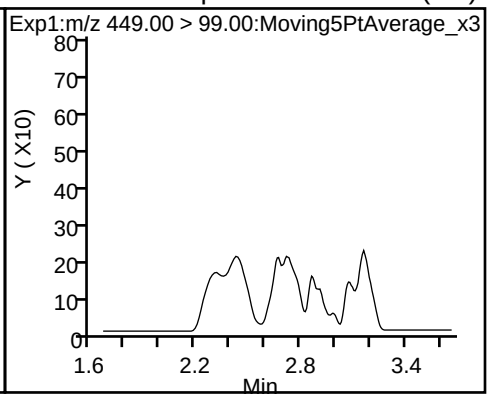
15 Perfluorooctanoic acid (ND)



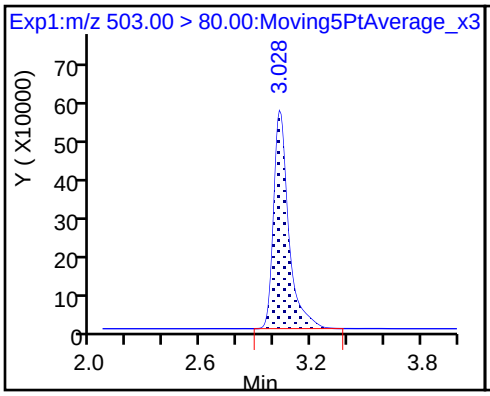
16 Perfluoroheptanesulfonic acid (ND)



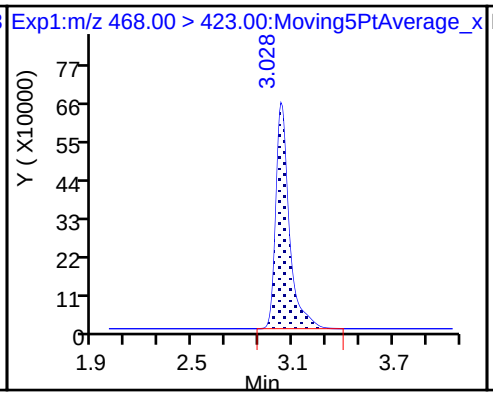
16 Perfluoroheptanesulfonic acid (ND)



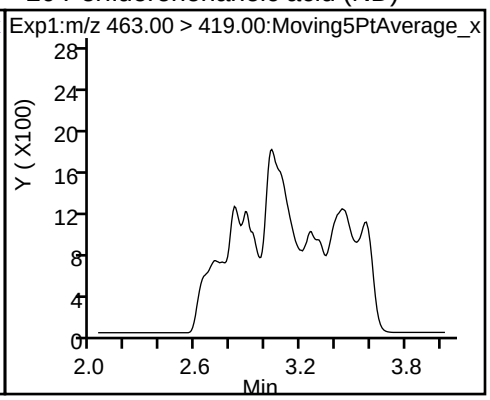
D 18 13C4 PFOS



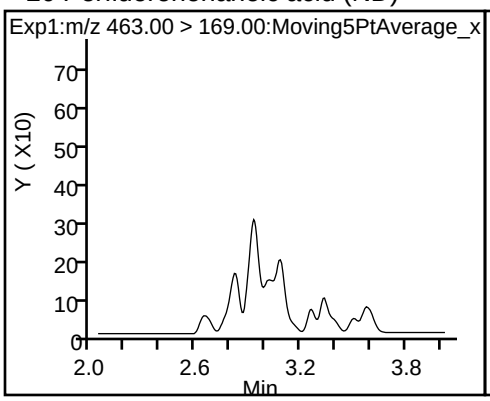
D 19 13C5 PFNA



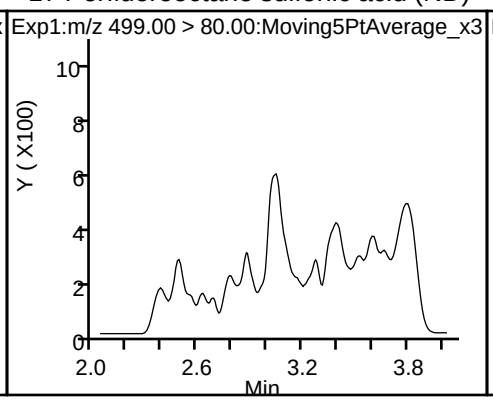
20 Perfluorononanoic acid (ND)



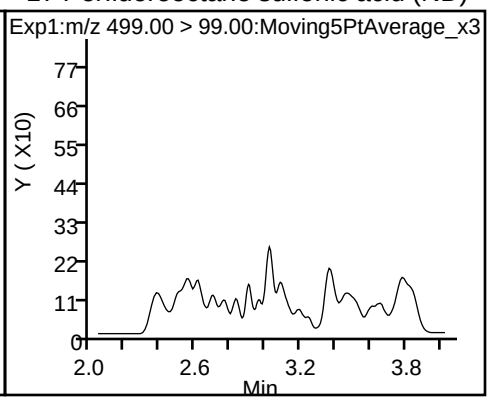
20 Perfluorononanoic acid (ND)



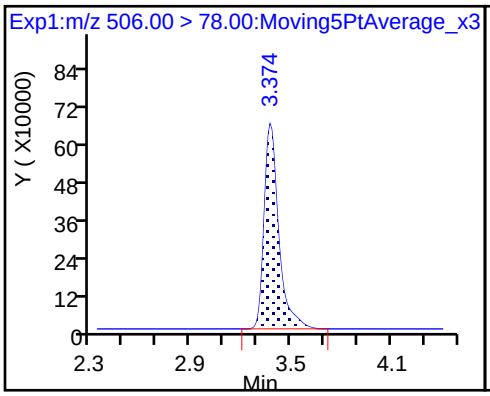
17 Perfluorooctane sulfonic acid (ND)



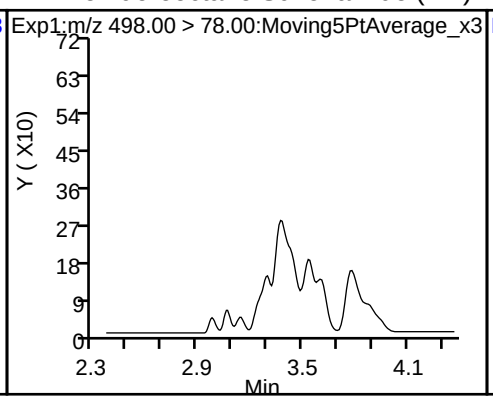
17 Perfluorooctane sulfonic acid (ND)



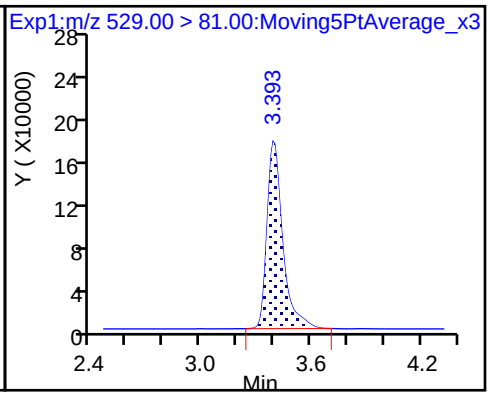
D 21 13C8 FOSA



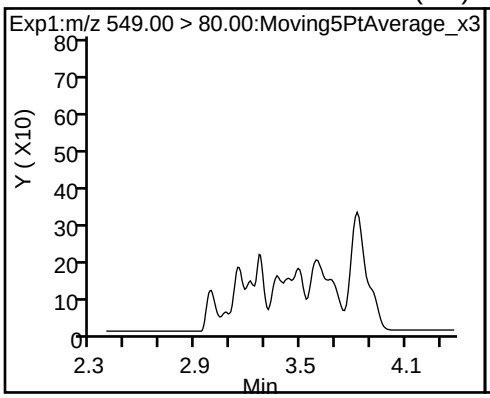
22 Perfluorooctane Sulfonamide (ND)



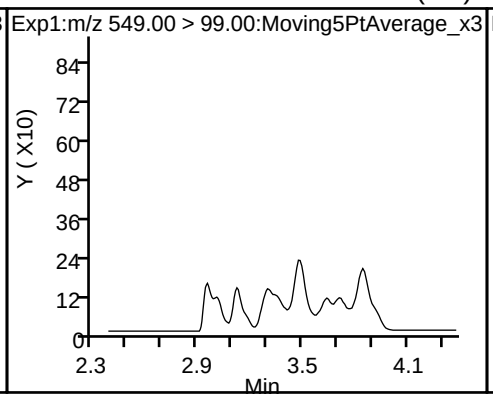
D 26 M2-8:2FTS



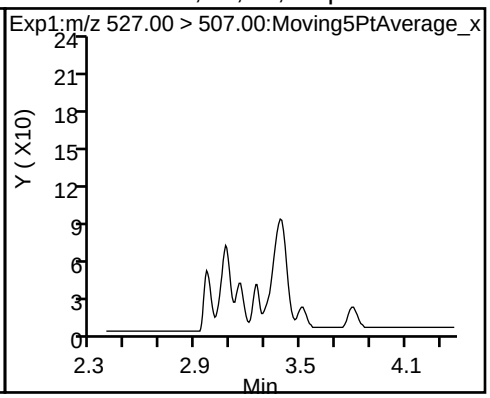
68 Perfluorononanesulfonic acid (ND)



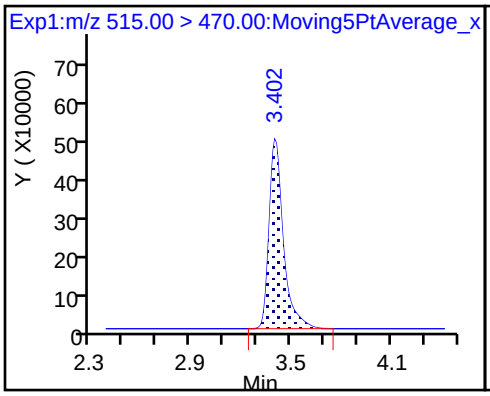
68 Perfluorononanesulfonic acid (ND)



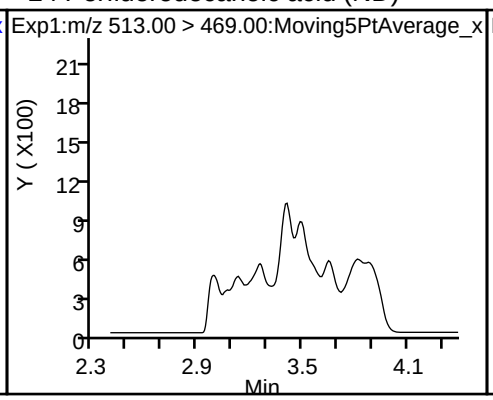
25 Sodium 1H,1H,2H,2H-perfluorodecane (ND)



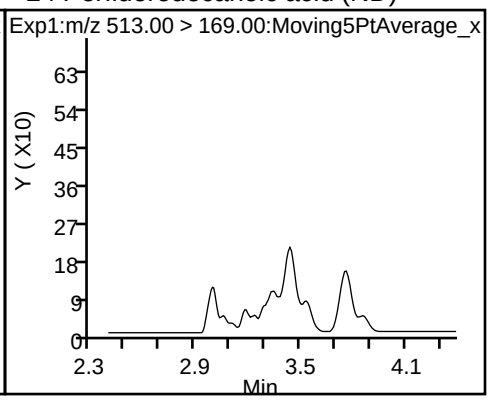
D 23 13C2 PFDA



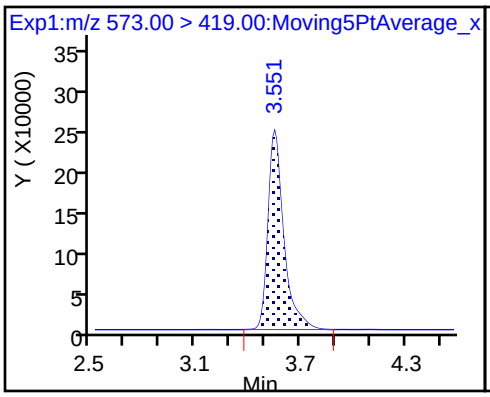
24 Perfluorodecanoic acid (ND)



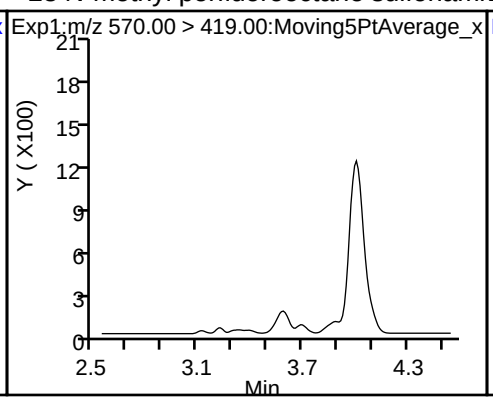
24 Perfluorodecanoic acid (ND)



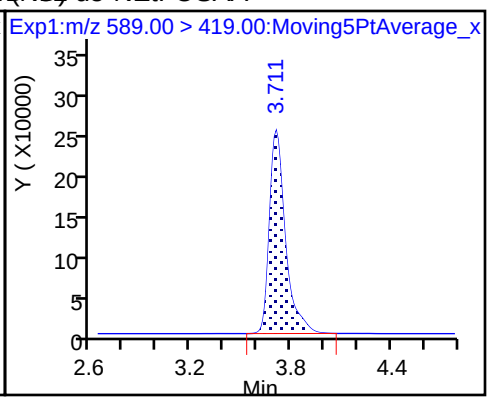
D 27 d3-NMeFOSAA



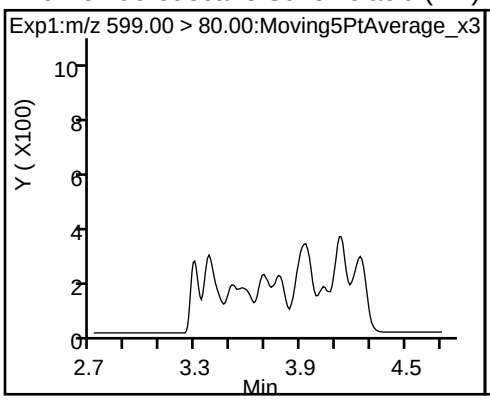
28 N-methyl perfluorooctane sulfonamid



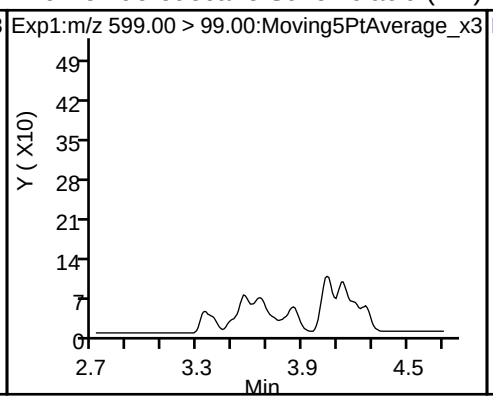
D 32 d5-NEtFOSAA



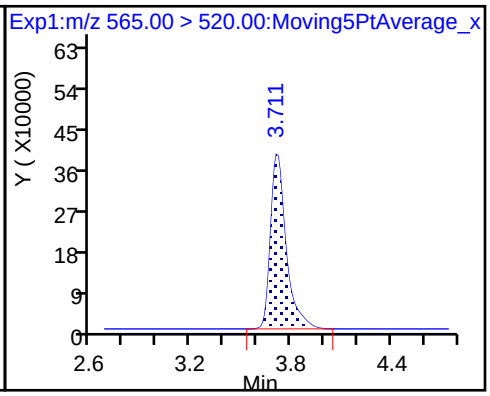
29 Perfluorodecane Sulfonic acid (ND)



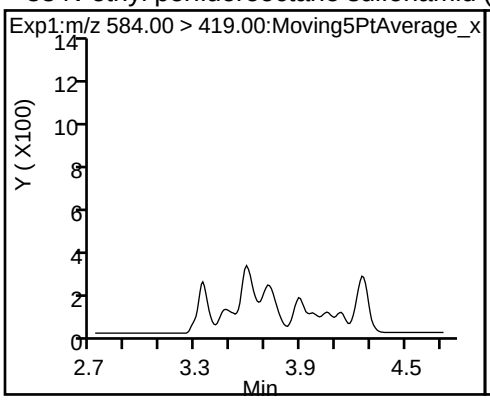
29 Perfluorodecane Sulfonic acid (ND)



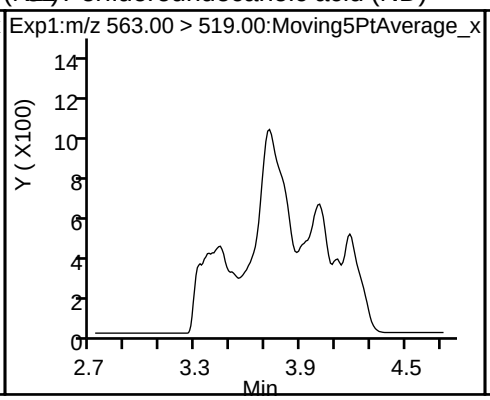
D 30 13C2 PFUnA



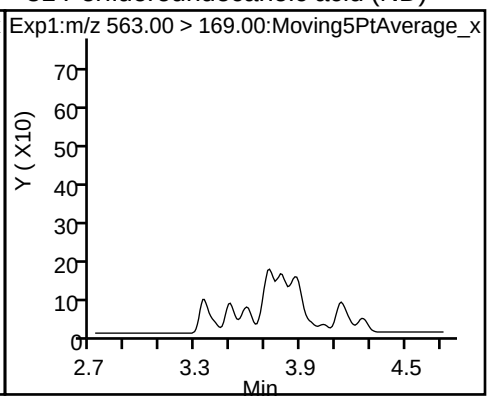
33 N-ethyl perfluorooctane sulfonamid (ND)



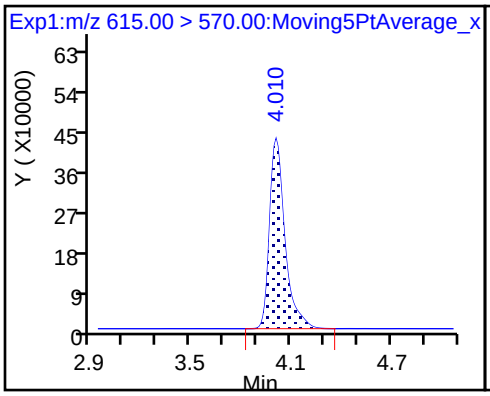
31 Perfluoroundecanoic acid (ND)



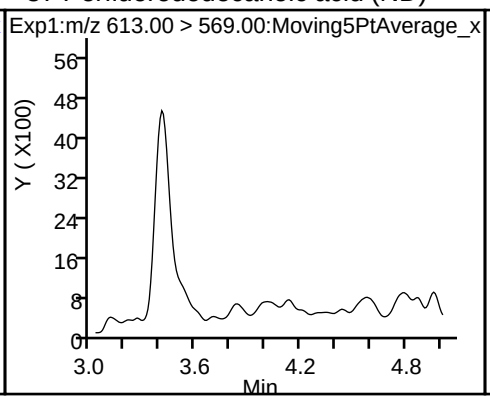
31 Perfluoroundecanoic acid (ND)



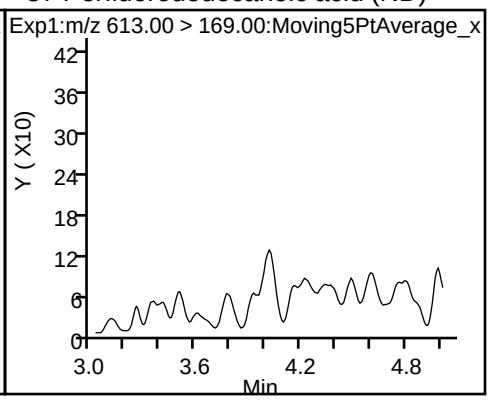
D 36 13C2 PFDoA



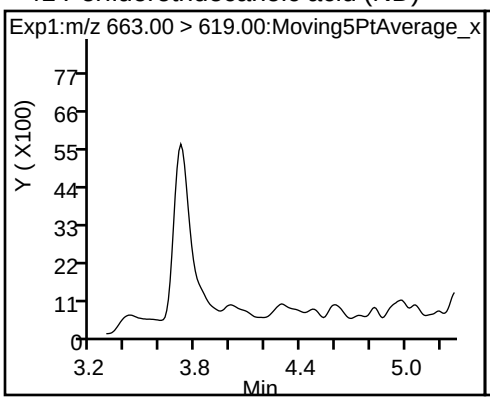
37 Perfluorododecanoic acid (ND)



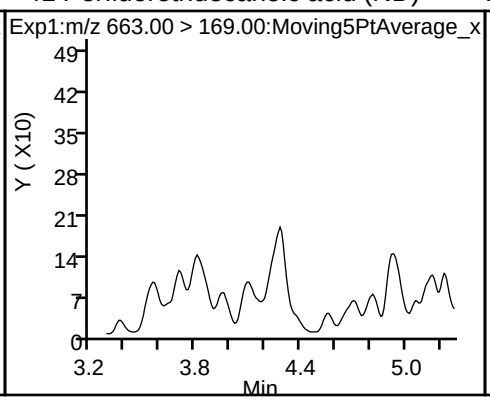
37 Perfluorododecanoic acid (ND)



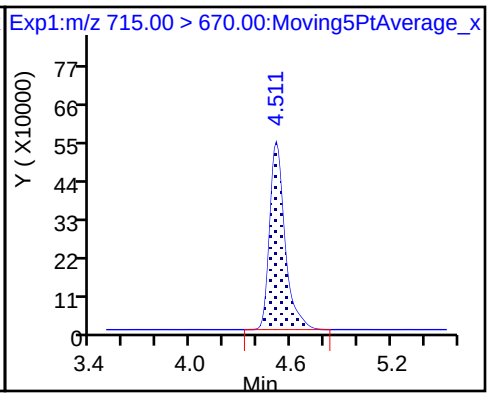
41 Perfluorotridecanoic acid (ND)



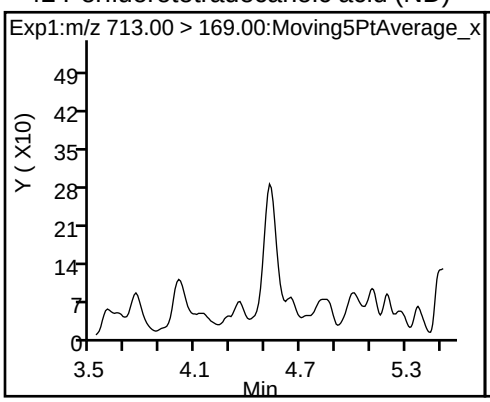
41 Perfluorotridecanoic acid (ND)



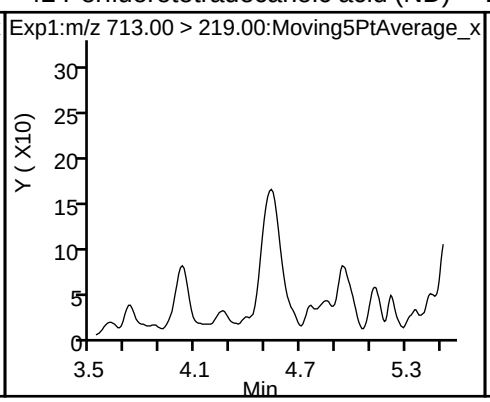
D 43 13C2-PFTeDA



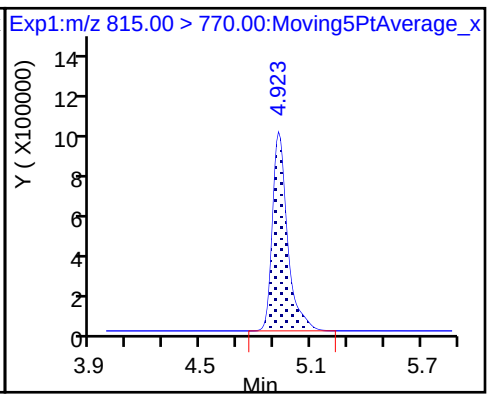
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-214457/1-A

Matrix: Water | Lab File ID: 2018.03.24LLAA_007.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 250(mL) | Date Analyzed: 03/24/2018 19:26

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U M	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	1.0	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	70		50-150
STL01892	13C4-PFHpA	69		50-150
STL00990	13C4 PFOA	67		50-150
STL00995	13C5 PFNA	68		50-150
STL00994	18O2 PFHxS	71		50-150
STL00991	13C4 PFOS	67		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_007.d
Lims ID: MB 320-214457/1-A
Client ID:
Sample Type: MB
Inject. Date: 24-Mar-2018 19:26:45 ALS Bottle#: 1 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-214457/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:46:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.462	1.459	0.003	0.538	5711726	1.74		69.7	81964	
2 Perfluorobutyric acid										
212.90 > 169.00	1.462	1.462	0.0	1.000	28010	0.0130			8.9	
D 3 13C5-PFPeA										
267.90 > 223.00	1.723	1.727	-0.004	0.634	3766642	1.73		69.2	122198	
D 47 13C3-PFBS										
301.90 > 83.00	1.758	1.762	-0.004	0.648	81306	1.64		70.4	437	
D 7 13C2 PFHxA										
315.00 > 270.00	2.014	2.019	-0.005	0.742	4019275	1.67		66.8	104919	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.374	2.361	0.013	1.000	15899	0.006866			50.9	
399.00 > 99.00	2.374	2.361	0.013	1.000	5765		2.76(1.50-4.49)		14.5	
D 9 13C4-PFHpA										
367.00 > 322.00	2.349	2.368	-0.019	0.865	4095148	1.72		69.0	79682	
D 11 18O2 PFHxS										
403.00 > 84.00	2.374	2.380	-0.006	0.874	4920407	1.68		71.0	87293	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.691	2.691	0.0	1.000	316754	0.4334			459	
D 12 M2-6:2FTS										
429.00 > 81.00	2.691	2.704	-0.013	0.991	995450	2.02		85.2	19977	
* 62 13C2-PFOA										
415.00 > 370.00	2.715	2.714	0.001		6477006	2.50			103686	
D 14 13C4 PFOA										
417.00 > 372.00	2.715	2.728	-0.013	1.000	4098058	1.69		67.5	108214	
D 19 13C5 PFNA										
468.00 > 423.00	3.090	3.112	-0.022	1.138	3658077	1.71		68.3	73409	
D 18 13C4 PFOS										
503.00 > 80.00	3.090	3.112	-0.022	1.138	3415748	1.60		67.1	52317	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.419	3.411	0.008	1.000	2002	0.001090			84.2	
D 21 13C8 FOSA										
506.00 > 78.00	3.419	3.418	0.001	1.259	4659554	1.62		64.9	53110	
D 26 M2-8:2FTS										
529.00 > 81.00	3.446	3.464	-0.018	1.269	1212578	1.82		76.2	34520	
D 23 13C2 PFDA										
515.00 > 470.00	3.455	3.473	-0.018	1.273	3198309	1.70		68.2	34541	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.615	3.633	-0.018	1.331	1547989	1.57		62.7	30159	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.774	3.784	-0.010	0.997	2817	0.004637			50.8	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.784	3.804	-0.020	1.394	1625663	1.44		57.8	6640	
D 30 13C2 PFUnA										
565.00 > 520.00	3.784	3.815	-0.031	1.394	2581818	1.54		61.5	53982	
D 36 13C2 PFDoA										
615.00 > 570.00	4.083	4.105	-0.022	1.504	2695715	1.41		56.6	17063	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.591	4.613	-0.022	1.691	3391817	1.46		58.3	19601	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.013	5.013	0.0	1.000	41220	NC			12.5	
813.00 > 169.00	5.013	5.013	0.0	1.000	7860		5.24(2.86-8.58)		87.4	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.013	5.049	-0.036	1.846	4590634	1.20		48.1	11294	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 25-Mar-2018 10:51:08 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_007.d

Injection Date: 24-Mar-2018 19:26:45 Instrument ID: A8_N

Lims ID: MB 320-214457/1-A

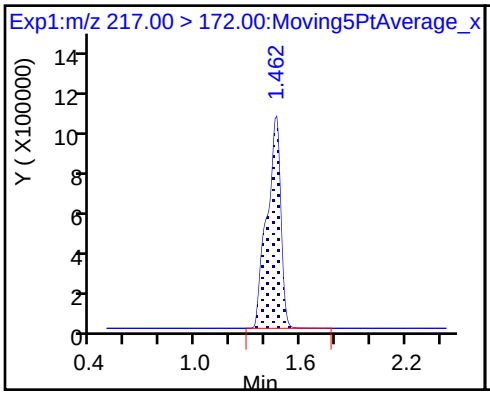
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 5

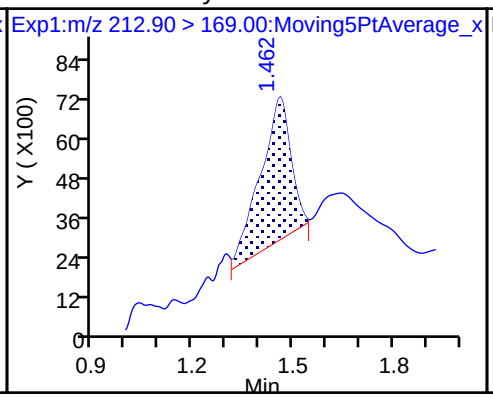
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

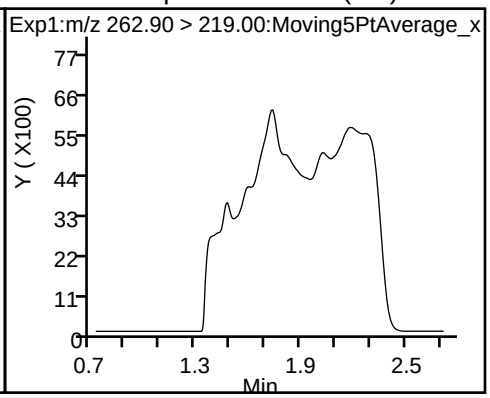
D 1 13C4 PFBA



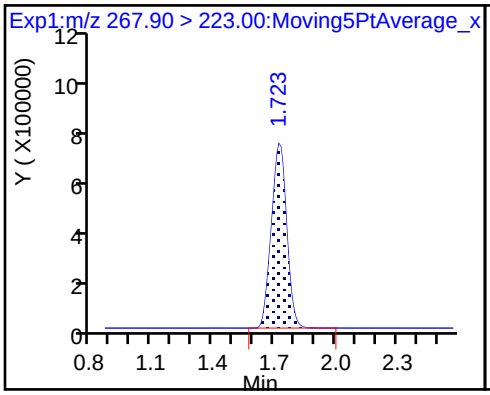
2 Perfluorobutyric acid



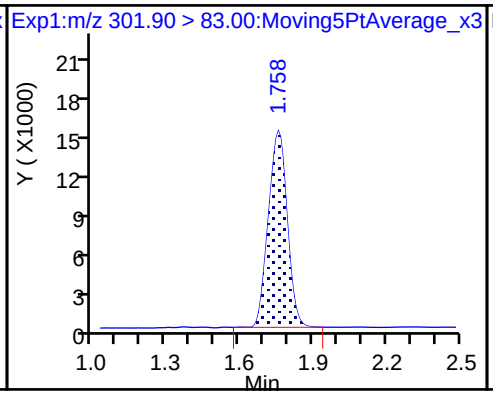
4 Perfluoropentanoic acid (ND)



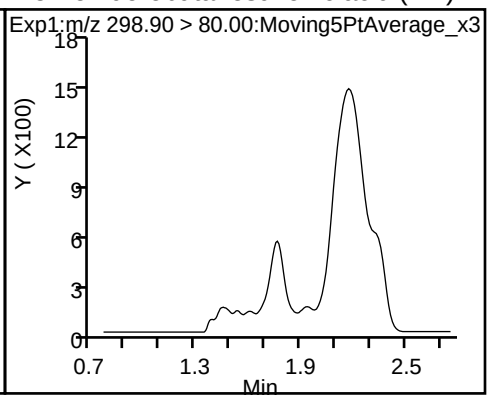
D 3 13C5-PFPeA



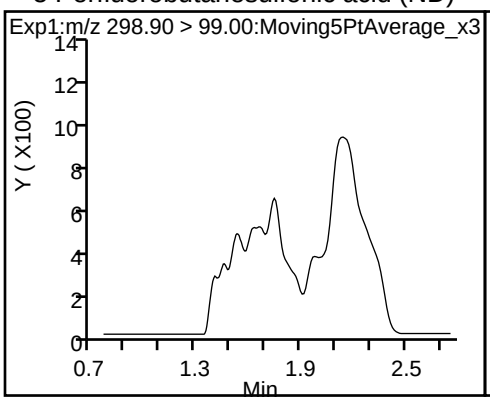
D 47 13C3-PFBS



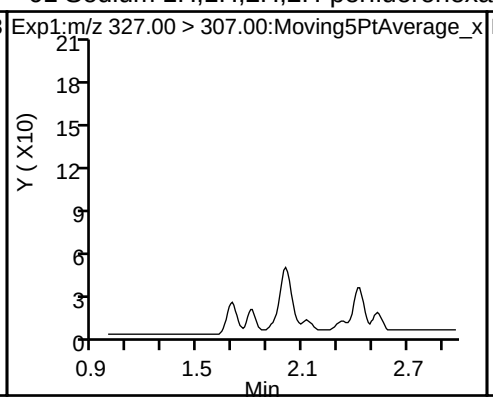
5 Perfluorobutanesulfonic acid (ND)



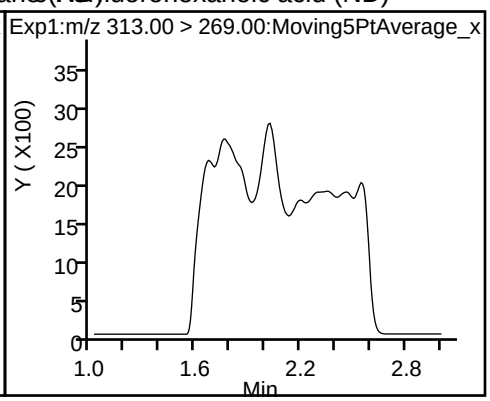
5 Perfluorobutanesulfonic acid (ND)



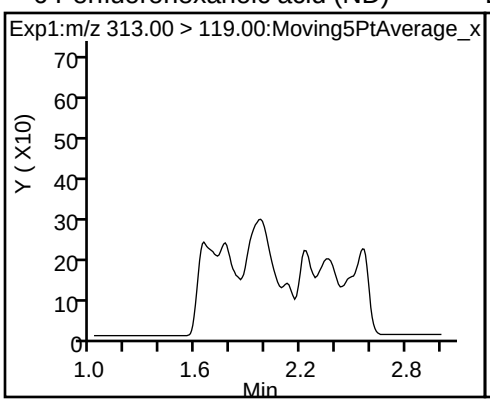
61 Sodium 1H,1H,2H,2H-perfluorohexane6(ND)



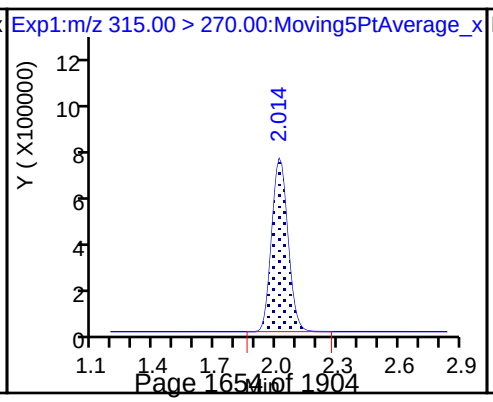
6 Perfluorohexanoic acid (ND)



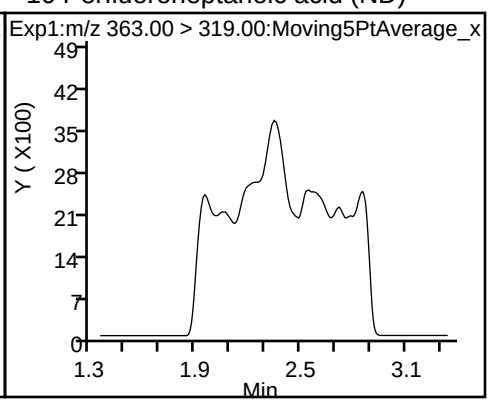
6 Perfluorohexanoic acid (ND)



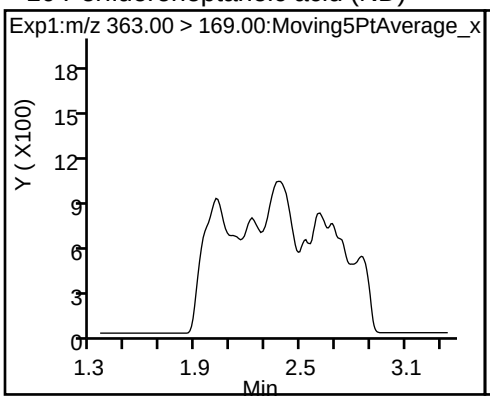
D 7 13C2 PFHxA



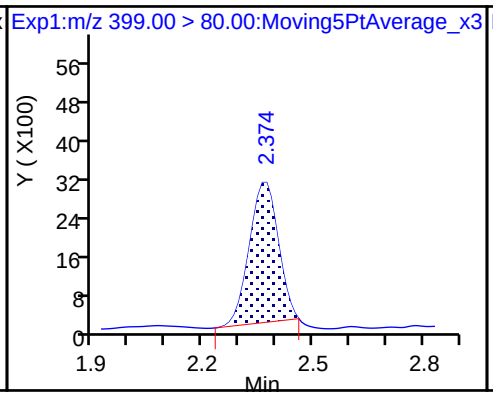
10 Perfluoroheptanoic acid (ND)



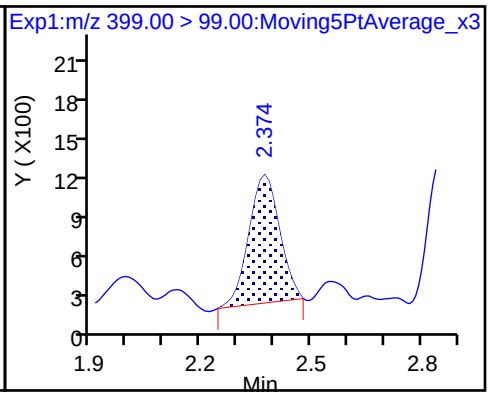
10 Perfluoroheptanoic acid (ND)



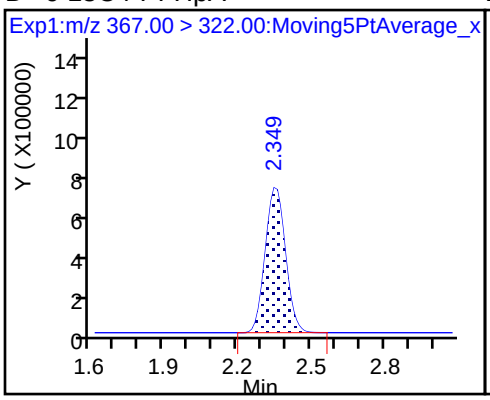
8 Perfluorohexanesulfonic acid



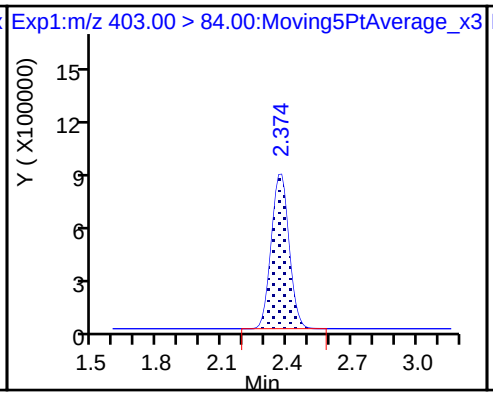
8 Perfluorohexanesulfonic acid



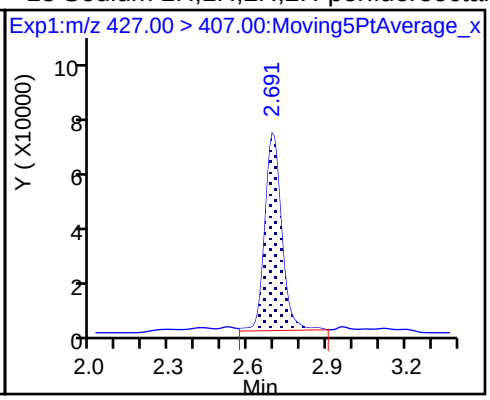
D 9 13C4-PFHpA



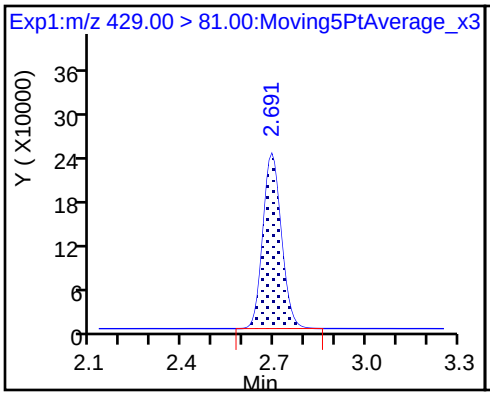
D 11 18O2 PFHxS



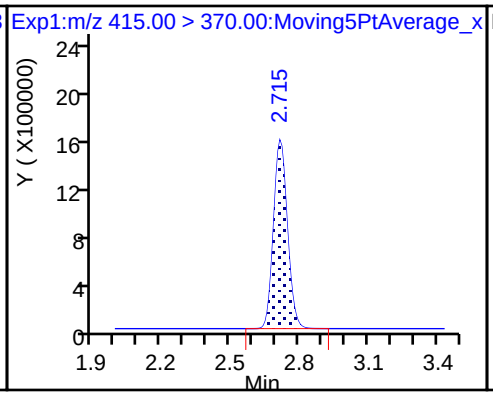
13 Sodium 1H,1H,2H,2H-perfluorooctane



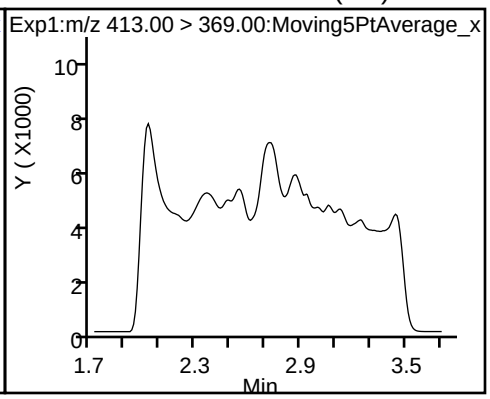
D 12 M2-6:2FTS



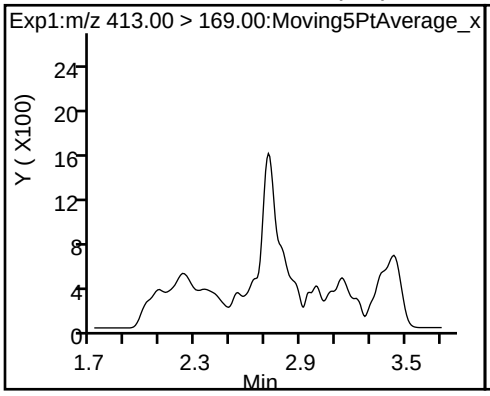
* 62 13C2-PFOA



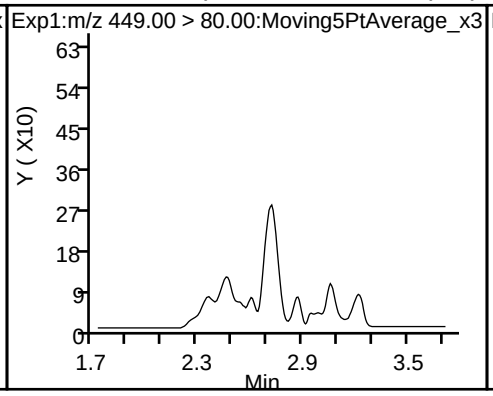
15 Perfluorooctanoic acid (ND)



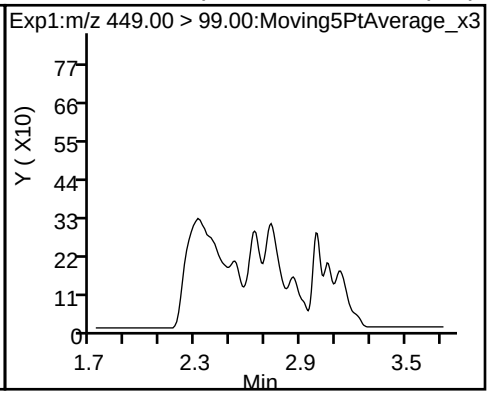
15 Perfluorooctanoic acid (ND)



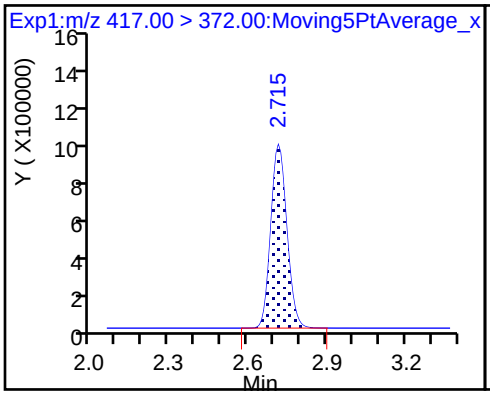
16 Perfluoroheptanesulfonic acid (ND)



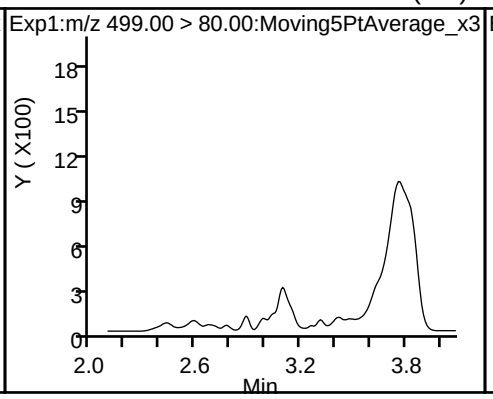
16 Perfluoroheptanesulfonic acid (ND)



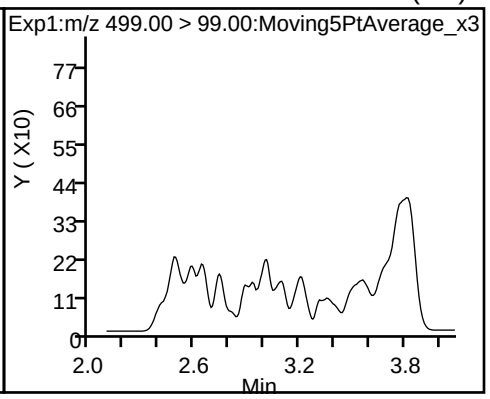
D 14 13C4 PFOA



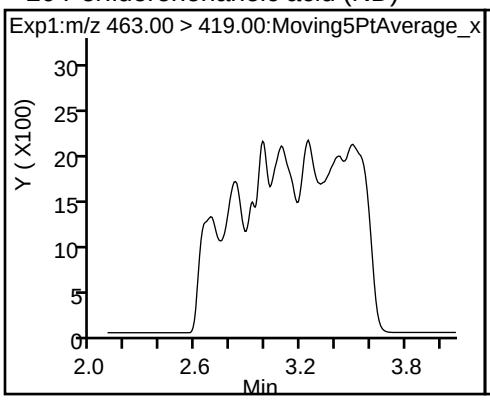
17 Perfluorooctane sulfonic acid (ND)



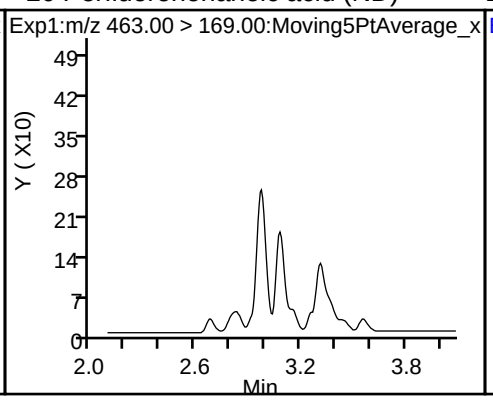
17 Perfluorooctane sulfonic acid (ND)



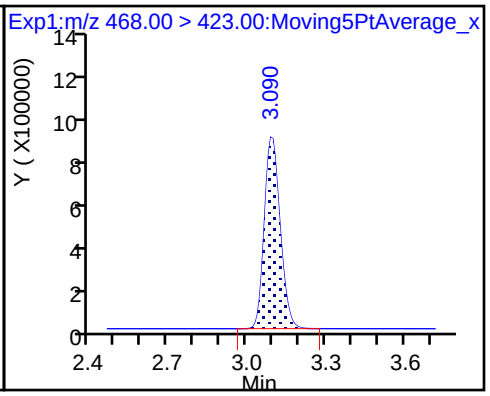
20 Perfluorononanoic acid (ND)



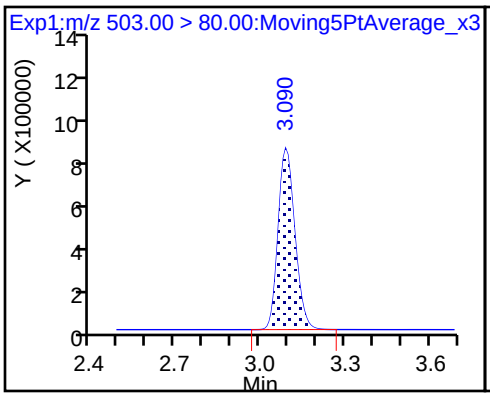
20 Perfluorononanoic acid (ND)



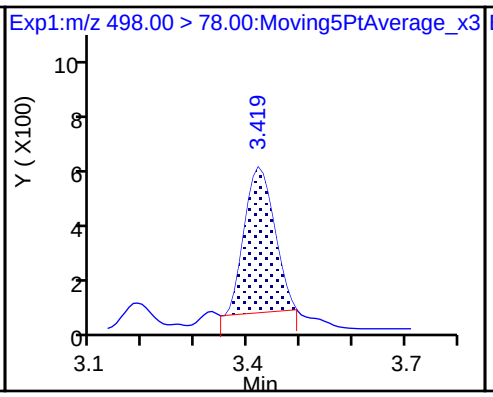
D 19 13C5 PFNA



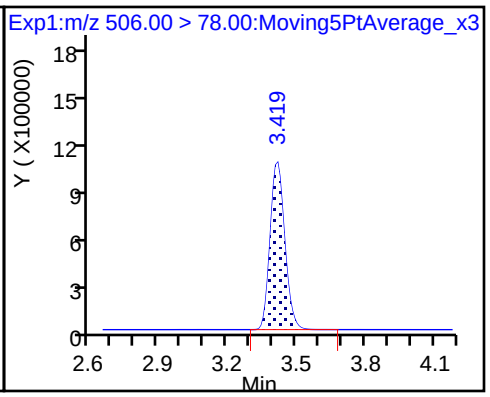
D 18 13C4 PFOS



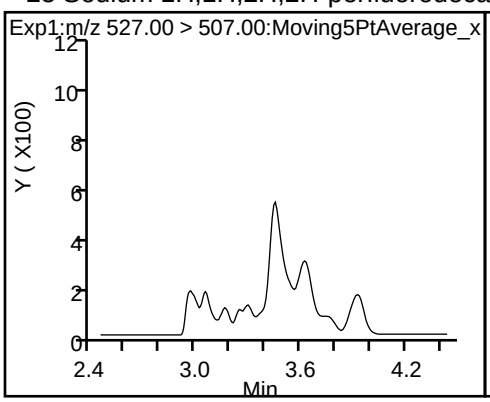
22 Perfluorooctane Sulfonamide



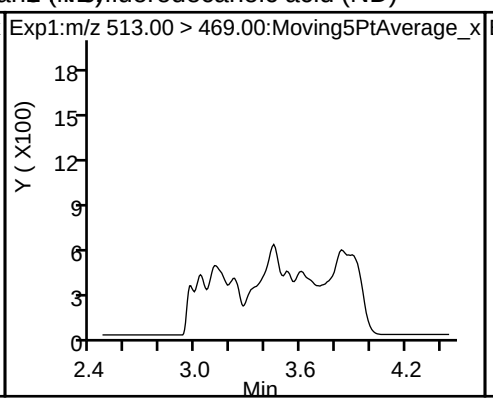
D 21 13C8 FOSA



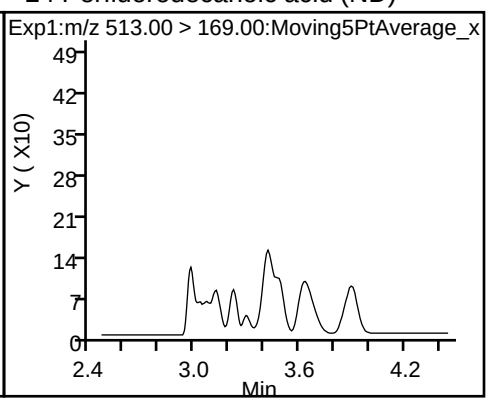
25 Sodium 1H,1H,2H,2H-perfluorodecane (ND)



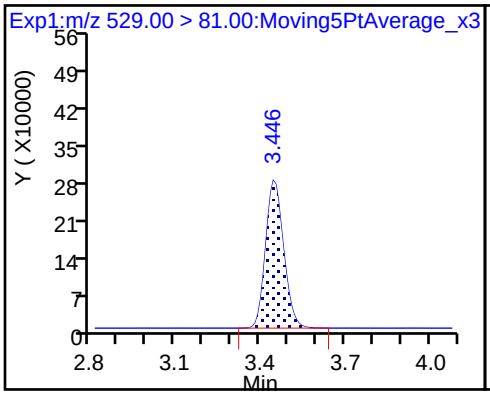
24 Perfluorodecanoic acid (ND)



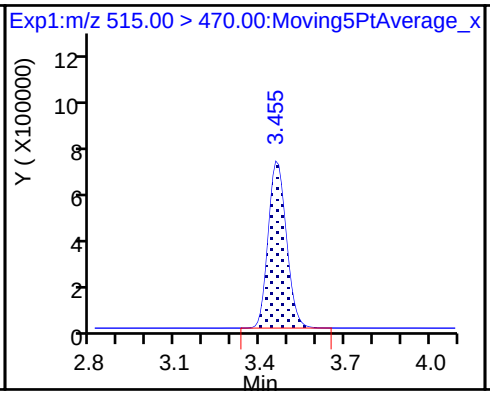
24 Perfluorodecanoic acid (ND)



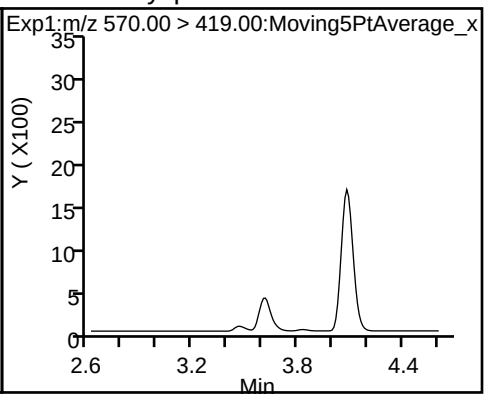
D 26 M2-8:2FTS



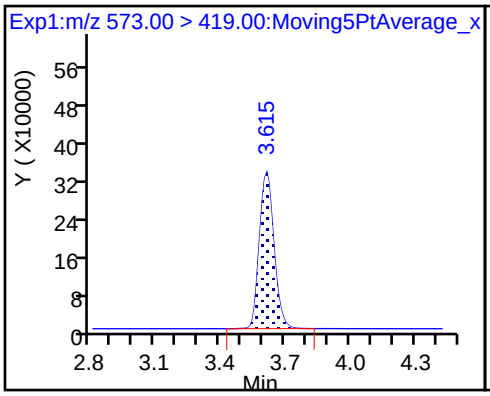
D 23 13C2 PFDA



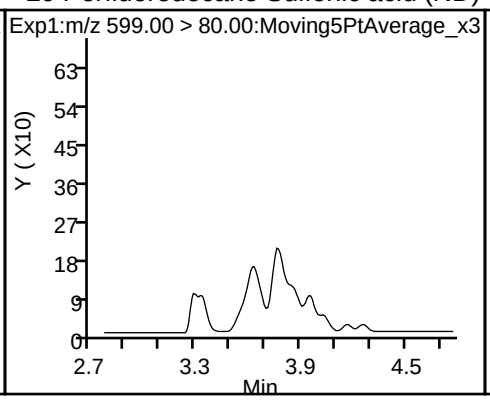
28 N-methyl perfluorooctane sulfonami (ND)



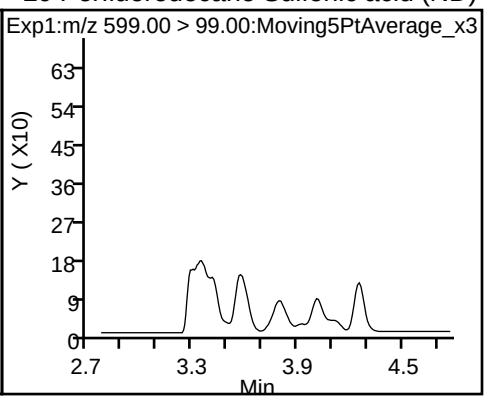
D 27 d3-NMeFOSAA



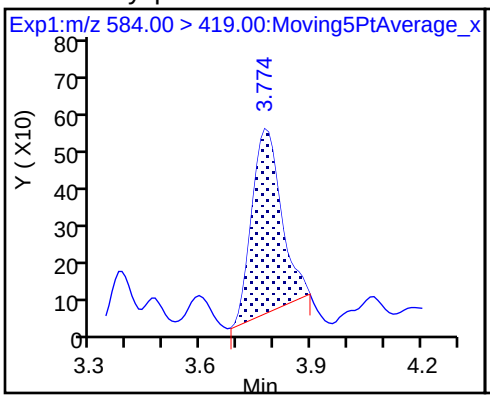
29 Perfluorodecane Sulfonic acid (ND)



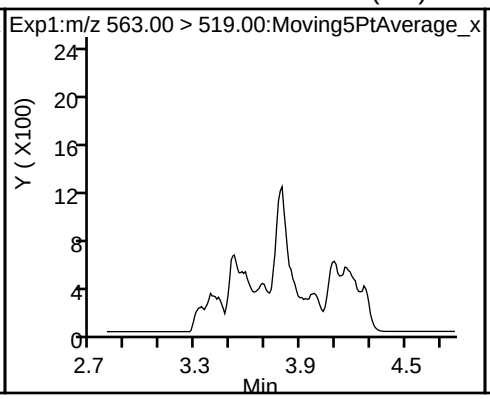
29 Perfluorodecane Sulfonic acid (ND)



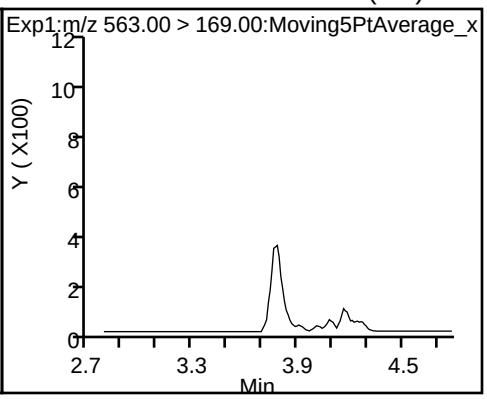
33 N-ethyl perfluorooctane sulfonamid



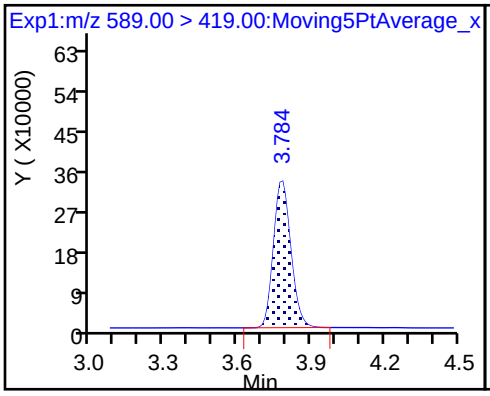
31 Perfluoroundecanoic acid (ND)



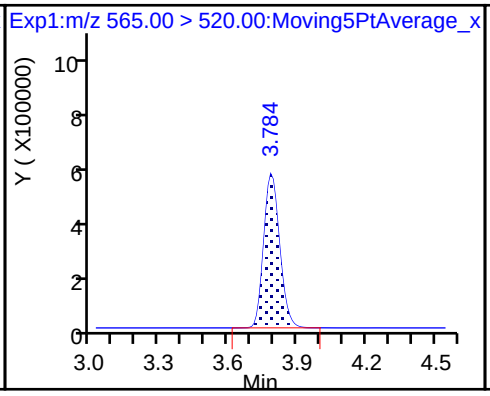
31 Perfluoroundecanoic acid (ND)



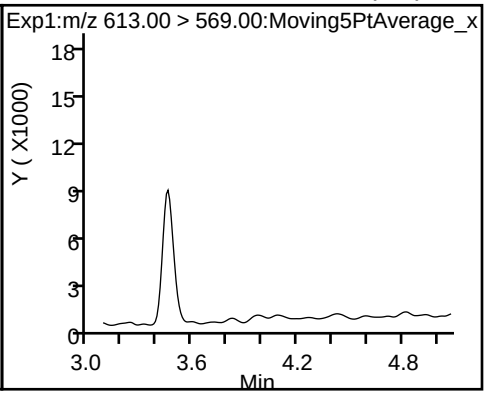
D 32 d5-NEtFOSAA



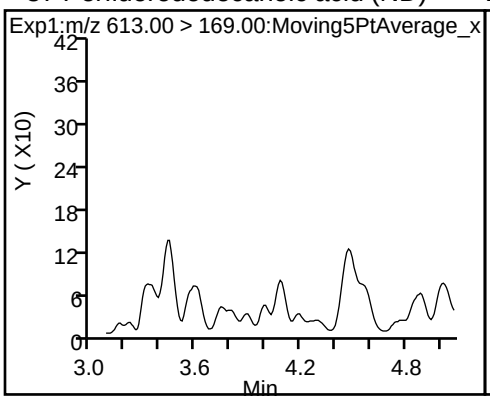
D 30 13C2 PFUnA



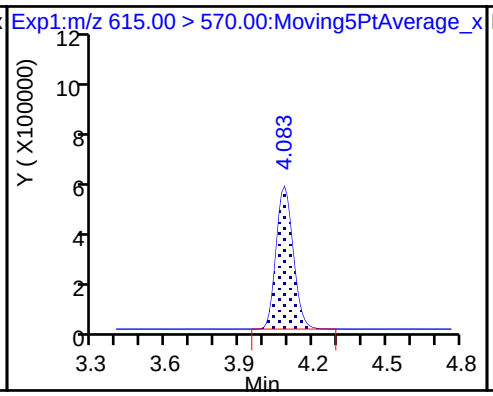
37 Perfluorododecanoic acid (ND)



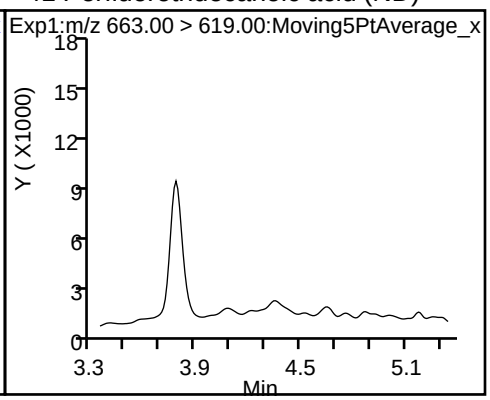
37 Perfluorododecanoic acid (ND)



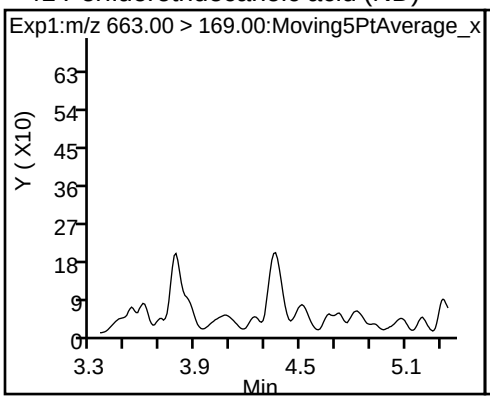
D 36 13C2 PFDoA



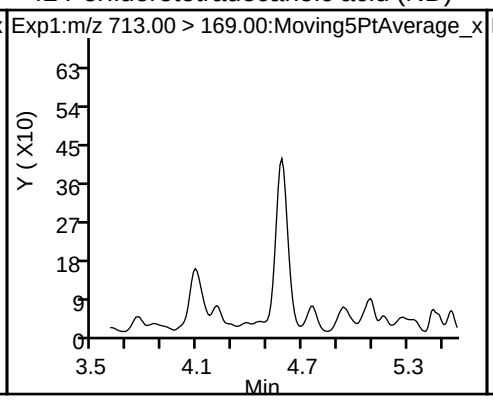
41 Perfluorotridecanoic acid (ND)



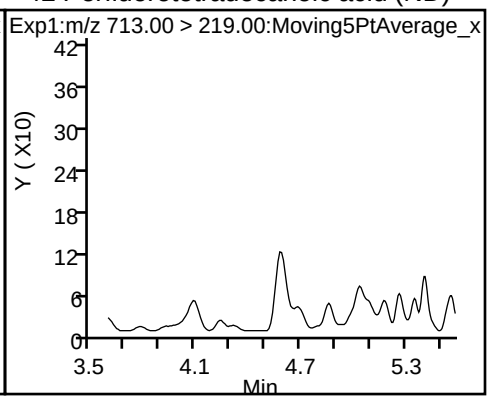
41 Perfluorotridecanoic acid (ND)



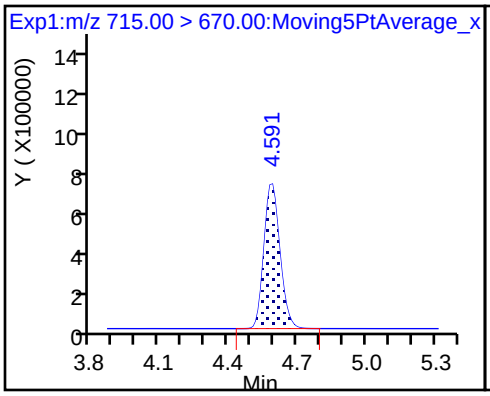
42 Perfluorotetradecanoic acid (ND)



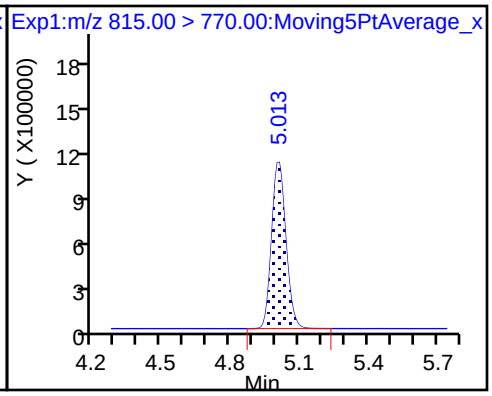
42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: CCB 320-213658/1

Matrix: Water | Lab File ID: 2018.03.19LLA_003.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 03/19/2018 10:10

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213658 | Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00762	J	0.050	0.040	0.0043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	99		50-150
STL01892	13C4-PFHpA	99		50-150
STL00990	13C4 PFOA	100		50-150
STL00995	13C5 PFNA	104		50-150
STL00994	18O2 PFHxS	100		50-150
STL00991	13C4 PFOS	100		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\2018.03.19LLA_003.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 19-Mar-2018 10:10:32 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 10:48:55 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK040

First Level Reviewer: hannigana Date: 19-Mar-2018 10:48:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.434	0.012	0.532	5308123	2.36		94.5	104849	
D 3 13C5-PFPeA										
267.90 > 223.00	1.717	1.691	0.026	0.632	3535084	2.23		89.2	77077	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.726	0.018	0.641	89703	2.29		98.6	528	
D 60 M2-4:2FTS										
329.00 > 81.00	1.965	1.945	0.020	0.723	449399	NC			4906	
D 7 13C2 PFHxA										
315.00 > 270.00	2.007	1.976	0.031	0.739	3959954	2.24		89.6	119319	
D 9 13C4-PFHpA										
367.00 > 322.00	2.340	2.315	0.025	0.861	4246137	2.47		98.8	80369	
D 11 18O2 PFHxS										
403.00 > 84.00	2.367	2.328	0.039	0.871	5423204	2.36		100.0	59009	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.367	2.354	0.013	1.000	19496	0.007623			3.2	
399.00 > 99.00	2.367	2.354	0.013	1.000	5510		3.54(1.50-4.49)		2.8	
D 12 M2-6:2FTS										
429.00 > 81.00	2.694	2.647	0.047	0.991	982017	2.23		93.9	19191	
D 14 13C4 PFOA										
417.00 > 372.00	2.718	2.679	0.039	1.000	4137799	2.49		99.7	96546	
* 62 13C2-PFOA										
415.00 > 370.00	2.718	2.712	0.006		4400639	2.50			60852	
D 18 13C4 PFOS										
503.00 > 80.00	3.095	3.051	0.044	1.139	3816458	2.38		99.5	58083	
D 19 13C5 PFNA										
468.00 > 423.00	3.095	3.051	0.044	1.139	3440148	2.59		104	82746	
D 21 13C8 FOSA										
506.00 > 78.00	3.406	3.388	0.018	1.253	5921957	2.55		102	61195	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.451	3.406	0.045	1.270	1077401	2.60		109	19915	
D 23 13C2 PFDA										
515.00 > 470.00	3.460	3.415	0.045	1.273	2992768	2.70		108	44878	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.620	3.569	0.051	1.332	990851	2.70		108	23055	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.789	3.738	0.051	1.394	1069950	3.05		122	1930	
D 30 13C2 PFUnA										
565.00 > 520.00	3.799	3.748	0.051	1.398	2248759	2.59		104	58680	
D 36 13C2 PFDoA										
615.00 > 570.00	4.098	4.036	0.062	1.508	2128877	2.58		103	15801	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.606	4.544	0.062	1.694	2202495	2.93		117	17875	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.025	4.955	0.070	1.849	3068559	2.79		112	9485	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.025	5.026	-0.001	1.000	24372	NC			2.6	
813.00 > 169.00	5.025	5.026	-0.001	1.000	3863		6.31(2.86-8.58)		36.0	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL0_00006 Amount Added: 1.00 Units: mL

Report Date: 19-Mar-2018 10:49:00 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b\2018.03.19LLA_003.d

Injection Date: 19-Mar-2018 10:10:32 Instrument ID: A8_N

Lims ID: CCB

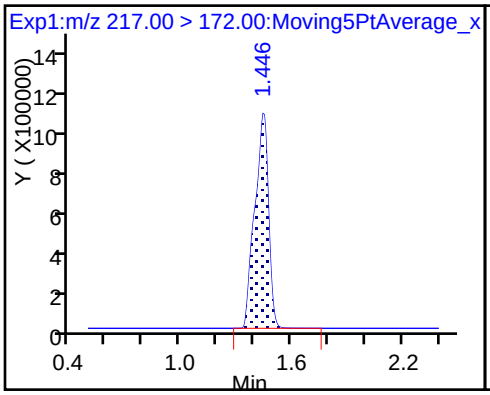
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1

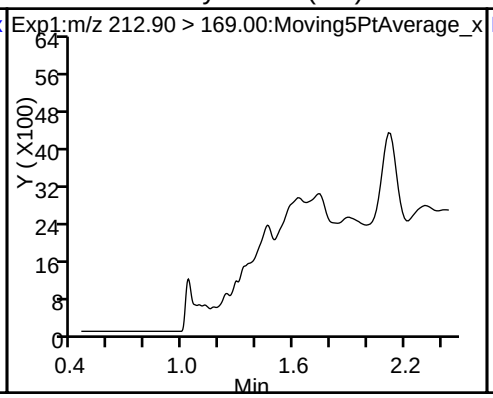
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

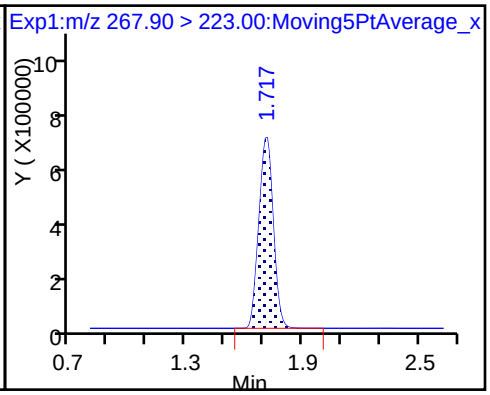
D 1 13C4 PFBA



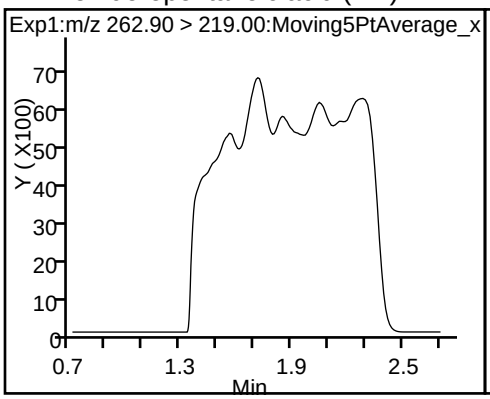
2 Perfluorobutyric acid (ND)



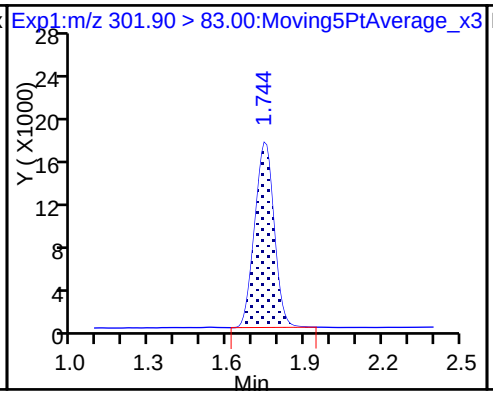
D 3 13C5-PFPeA



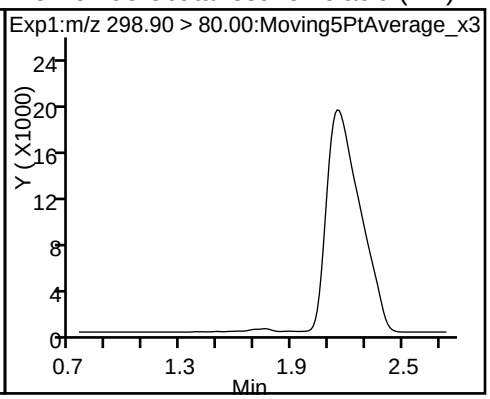
4 Perfluoropentanoic acid (ND)



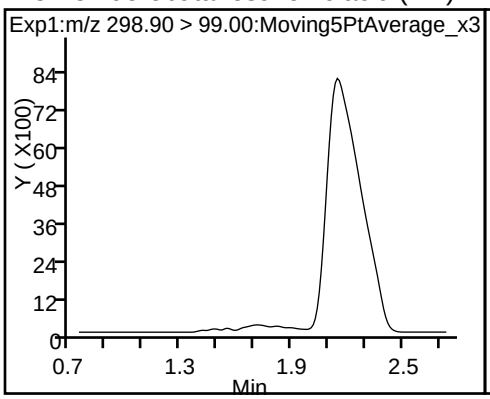
D 47 13C3-PFBS



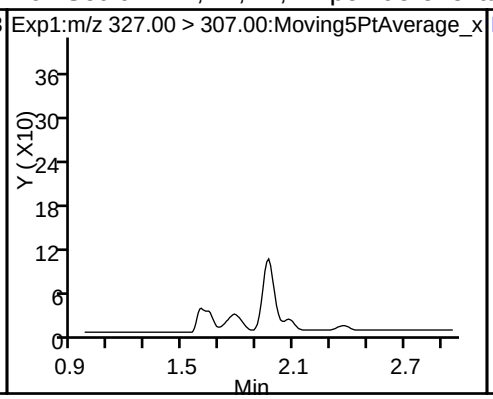
5 Perfluorobutanesulfonic acid (ND)



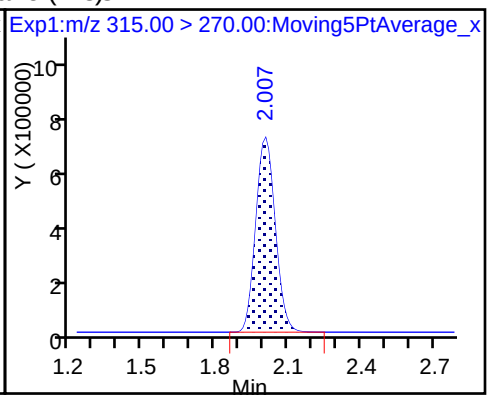
5 Perfluorobutanesulfonic acid (ND)



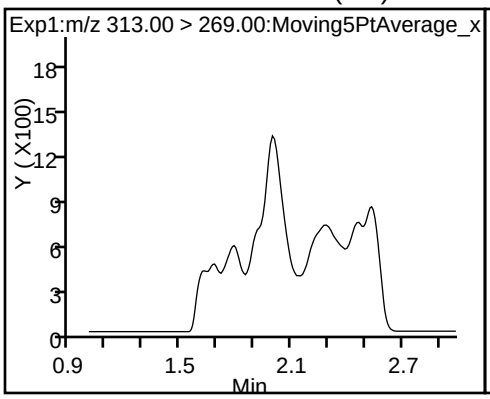
61 Sodium 1H,1H,2H,2H-perfluorohexane (ND)



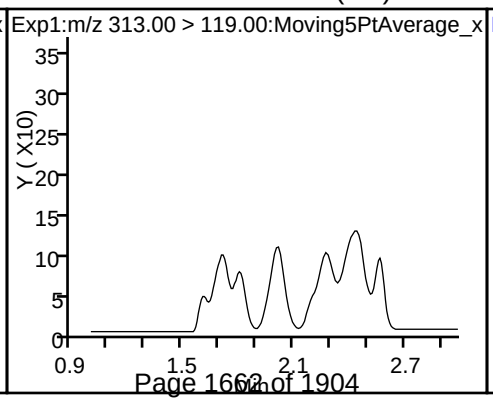
D 13C2 PFHxA



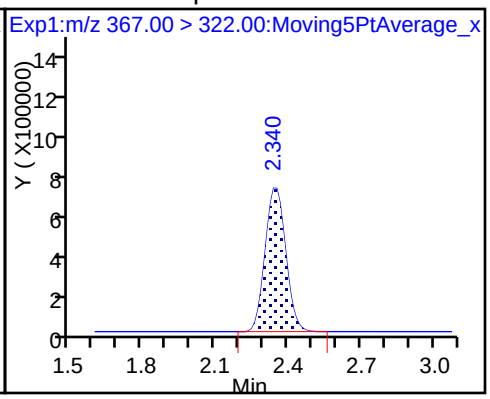
6 Perfluorohexanoic acid (ND)



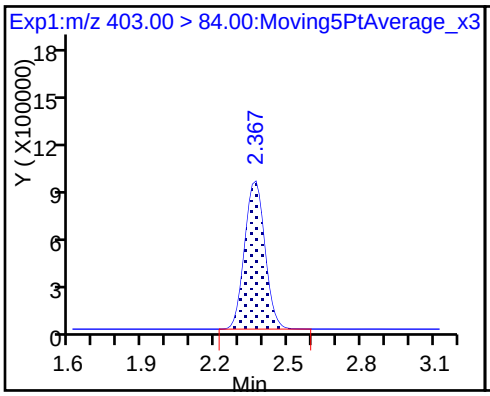
6 Perfluorohexanoic acid (ND)



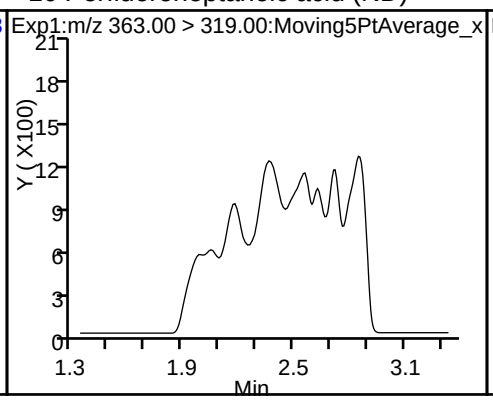
D 9 13C4-PFHpA



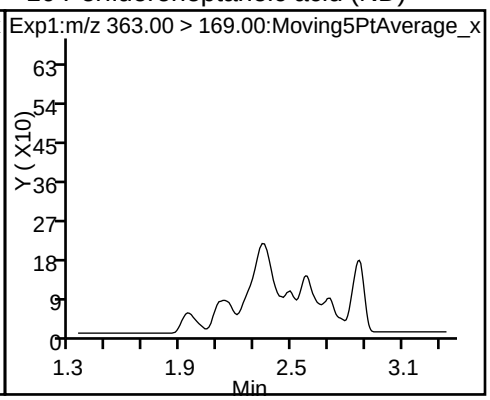
D 11 18O2 PFHxS



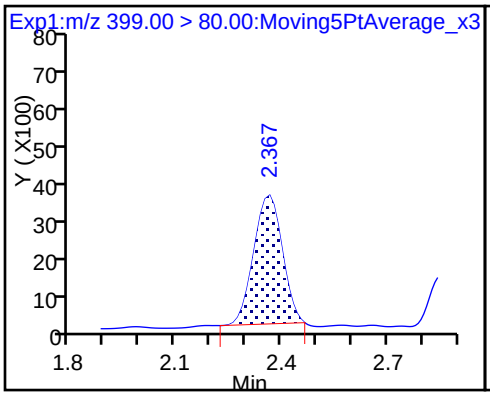
10 Perfluoroheptanoic acid (ND)



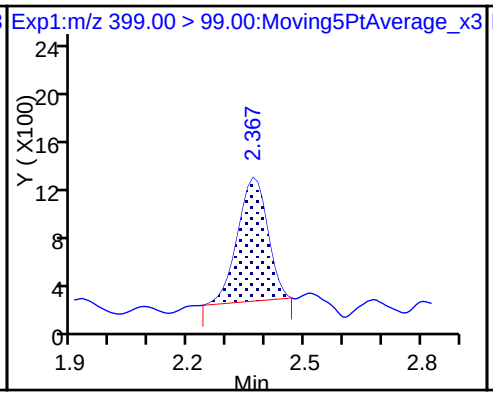
10 Perfluoroheptanoic acid (ND)



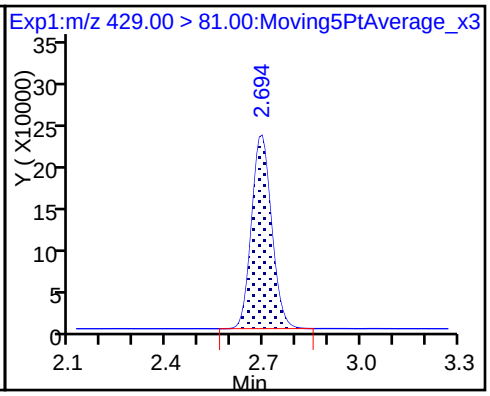
8 Perfluorohexanesulfonic acid



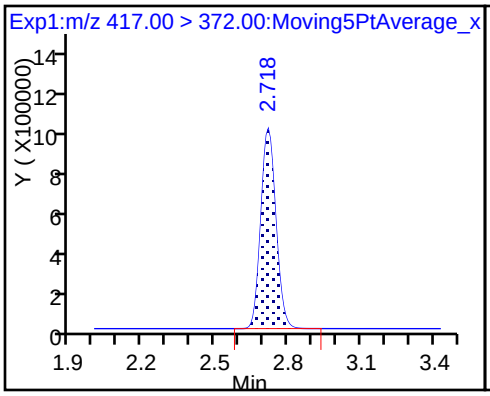
8 Perfluorohexanesulfonic acid



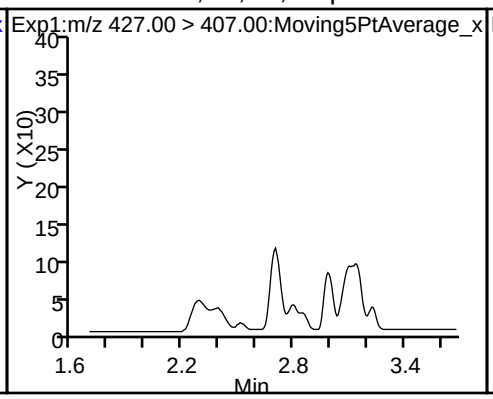
D 12 M2-6:2FTS



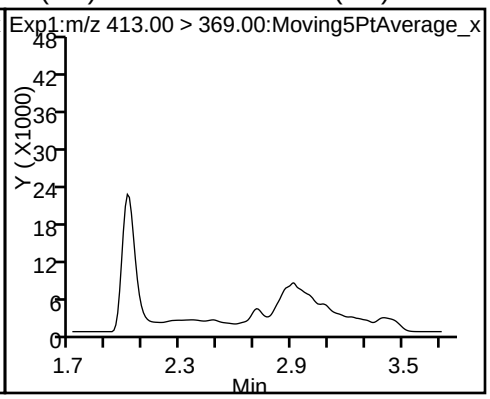
D 14 13C4 PFOA



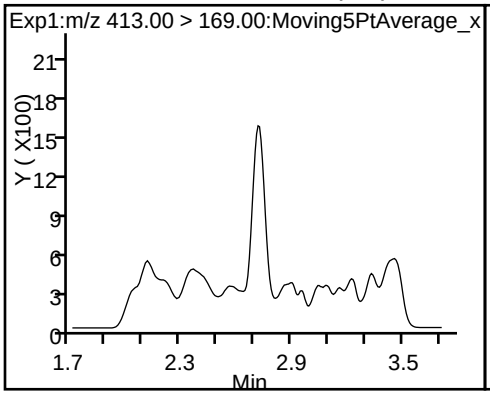
13 Sodium 1H,1H,2H,2H-perfluorooctanesulfonate



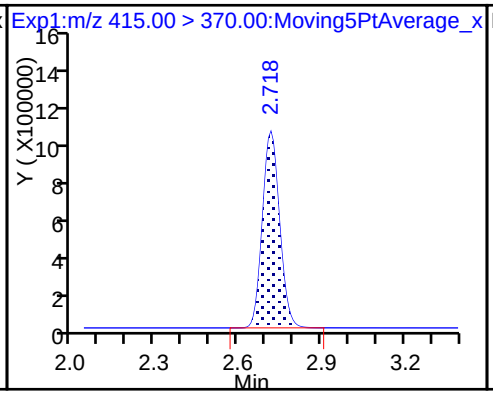
15 Perfluorooctanoic acid (ND)



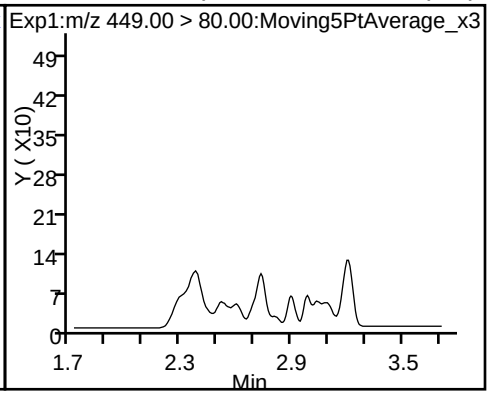
15 Perfluorooctanoic acid (ND)



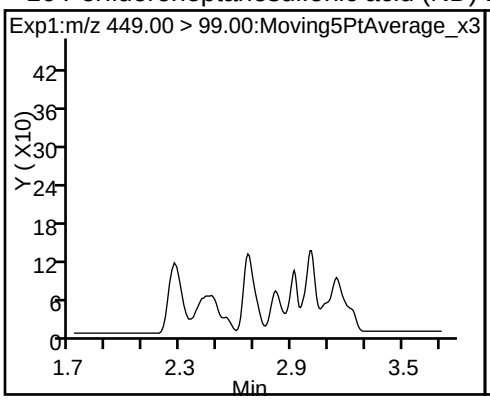
* 62 13C2-PFOA



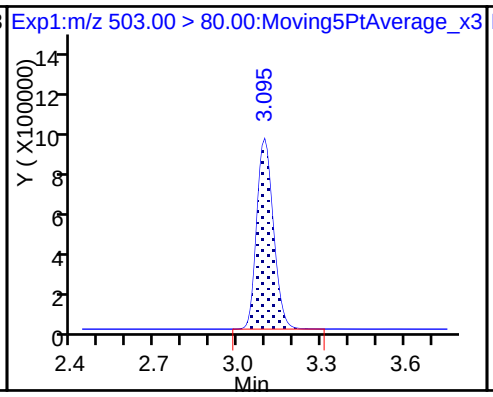
16 Perfluoroheptanesulfonic acid (ND)



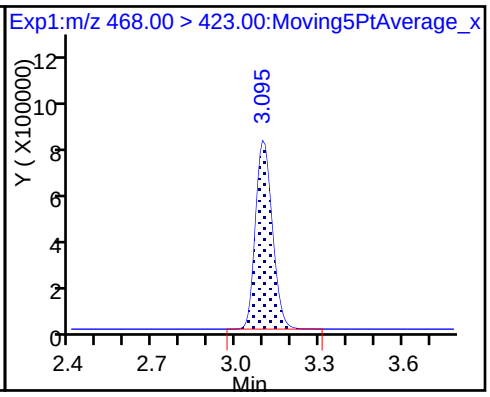
16 Perfluoroheptanesulfonic acid (ND)



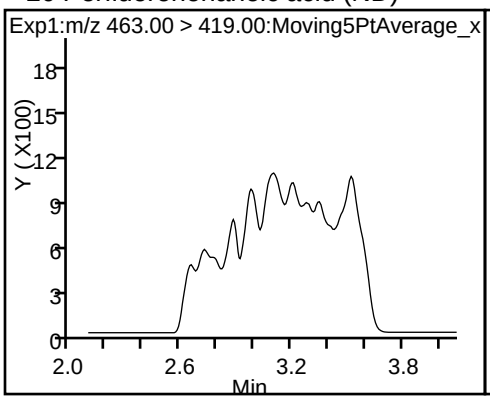
D 18 13C4 PFOS



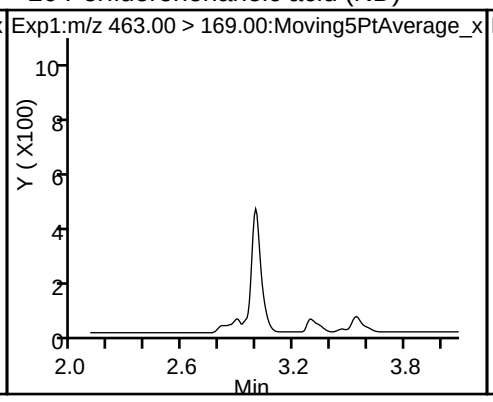
D 19 13C5 PFNA



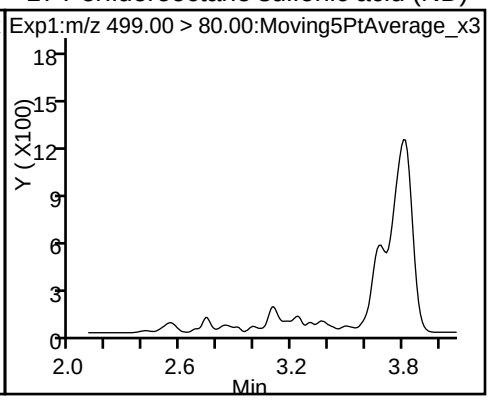
20 Perfluorononanoic acid (ND)



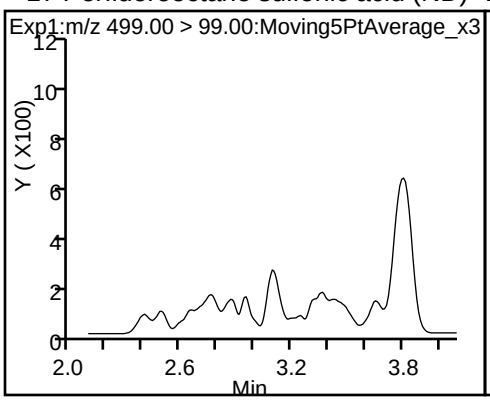
20 Perfluorononanoic acid (ND)



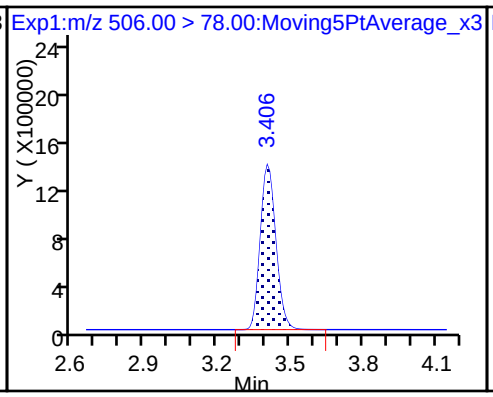
17 Perfluorooctane sulfonic acid (ND)



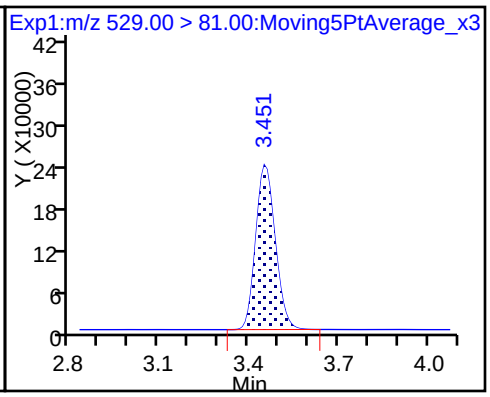
17 Perfluorooctane sulfonic acid (ND)



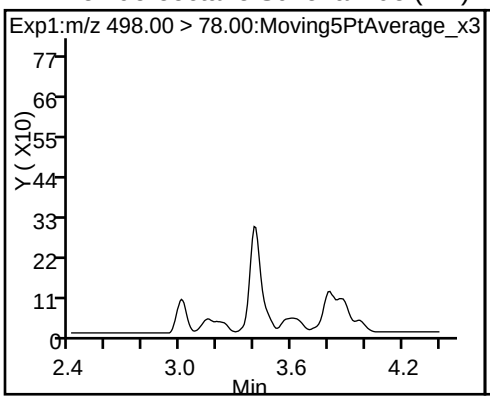
D 21 13C8 FOSA



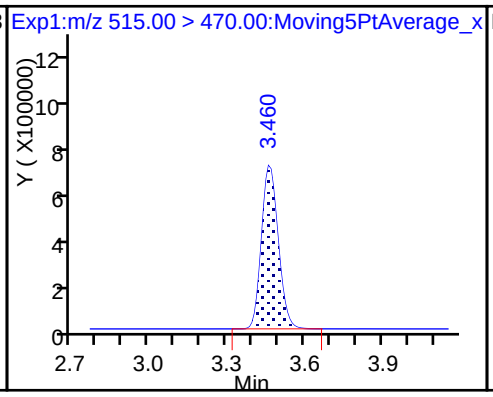
D 26 M2-8:2FTS



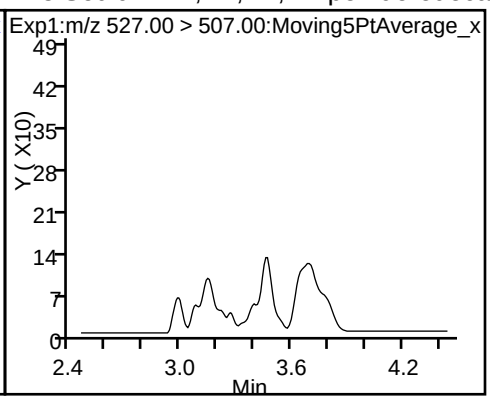
22 Perfluorooctane Sulfonamide (ND)



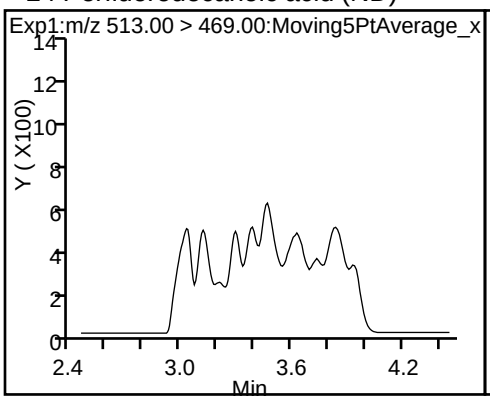
D 23 13C2 PFDA



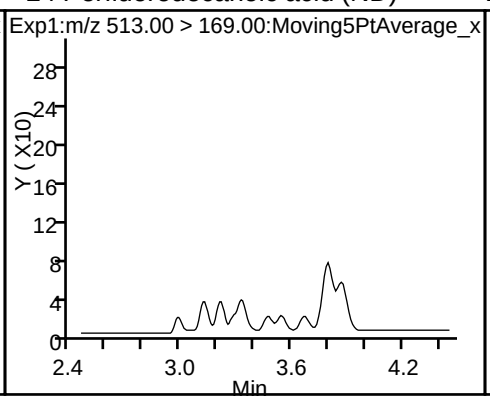
25 Sodium 1H,1H,2H,2H-perfluorodecane (ND)



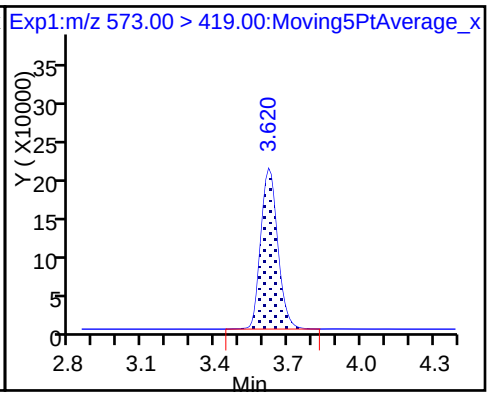
24 Perfluorodecanoic acid (ND)



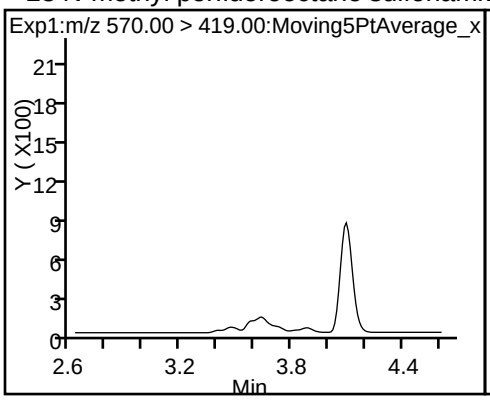
24 Perfluorodecanoic acid (ND)



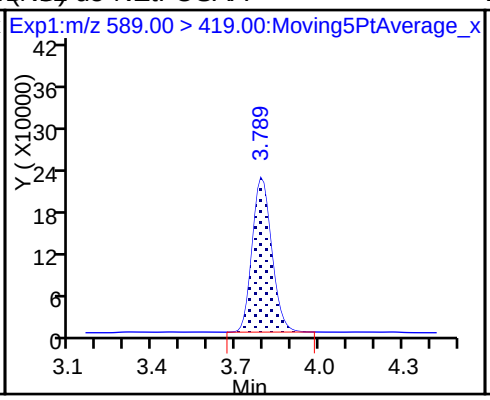
D 27 d3-NMeFOSAA



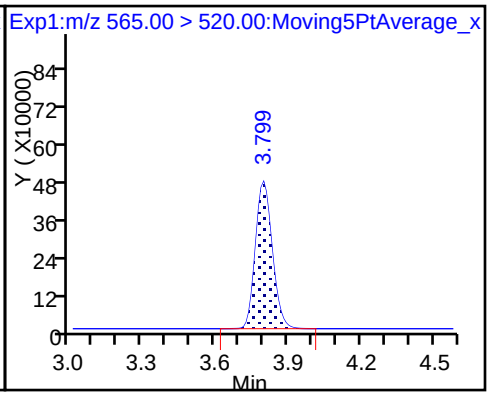
28 N-methyl perfluorooctane sulfonamid (ND)



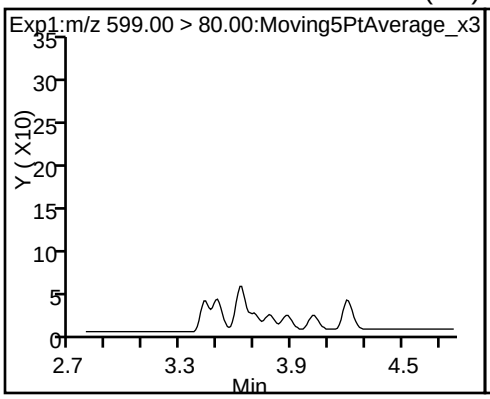
D 32 d5-NEtFOSAA



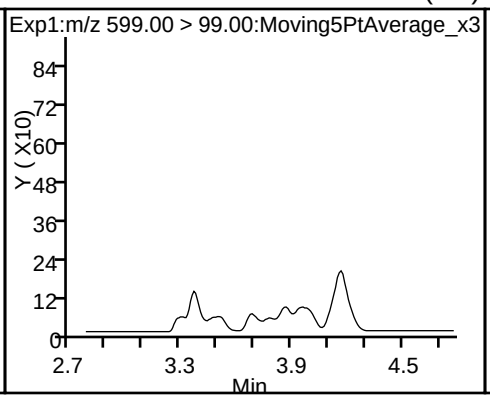
D 30 13C2 PFUnA



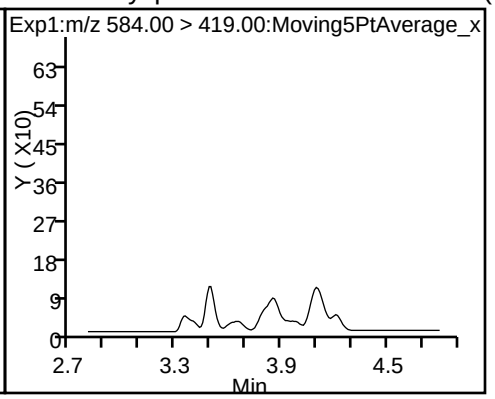
29 Perfluorodecane Sulfonic acid (ND)



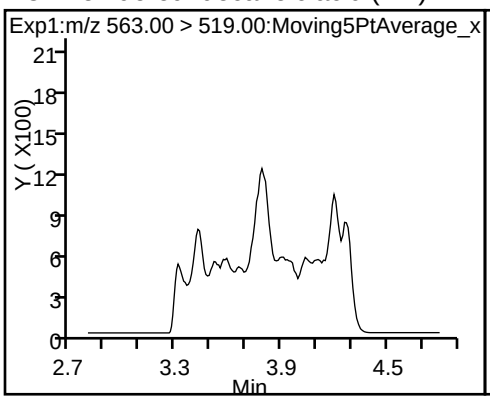
29 Perfluorodecane Sulfonic acid (ND)



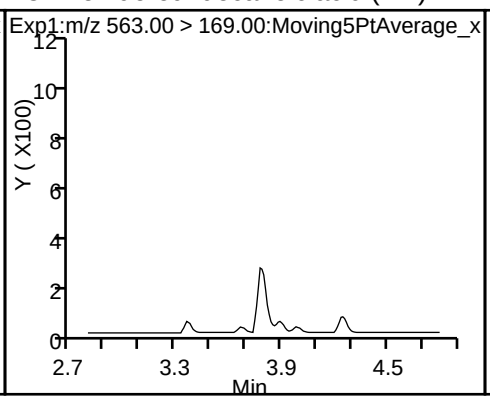
33 N-ethyl perfluorooctane sulfonamid (ND)



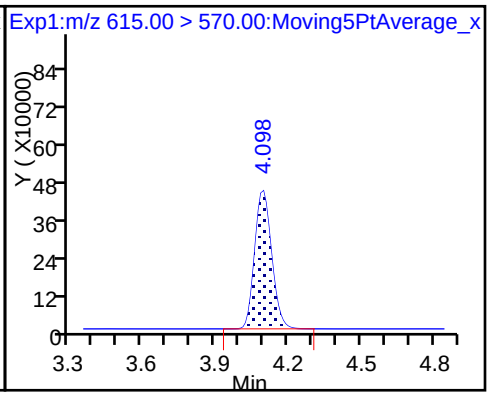
31 Perfluoroundecanoic acid (ND)



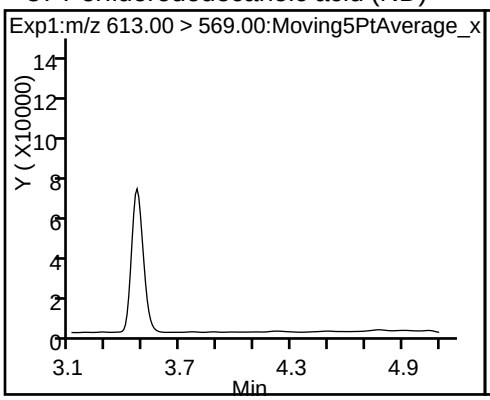
31 Perfluoroundecanoic acid (ND)



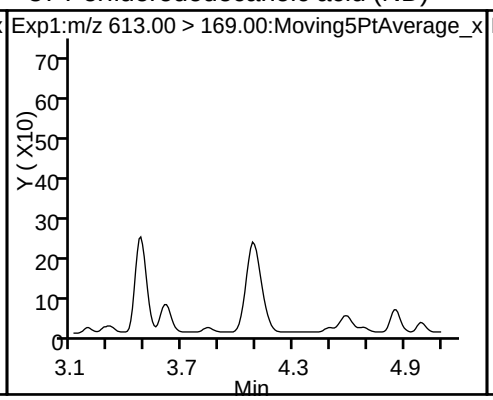
D 36 13C2 PFDoA



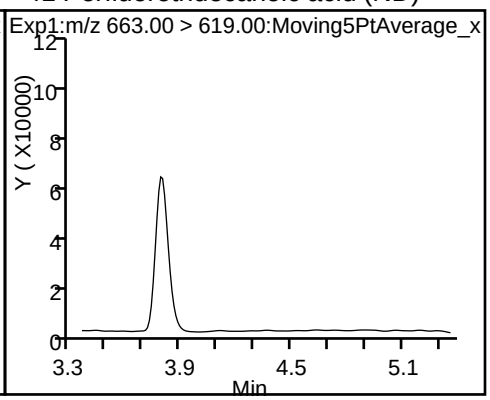
37 Perfluorododecanoic acid (ND)



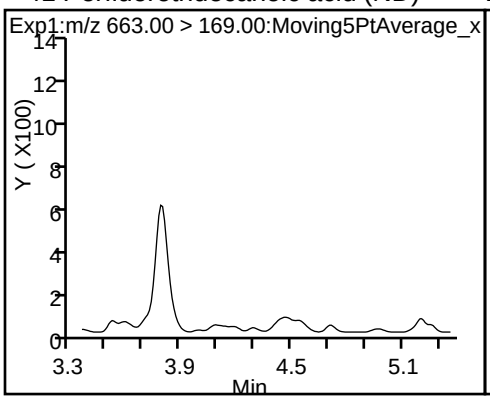
37 Perfluorododecanoic acid (ND)



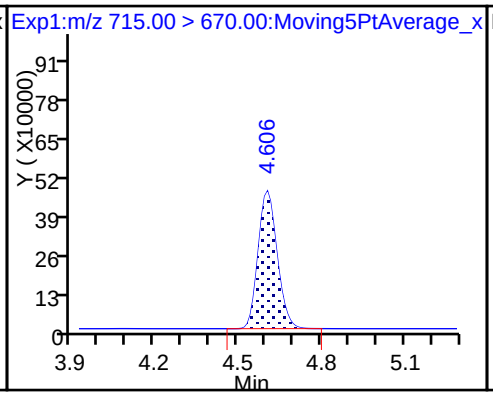
41 Perfluorotridecanoic acid (ND)



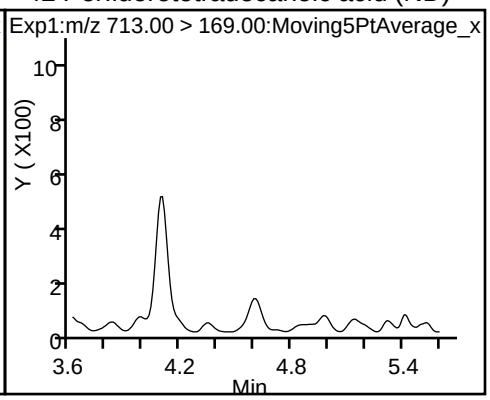
41 Perfluorotridecanoic acid (ND)



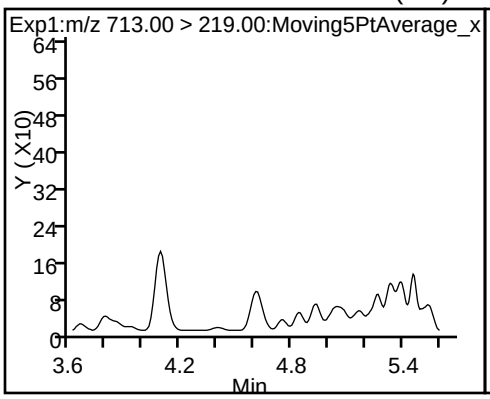
D 43 13C2-PFTeDA



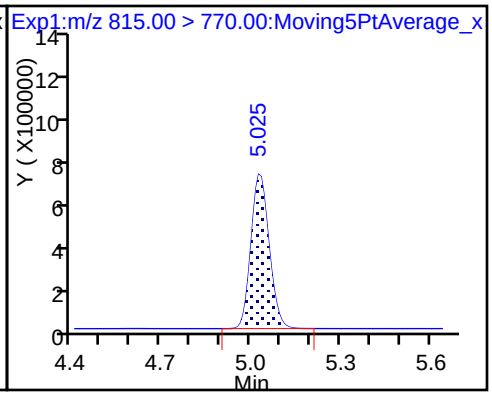
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: CCB 320-214716/1

Matrix: Water | Lab File ID: 2018.03.24LLAA_004.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 03/24/2018 19:03

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00655	J	0.050	0.040	0.0043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	102		50-150
STL01892	13C4-PFHpA	108		50-150
STL00990	13C4 PFOA	106		50-150
STL00995	13C5 PFNA	99		50-150
STL00994	18O2 PFHxS	108		50-150
STL00991	13C4 PFOS	103		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_004.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 24-Mar-2018 19:03:21 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:50:53 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.470	1.459	0.011	1.008	1769	0.000761			0.6	
D 1 13C4 PFBA										
217.00 > 172.00	1.458	1.459	-0.001	0.538	6167180	2.53		101	118280	
D 3 13C5-PFPeA										
267.90 > 223.00	1.726	1.727	-0.001	0.637	4180075	2.58		103	161693	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.762	-0.009	0.646	87481	2.37		102	520	
D 60 M2-4:2FTS										
329.00 > 81.00	1.976	1.987	-0.011	0.729	717144	NC			8245	
D 7 13C2 PFHxA										
315.00 > 270.00	2.019	2.019	0.0	0.744	4439937	2.48		99.1	113365	
D 9 13C4-PFHpA										
367.00 > 322.00	2.354	2.368	-0.014	0.868	4757573	2.69		108	102272	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.367	2.368	-0.001	1.000	17237	0.006552			50.6	
399.00 > 99.00	2.354	2.368	-0.014	0.994	5588		3.08(1.50-4.49)		14.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.367	2.380	-0.013	0.873	5590238	2.56		108	75092	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.696	2.689	0.007	1.003	153233	0.2010			179	
D 12 M2-6:2FTS										
429.00 > 81.00	2.688	2.704	-0.016	0.991	1038594	2.83		119	27176	
* 62 13C2-PFOA										
415.00 > 370.00	2.712	2.713	0.0		4822111	2.50			62473	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.720	2.713	0.008	1.003	8478	0.003909			2.5	
413.00 > 169.00	2.736	2.713	0.024	1.009	0		0.00(0.84-2.52)			
D 14 13C4 PFOA										
417.00 > 372.00	2.712	2.728	-0.016	1.000	4799144	2.65		106	71217	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.112	-0.024	1.139	3952888	2.48		99.2	53697	
D 18 13C4 PFOS										
503.00 > 80.00	3.088	3.112	-0.024	1.139	3906650	2.46		103	43463	
D 21 13C8 FOSA										
506.00 > 78.00	3.407	3.418	-0.011	1.256	5583969	2.61		104	52517	
D 26 M2-8:2FTS										
529.00 > 81.00	3.444	3.464	-0.020	1.270	1275638	2.58		108	25598	
D 23 13C2 PFDA										
515.00 > 470.00	3.453	3.473	-0.020	1.273	3562150	2.55		102	47288	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.611	3.633	-0.022	1.331	1898603	2.58		103	37507	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.779	3.789	-0.010	0.997	4179	0.004222			23.0	
563.00 > 169.00	3.779	3.789	-0.010	0.997	1534		2.72(2.12-6.36)		52.8	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.779	3.804	-0.025	1.393	2020749	2.41		96.4	6805	
D 30 13C2 PFUnA										
565.00 > 520.00	3.789	3.815	-0.026	1.397	2870377	2.30		91.8	66472	
D 36 13C2 PFDoA										
615.00 > 570.00	4.078	4.105	-0.027	1.504	2942732	2.07		83.0	17938	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.585	4.613	-0.028	1.691	3850722	2.22		88.9	22409	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.008	5.008	0.0	1.000	61162	NC			16.0	
813.00 > 169.00	5.008	5.008	0.0	1.000	9966		6.14(2.86-8.58)		102	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.008	5.049	-0.041	1.847	6804903	2.40		95.8	14218	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL0_00006 Amount Added: 1.00 Units: mL

Report Date: 25-Mar-2018 10:51:00 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_004.d

Injection Date: 24-Mar-2018 19:03:21 Instrument ID: A8_N

Lims ID: CCB

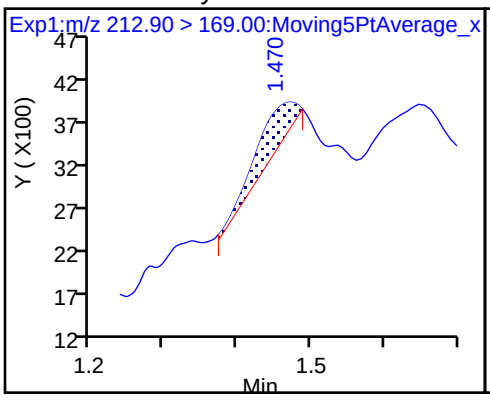
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1

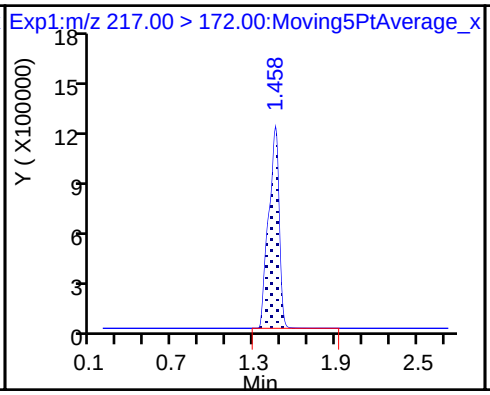
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

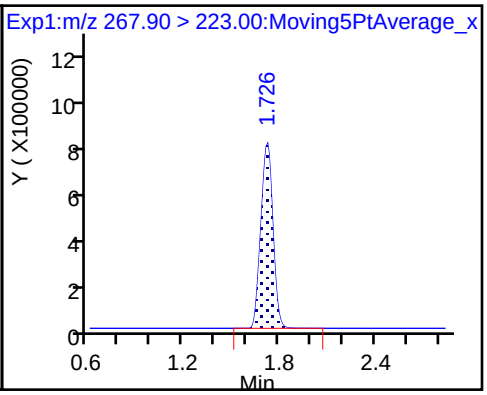
2 Perfluorobutyric acid



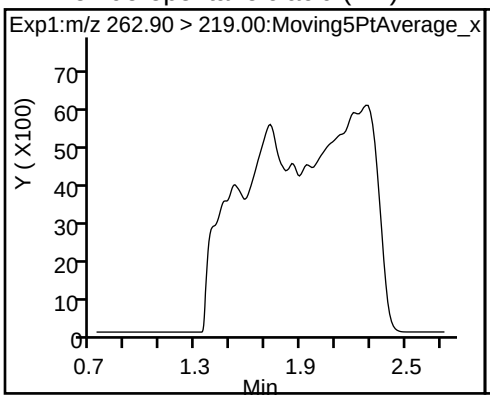
D 1 13C4 PFBA



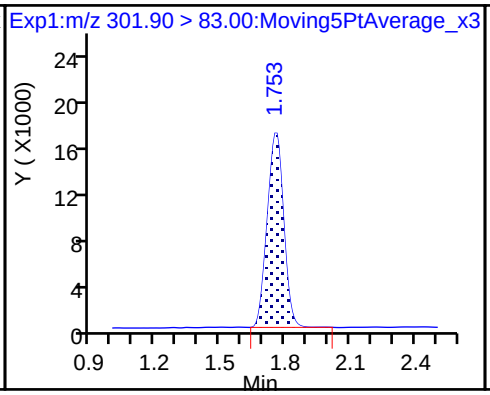
D 3 13C5-PFPeA



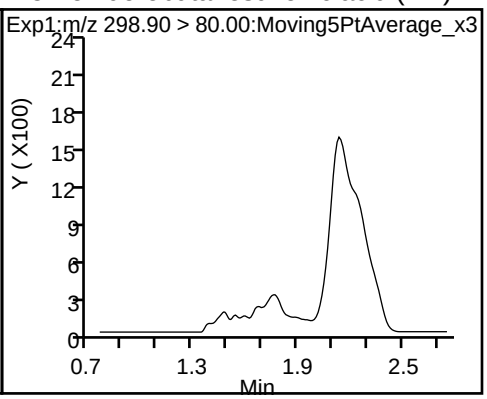
4 Perfluoropentanoic acid (ND)



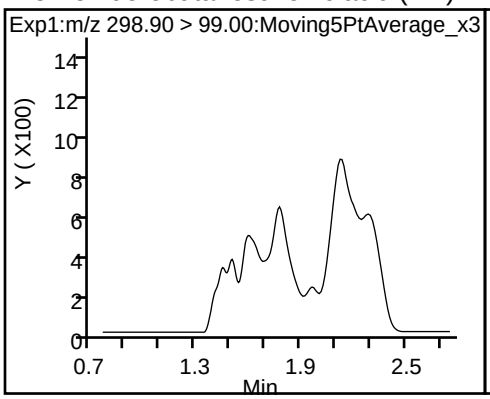
D 47 13C3-PFBS



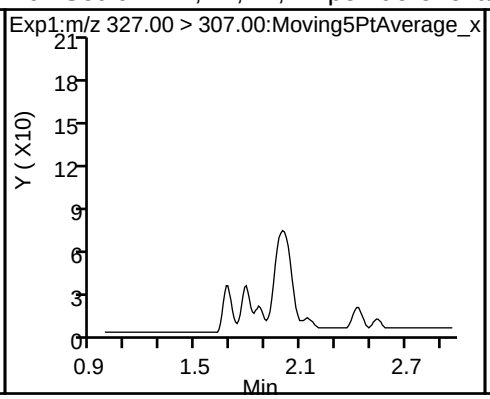
5 Perfluorobutanesulfonic acid (ND)



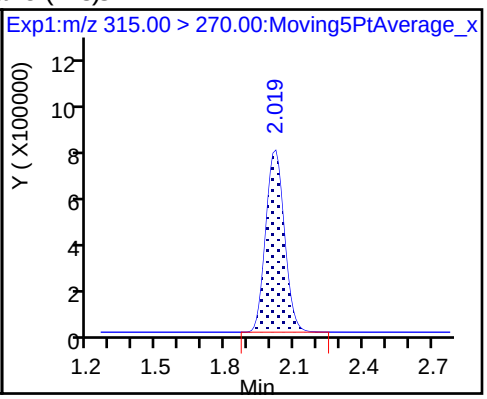
5 Perfluorobutanesulfonic acid (ND)



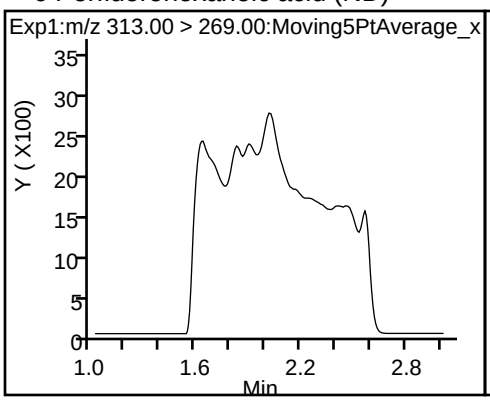
61 Sodium 1H,1H,2H,2H-perfluorohexane (ND)



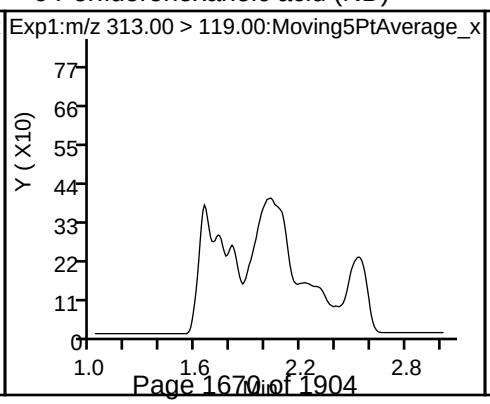
D 7 13C2 PFHxA



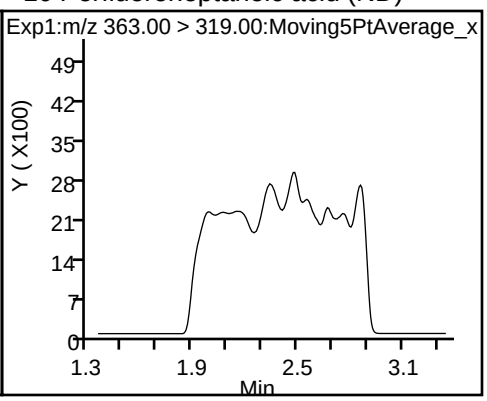
6 Perfluorohexanoic acid (ND)



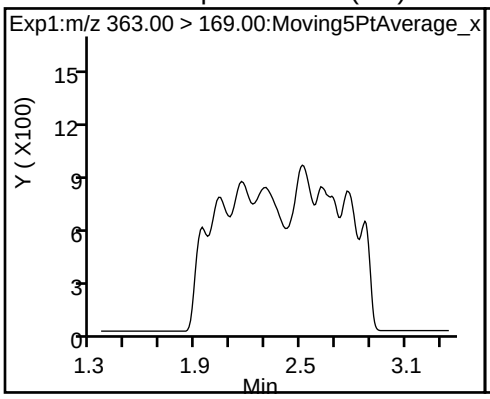
6 Perfluorohexanoic acid (ND)



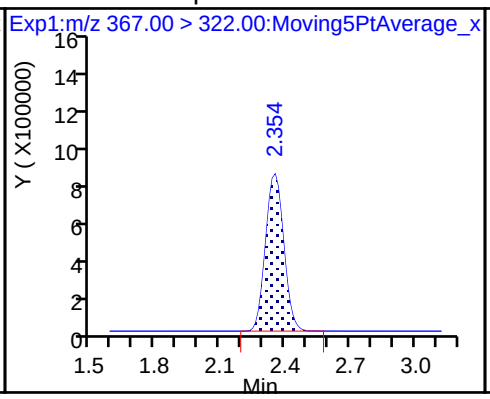
10 Perfluoroheptanoic acid (ND)



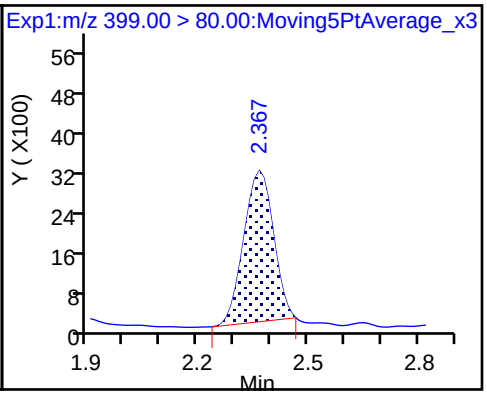
10 Perfluoroheptanoic acid (ND)



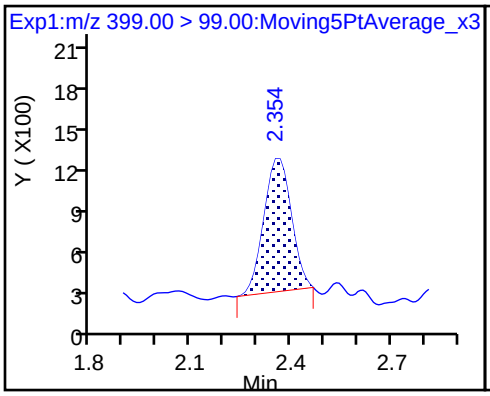
D 9 13C4-PFHpA



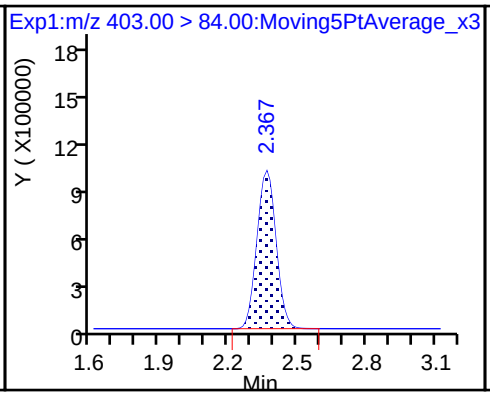
8 Perfluorohexanesulfonic acid



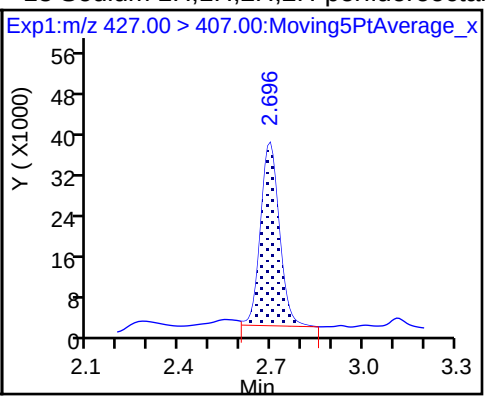
8 Perfluorohexanesulfonic acid



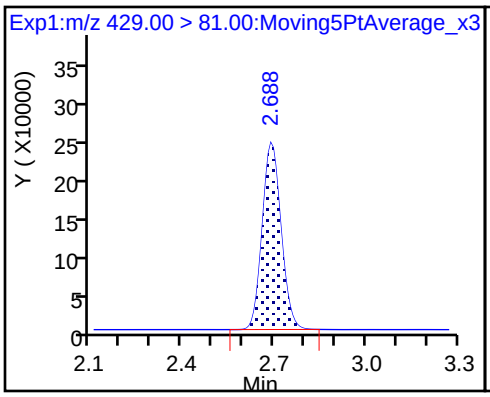
D 11 18O2 PFHxS



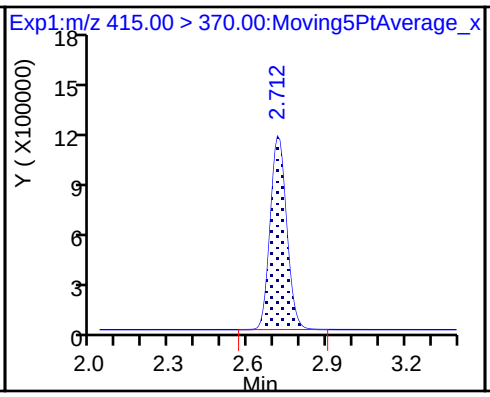
13 Sodium 1H,1H,2H,2H-perfluorooctane



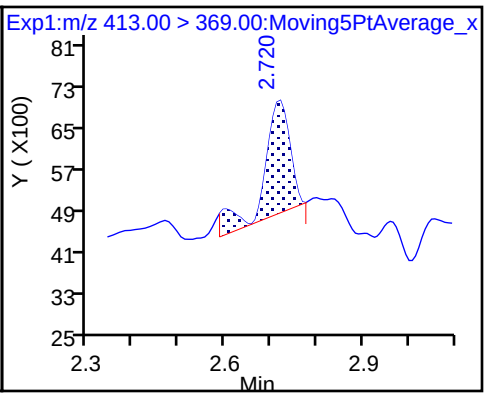
D 12 M2-6:2FTS



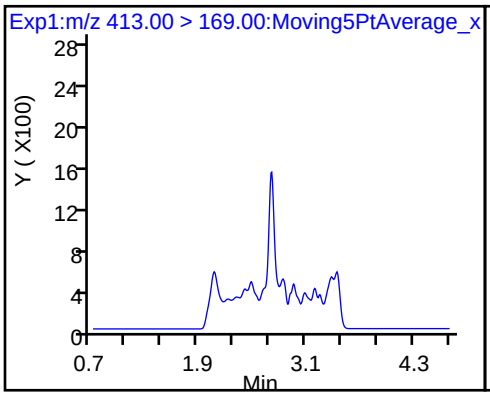
* 62 13C2-PFOA



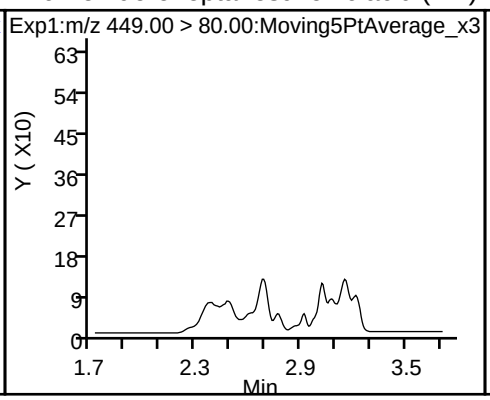
15 Perfluorooctanoic acid



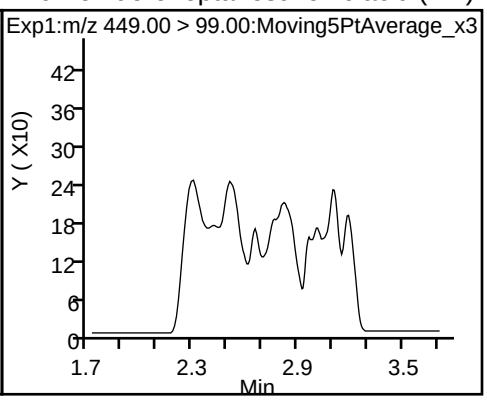
15 Perfluorooctanoic acid



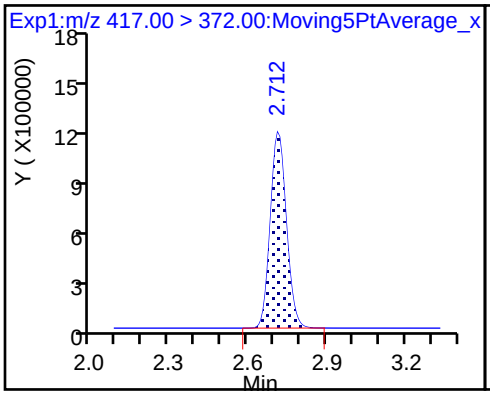
16 Perfluoroheptanesulfonic acid (ND)



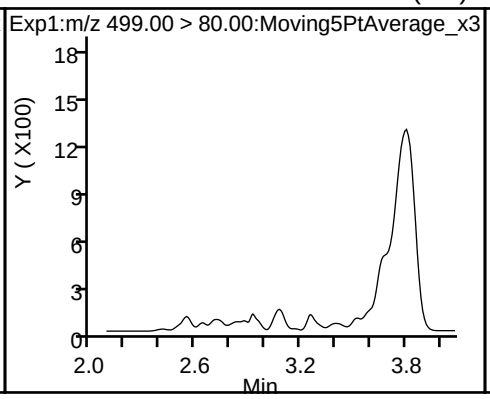
16 Perfluoroheptanesulfonic acid (ND)



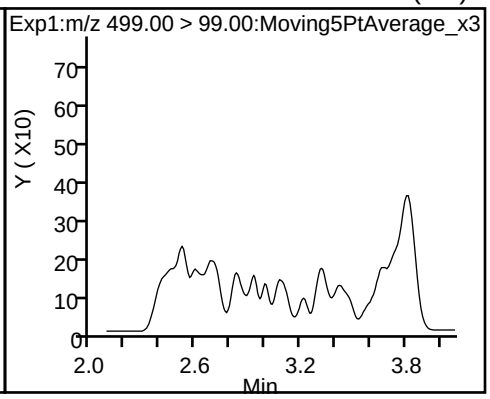
D 14 13C4 PFOA



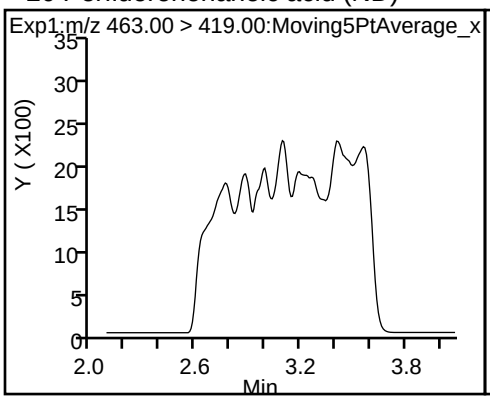
17 Perfluorooctane sulfonic acid (ND)



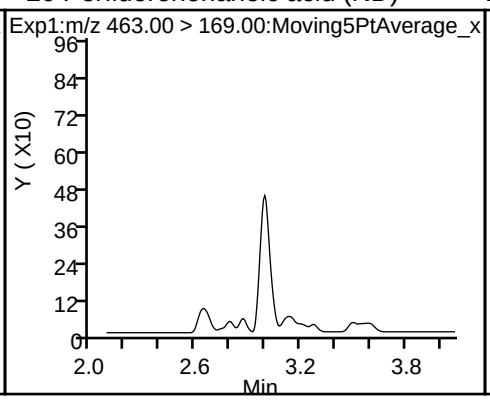
17 Perfluorooctane sulfonic acid (ND)



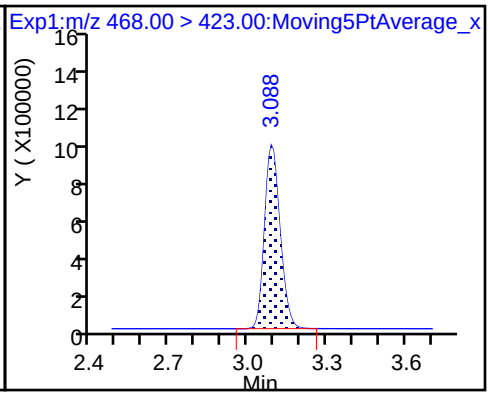
20 Perfluorononanoic acid (ND)



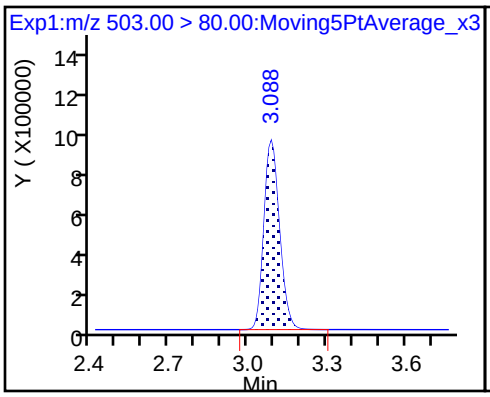
20 Perfluorononanoic acid (ND)



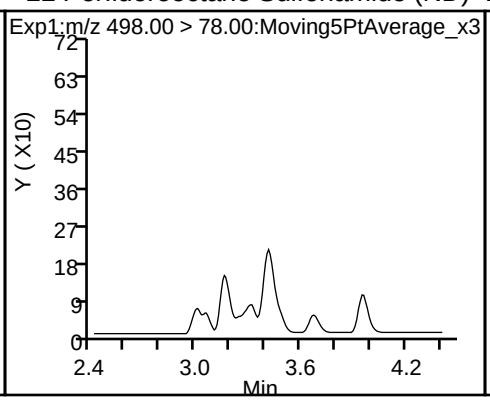
D 19 13C5 PFNA



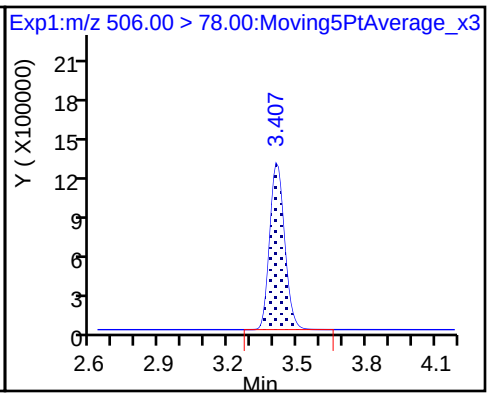
D 18 13C4 PFOS



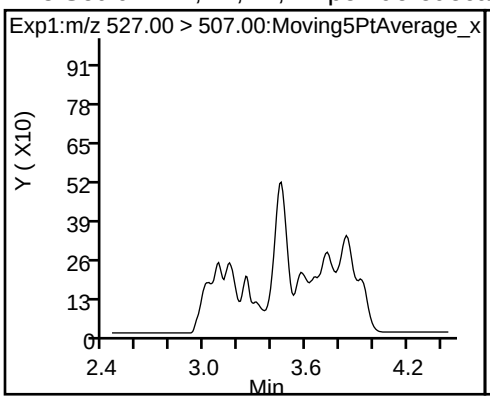
22 Perfluorooctane Sulfonamide (ND)



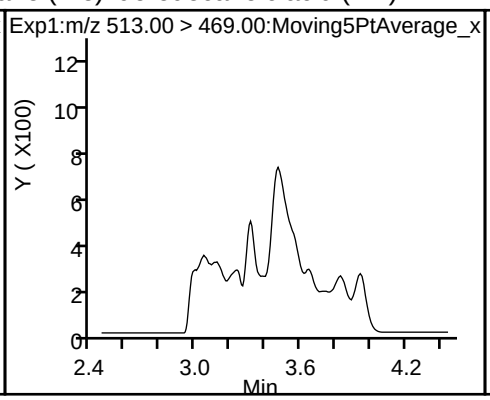
D 21 13C8 FOSA



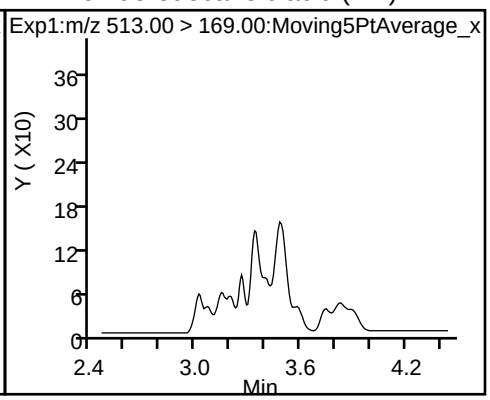
25 Sodium 1H,1H,2H,2H-perfluorodecane (ND)



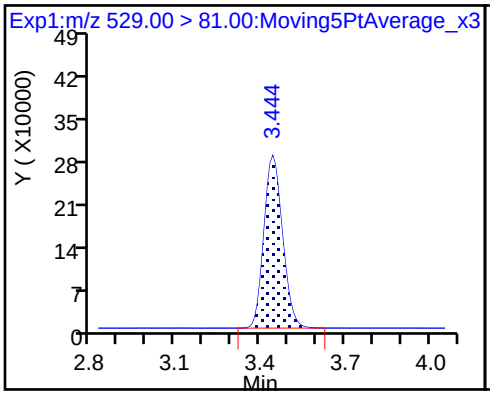
24 Perfluorodecanoic acid (ND)



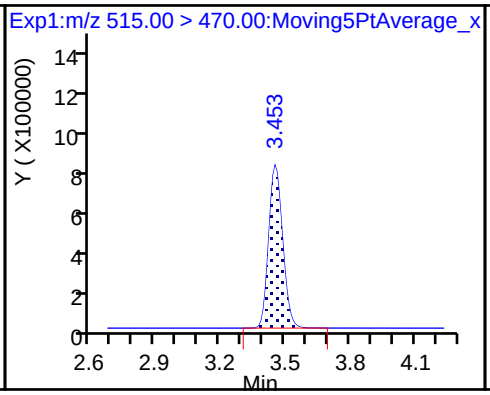
24 Perfluorodecanoic acid (ND)



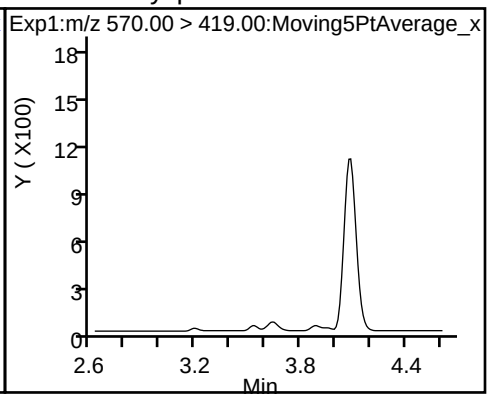
D 26 M2-8:2FTS



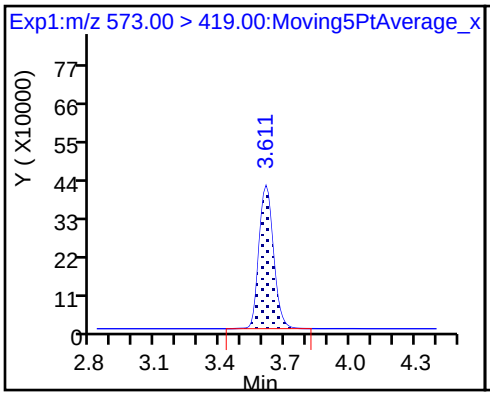
D 23 13C2 PFDA



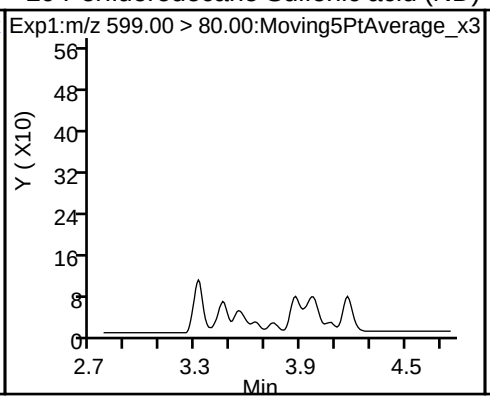
28 N-methyl perfluorooctane sulfonami (ND)



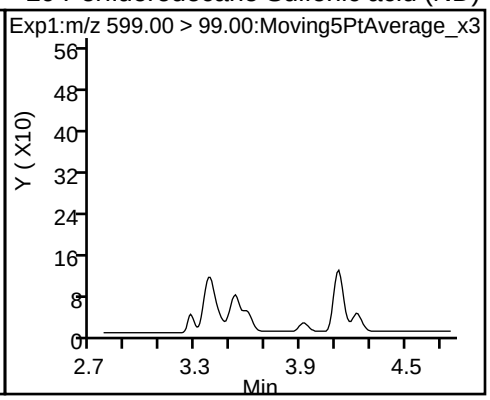
D 27 d3-NMeFOSAA



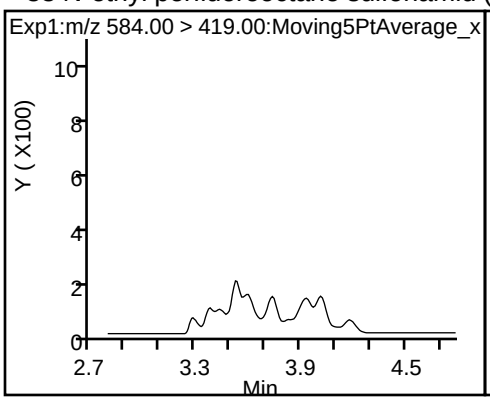
29 Perfluorodecane Sulfonic acid (ND)



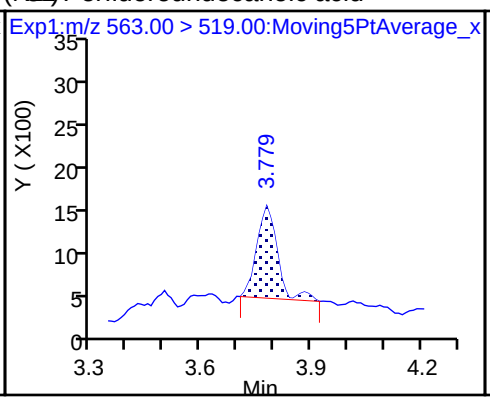
29 Perfluorodecane Sulfonic acid (ND)



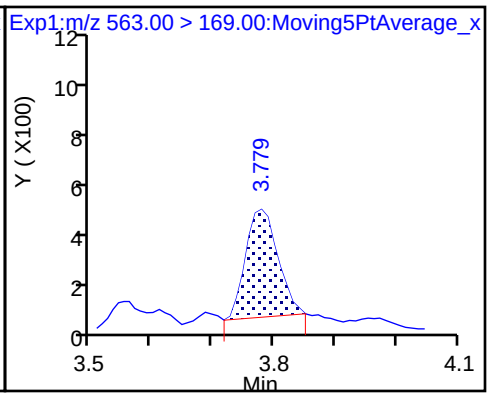
33 N-ethyl perfluorooctane sulfonamid (ND)



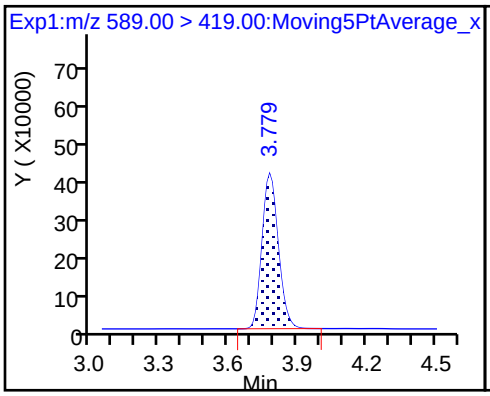
31 Perfluoroundecanoic acid



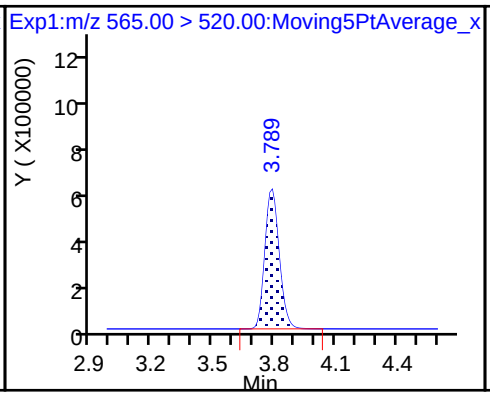
31 Perfluoroundecanoic acid



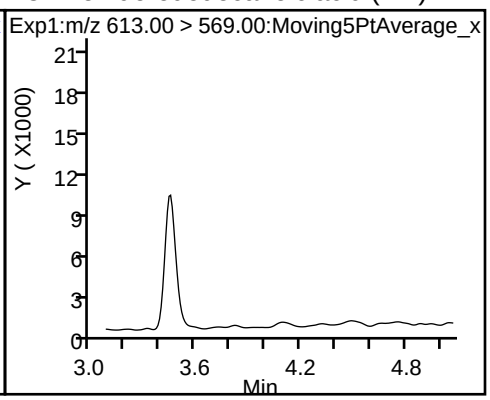
D 32 d5-NEtFOSAA



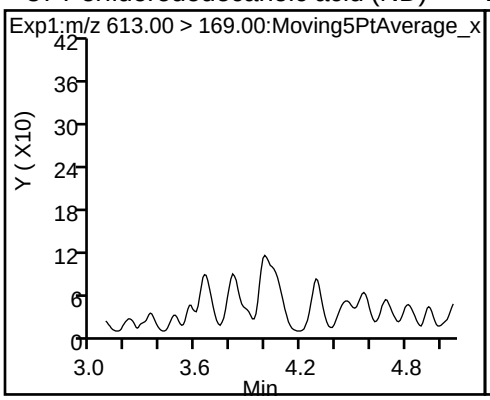
D 30 13C2 PFUnA



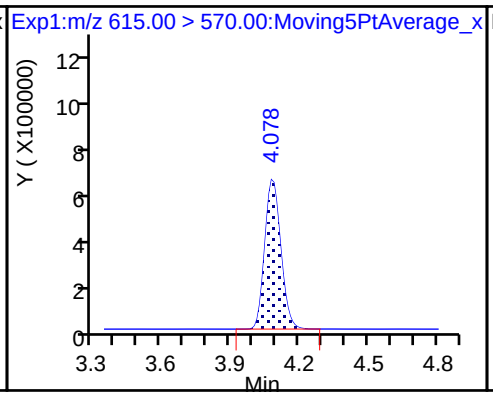
37 Perfluorododecanoic acid (ND)



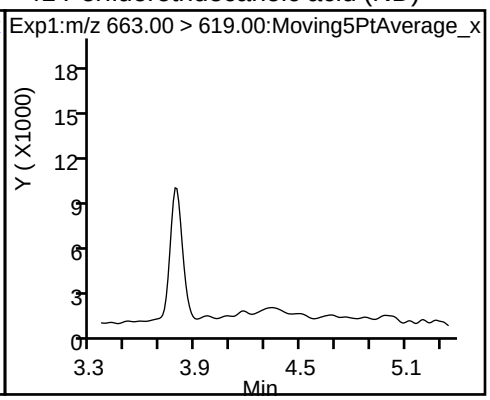
37 Perfluorododecanoic acid (ND)



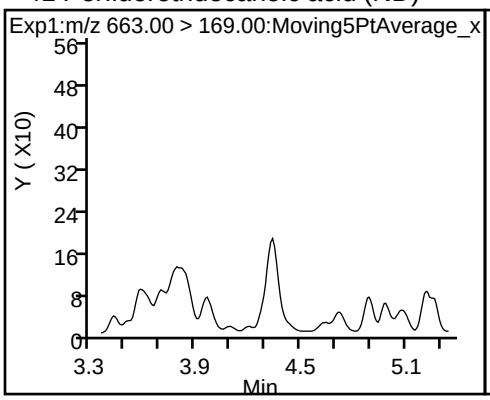
D 36 13C2 PFDoA



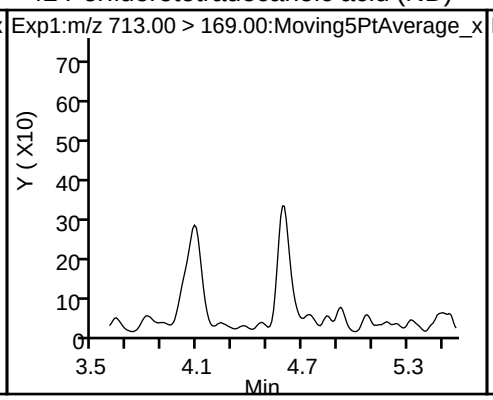
41 Perfluorotridecanoic acid (ND)



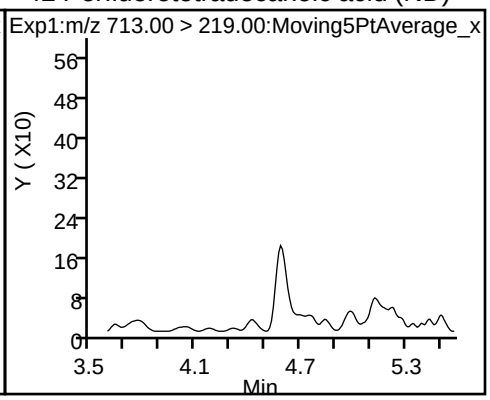
41 Perfluorotridecanoic acid (ND)



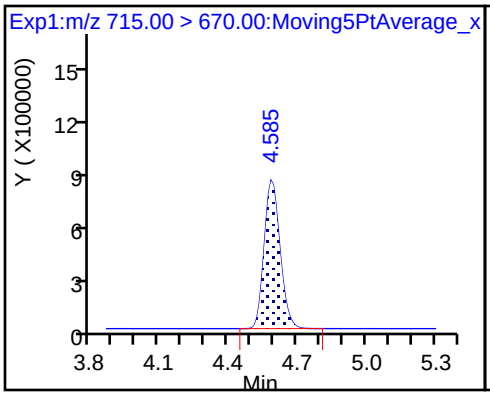
42 Perfluorotetradecanoic acid (ND)



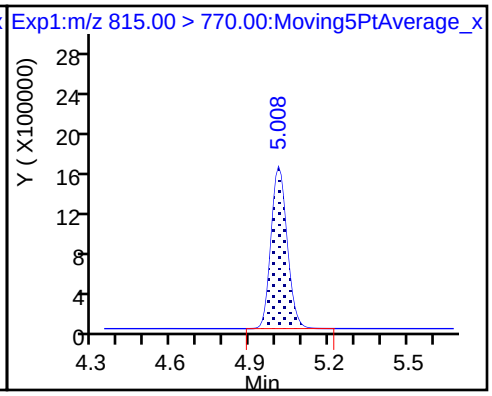
42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: CCB 320-216821/1

Matrix: Solid | Lab File ID: 2018.04.07LLA_004.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 04/07/2018 09:01

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 216821 | Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00593	J	0.050	0.040	0.0043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	95		50-150
STL01892	13C4-PFHpA	100		50-150
STL00990	13C4 PFOA	101		50-150
STL00995	13C5 PFNA	106		50-150
STL00994	18O2 PFHxS	99		50-150
STL00991	13C4 PFOS	99		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_004.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 07-Apr-2018 09:01:11 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:29 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:17:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.419	1.424	-0.005	0.996	2132	0.000931			0.9	
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.425	0.0	1.000	6191473	2.41		96.2	53209	
D 3 13C5-PFPeA										
267.90 > 223.00	1.693	1.694	-0.001	0.559	3938631	2.35		94.1	85130	
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.730	-0.001	1.000	84956	2.22		95.3	532	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.950	-0.001	1.000	608102	NC			5404	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.982	-0.001	1.000	4482877	2.43		97.1	116355	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.071	2.073	-0.002	1.000	244873	NC			5500	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.307	0.013	1.000	14511	0.005926			50.2	
399.00 > 99.00	2.320	2.307	0.013	1.000	5516		2.63(1.50-4.49)		27.7	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.308	-0.001	1.000	4454222	2.51		100	78989	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.321	-0.001	1.000	5184878	2.34		99.1	67092	
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.637	0.0	1.000	936827	2.28		96.2	12416	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.653	0.007		4655047	2.50			91486	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	4403507	2.52		101	78511	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
20 Perfluorononanoic acid										
463.00 > 419.00	2.923	3.023	-0.100	0.965	3062	0.001899			4.3	
463.00 > 169.00	2.908	3.023	-0.115	0.960	1282		2.39(1.90-5.69)		43.9	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.023	0.006	1.000	3646239	2.37		99.2	28084	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.030	-0.001	1.000	3917765	2.65		106	103195	
D 21 13C8 FOSA										
506.00 > 78.00	3.358	3.360	-0.002	1.000	5058171	2.33		93.2	65869	
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.378	-0.002	1.000	1160159	2.43		102	10100	
D 23 13C2 PFDA										
515.00 > 470.00	3.386	3.387	-0.001	1.000	3253189	2.61		104	74537	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.544	3.537	0.007	1.000	1812188	2.72		109	28610	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.716	3.707	0.009	1.000	1937231	2.77		111	12088	
D 30 13C2 PFUnA										
565.00 > 520.00	3.716	3.718	-0.002	1.000	2860321	2.81		112	74562	
D 36 13C2 PFDoA										
615.00 > 570.00	4.006	4.008	-0.002	1.000	2985152	2.63		105	25980	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.510	4.511	-0.001	1.000	3842632	2.67		107	21989	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.921	4.922	-0.001	1.000	57229	NC			13.3	
813.00 > 169.00	4.921	4.922	-0.001	1.000	7586		7.54(2.86-8.58)		49.7	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.921	4.922	-0.001	1.000	6387542	2.87		115	16071	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL0_00006 Amount Added: 1.00 Units: mL

Report Date: 09-Apr-2018 08:26:37 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_004.d

Injection Date: 07-Apr-2018 09:01:11 Instrument ID: A8_N

Lims ID: CCB

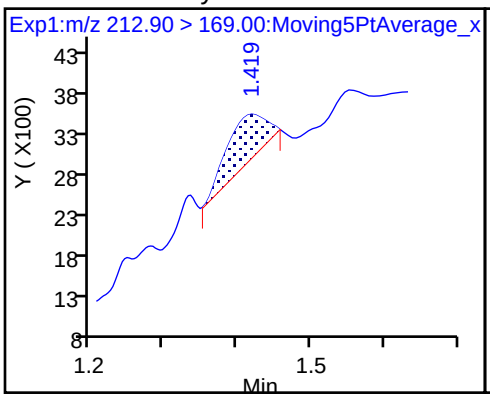
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1

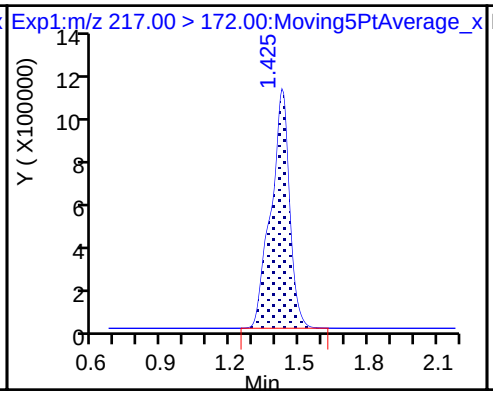
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

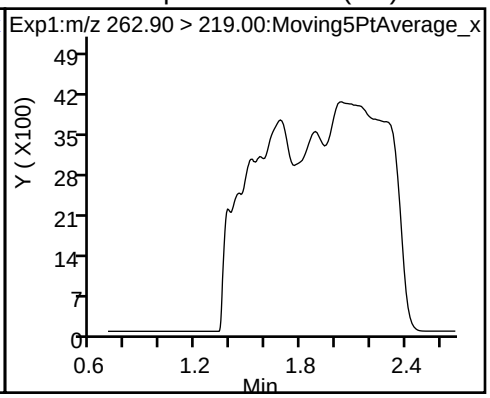
2 Perfluorobutyric acid



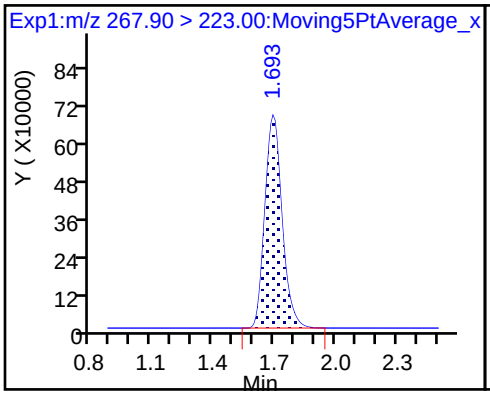
D 1 13C4 PFBA



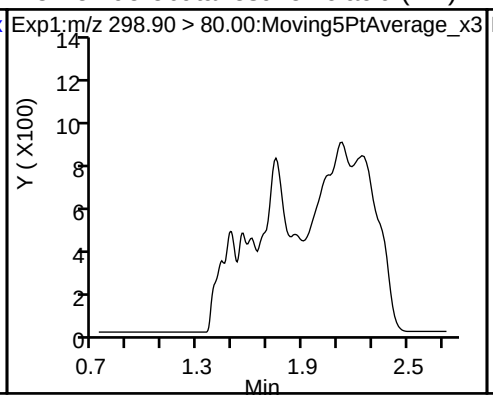
4 Perfluoropentanoic acid (ND)



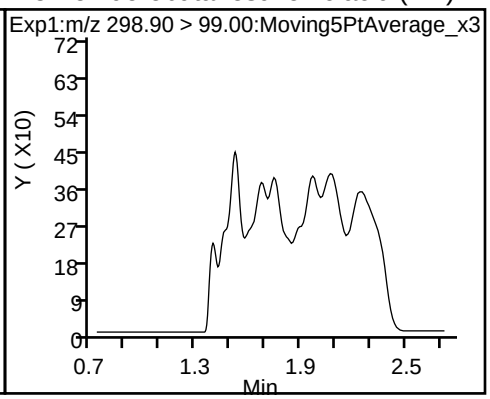
D 3 13C5-PFPeA



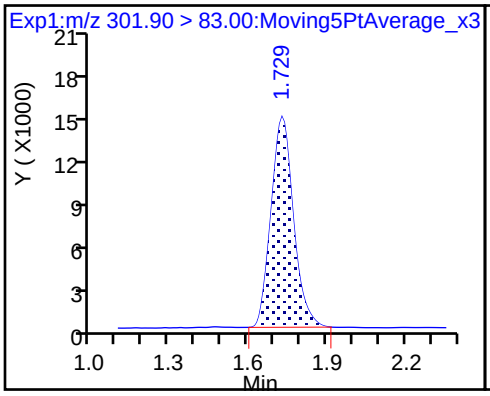
5 Perfluorobutanesulfonic acid (ND)



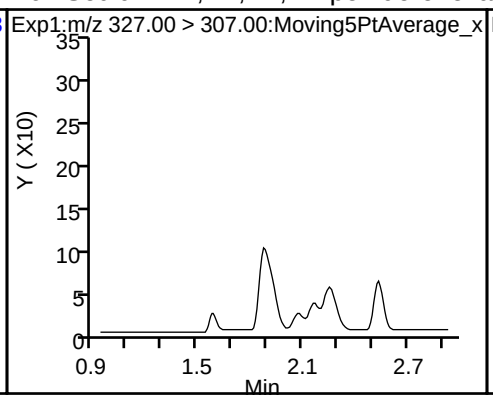
5 Perfluorobutanesulfonic acid (ND)



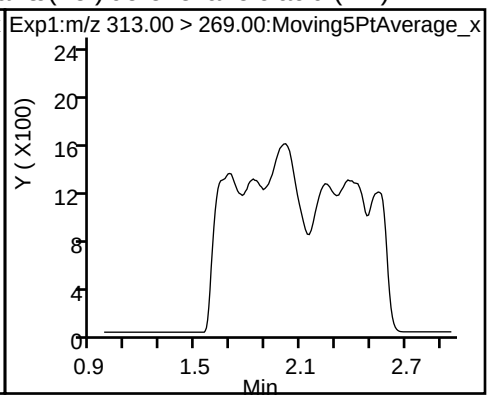
D 47 13C3-PFBS



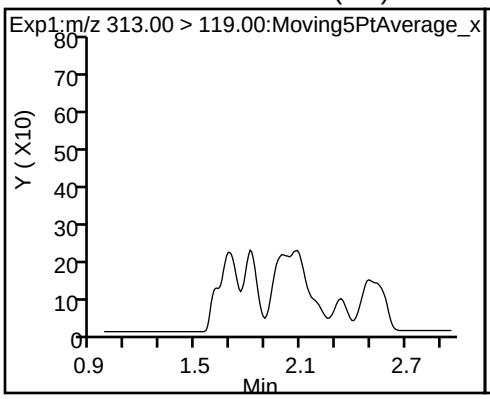
61 Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (ND)



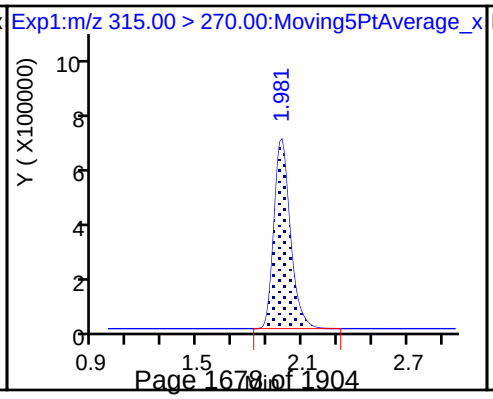
6 Perfluorohexanoic acid (ND)



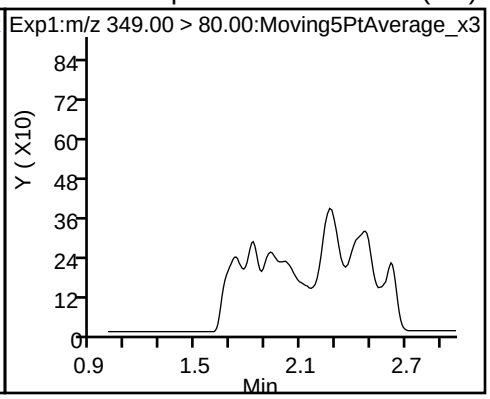
6 Perfluorohexanoic acid (ND)



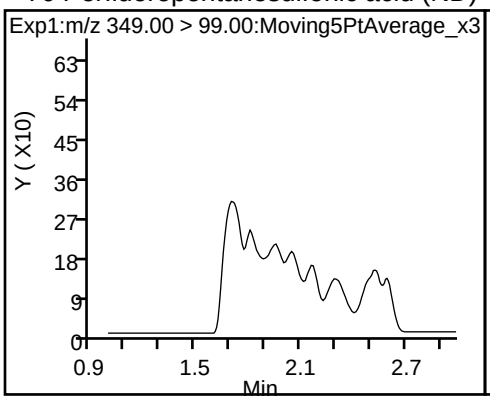
D 7 13C2 PFHxA



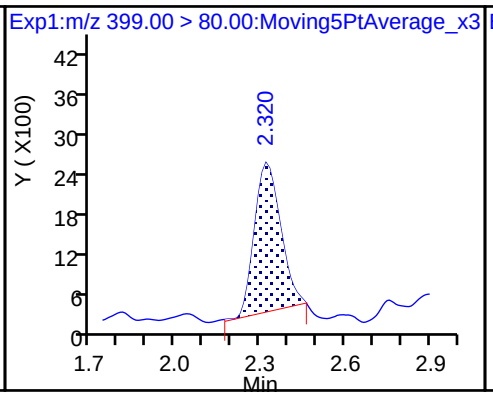
70 Perfluoropentanesulfonic acid (ND)



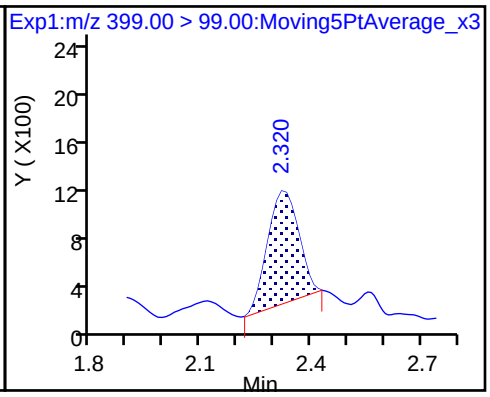
70 Perfluoropentanesulfonic acid (ND)



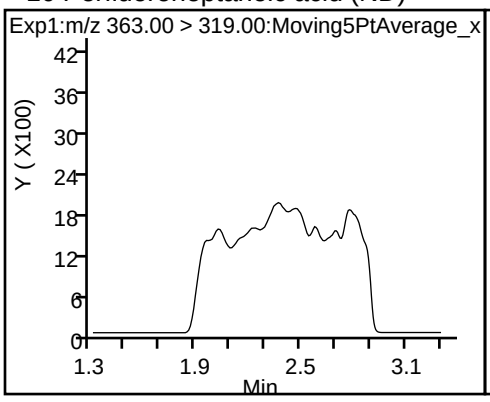
8 Perfluorohexanesulfonic acid



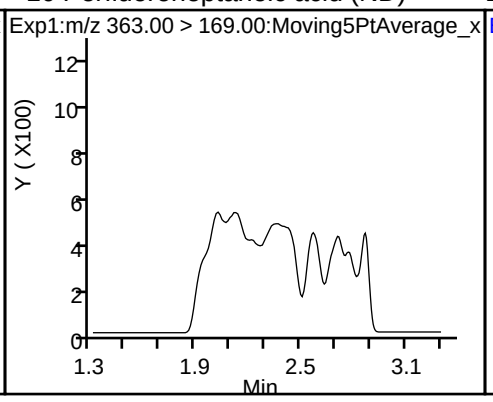
8 Perfluorohexanesulfonic acid



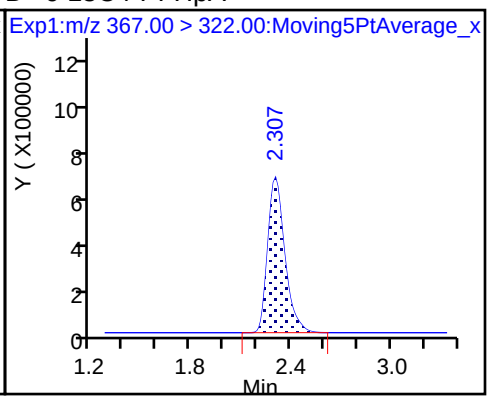
10 Perfluoroheptanoic acid (ND)



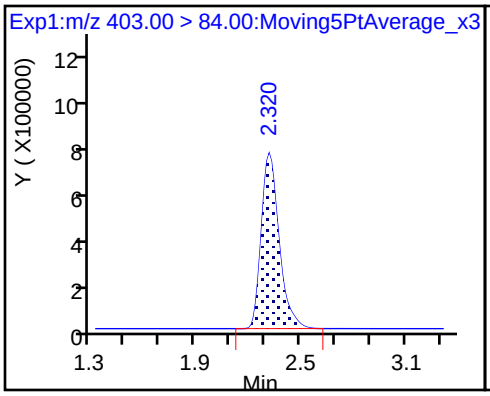
10 Perfluoroheptanoic acid (ND)



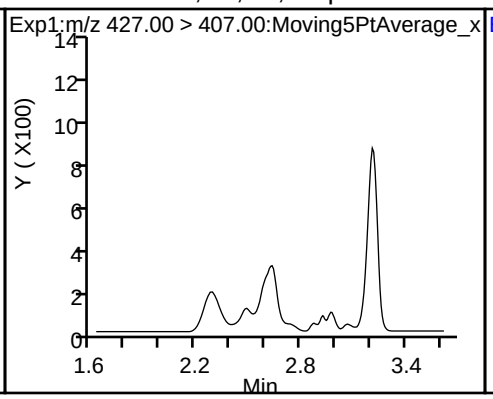
D 9 13C4-PFHpA



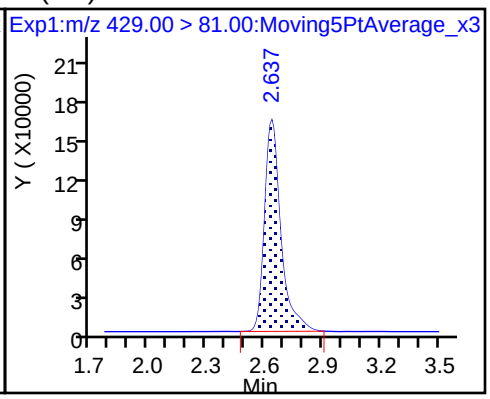
D 11 18O2 PFHxS



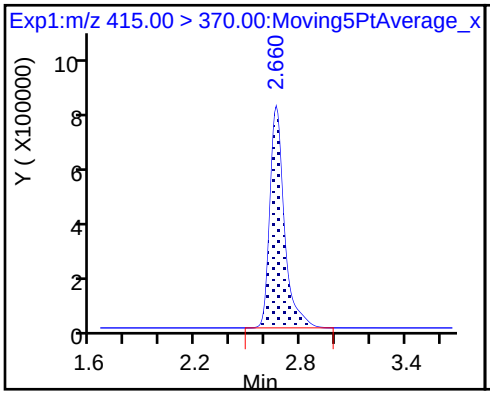
13 Sodium 1H,1H,2H,2H-perfluorooctane (8D)



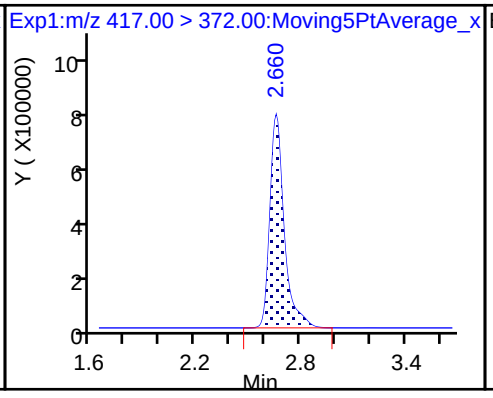
D 12 13C2-6:2FTS



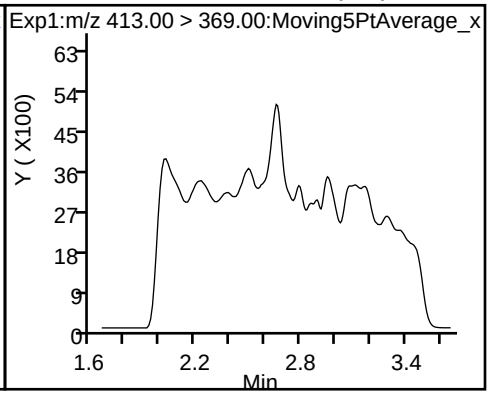
* 62 13C2-PFOA



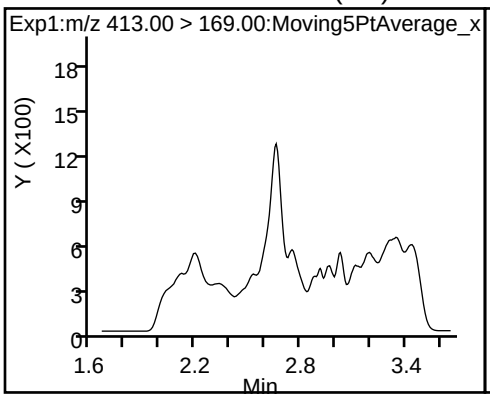
D 14 13C4 PFOA



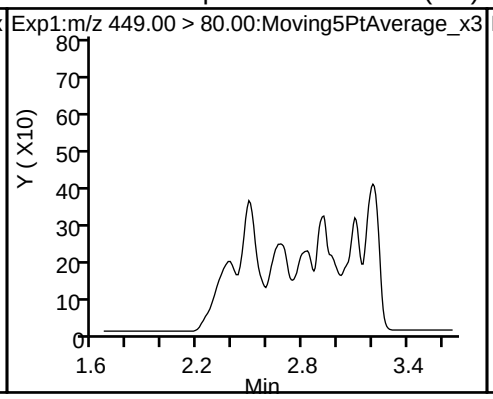
15 Perfluorooctanoic acid (ND)



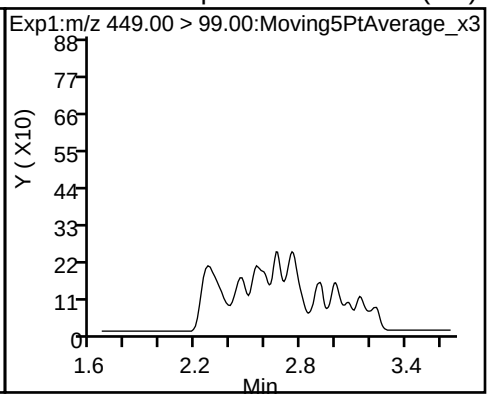
15 Perfluorooctanoic acid (ND)



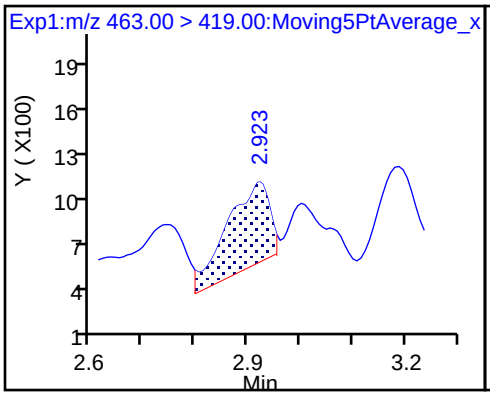
16 Perfluoroheptanesulfonic acid (ND)



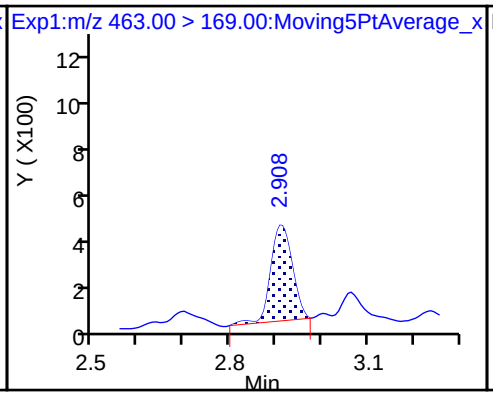
16 Perfluoroheptanesulfonic acid (ND)



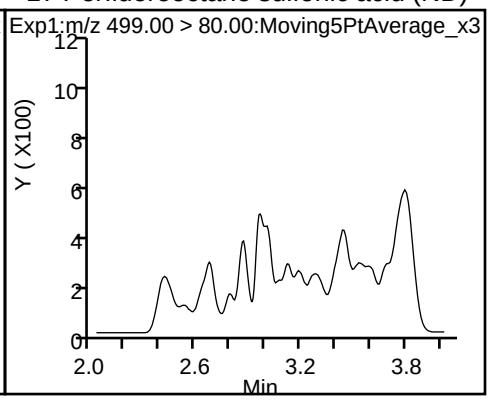
20 Perfluorononanoic acid



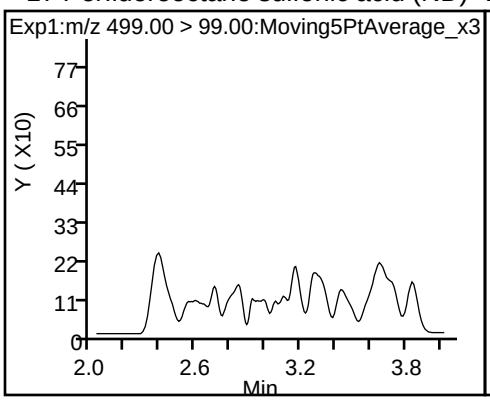
20 Perfluorononanoic acid



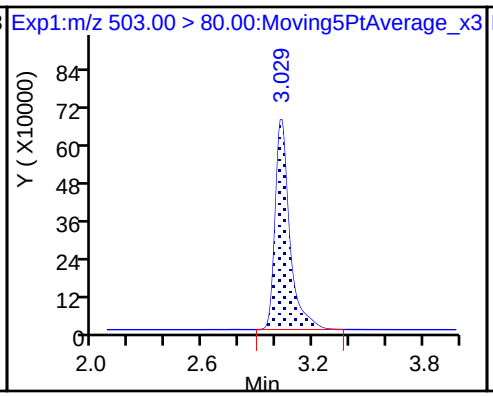
17 Perfluorooctane sulfonic acid (ND)



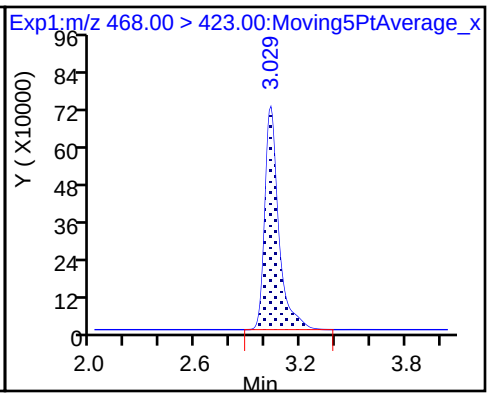
17 Perfluorooctane sulfonic acid (ND)



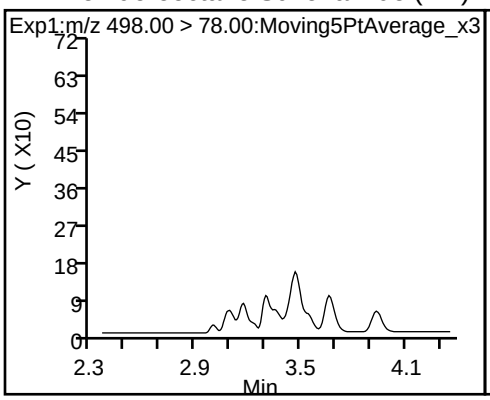
D 18 13C4 PFOS



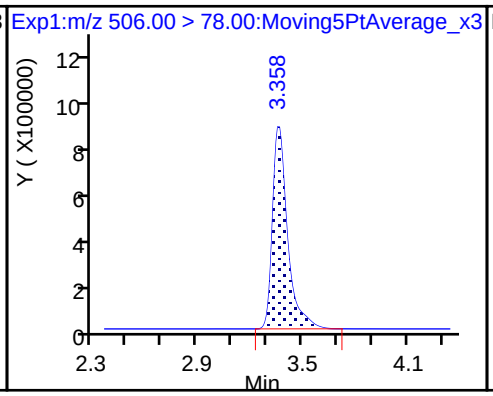
D 19 13C5 PFNA



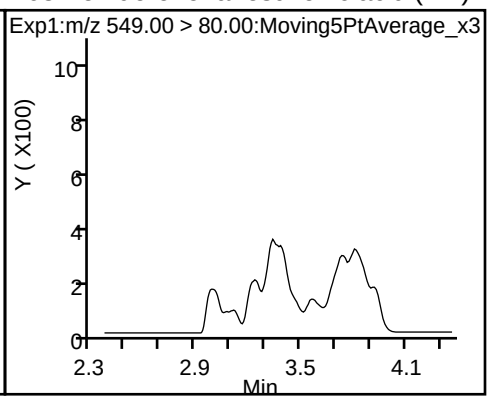
22 Perfluorooctane Sulfonamide (ND)



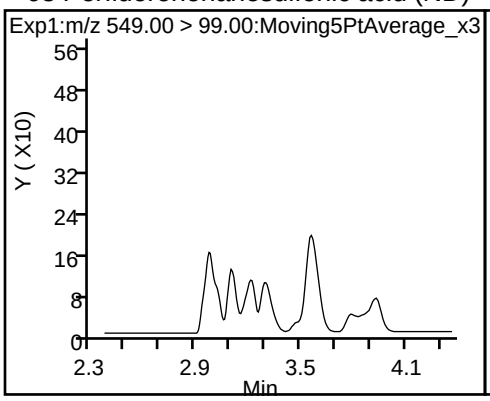
D 21 13C8 FOSA



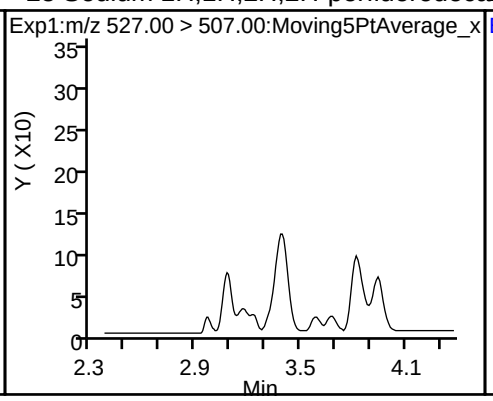
68 Perfluorononanesulfonic acid (ND)



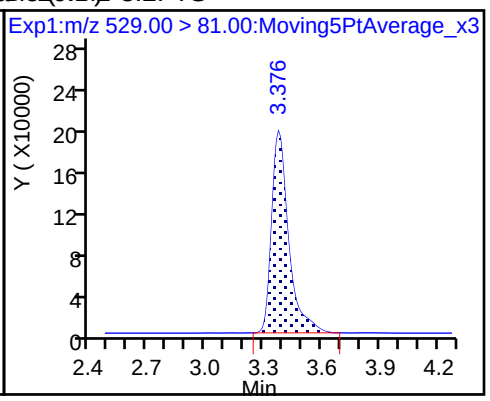
68 Perfluorononanesulfonic acid (ND)



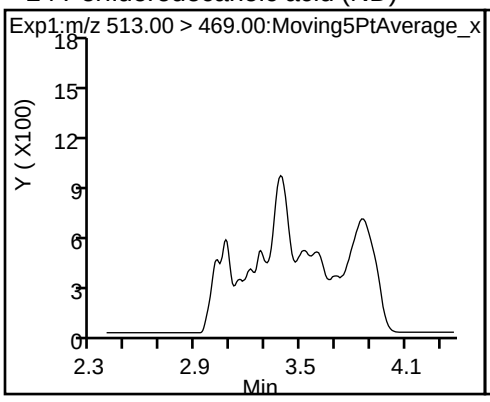
25 Sodium 1H,1H,2H,2H-perfluorodecane 6:2-8:2FTS



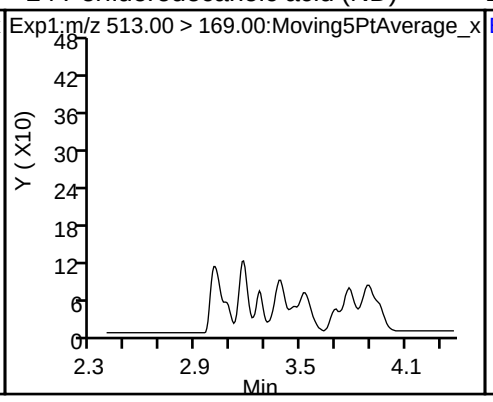
D 26 M2



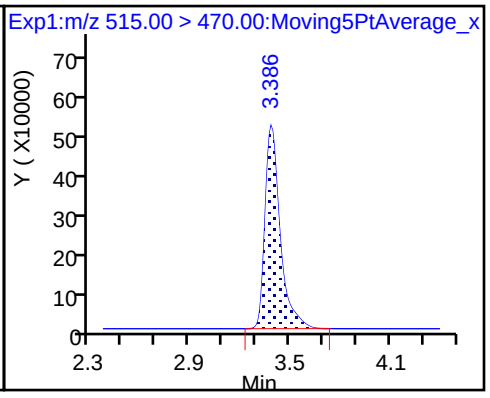
24 Perfluorodecanoic acid (ND)



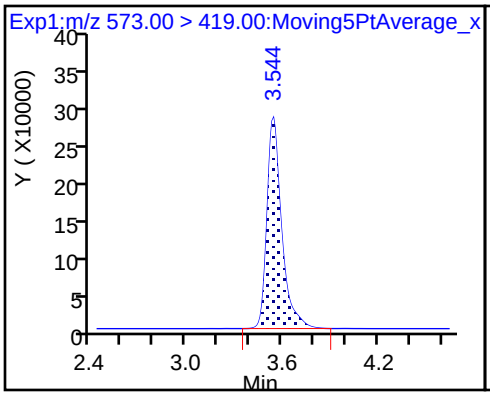
24 Perfluorodecanoic acid (ND)



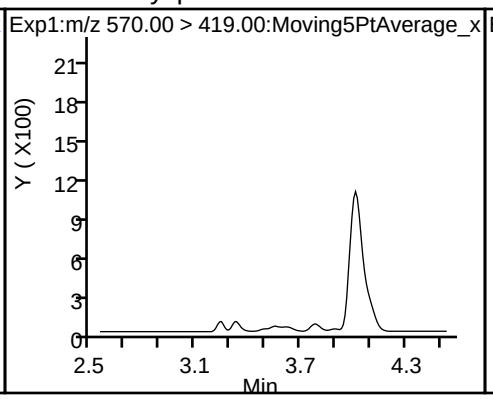
D 23 13C2 PFDA



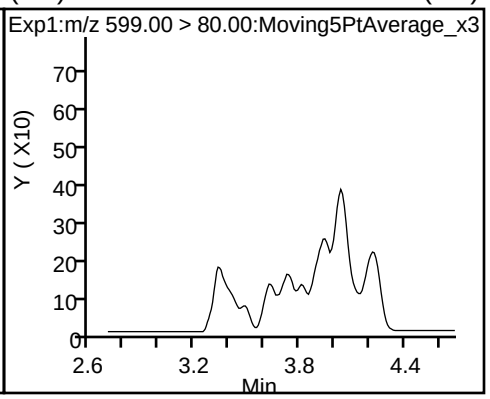
D 27 d3-NMeFOSAA



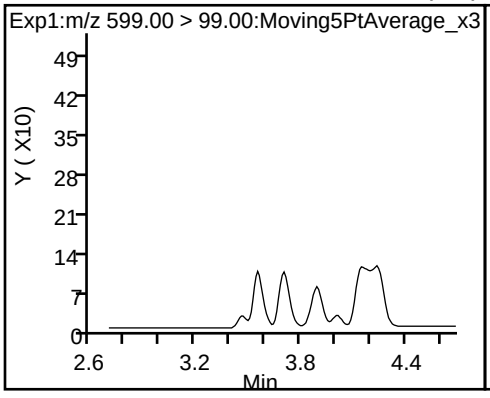
28 N-methyl perfluorooctane sulfonami (ND)



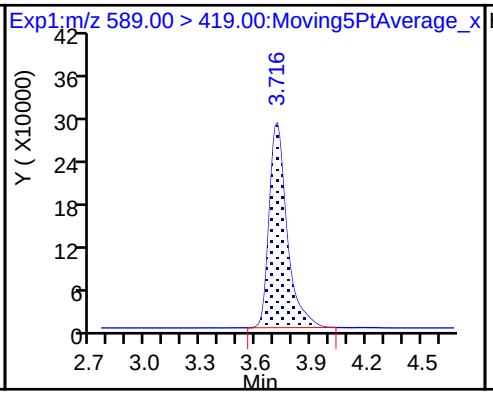
29 Perfluorodecane Sulfonic acid (ND)



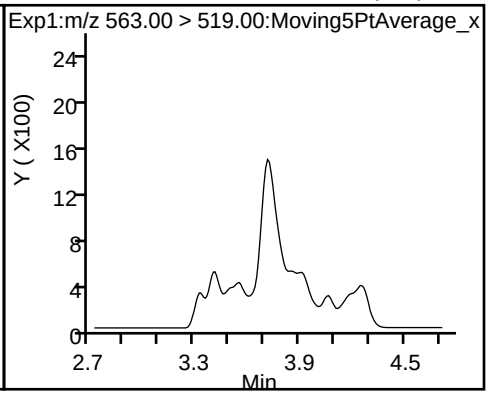
29 Perfluorodecane Sulfonic acid (ND)



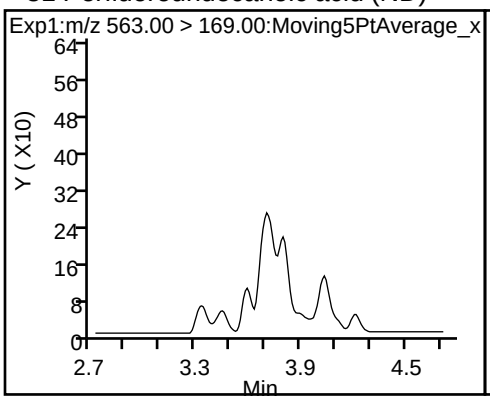
D 32 d5-NEtFOSAA



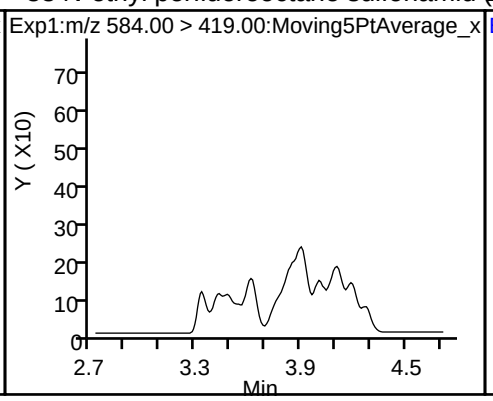
31 Perfluoroundecanoic acid (ND)



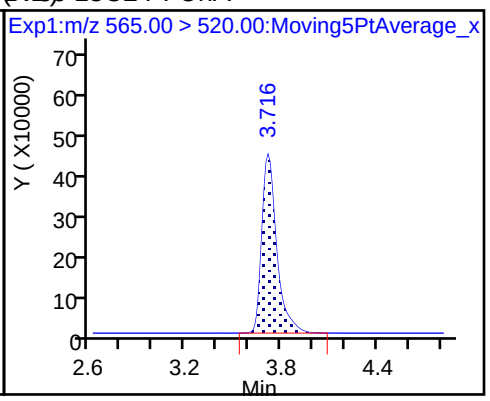
31 Perfluoroundecanoic acid (ND)



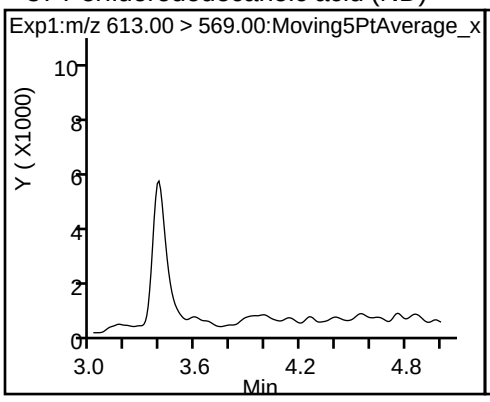
33 N-ethyl perfluorooctane sulfonamid (ND)



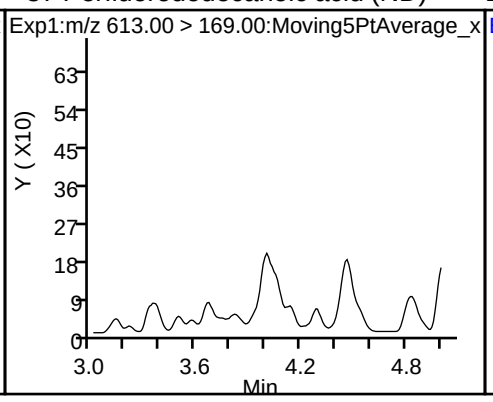
D 30 13C2 PFUnA



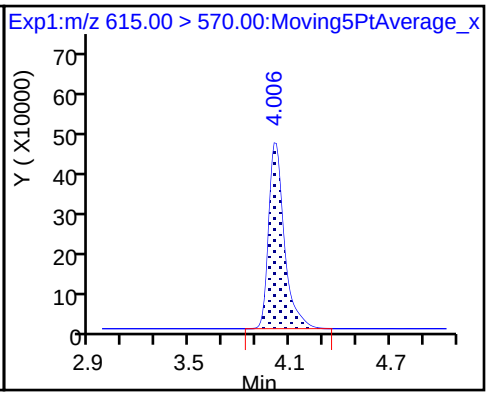
37 Perfluorododecanoic acid (ND)



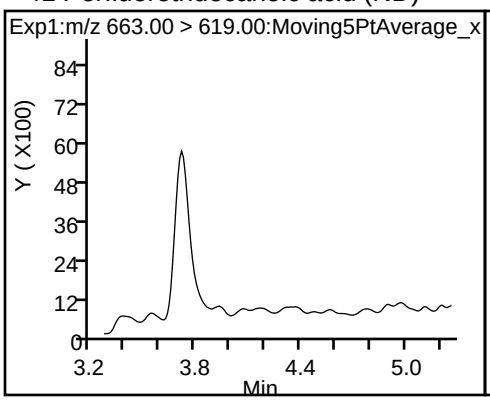
37 Perfluorododecanoic acid (ND)



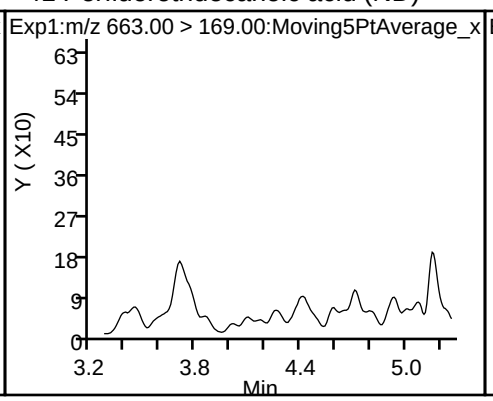
D 36 13C2 PFDoA



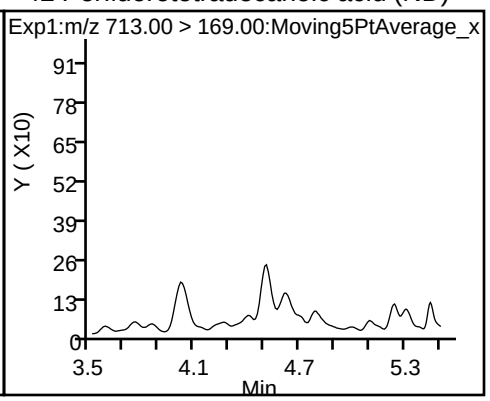
41 Perfluorotridecanoic acid (ND)



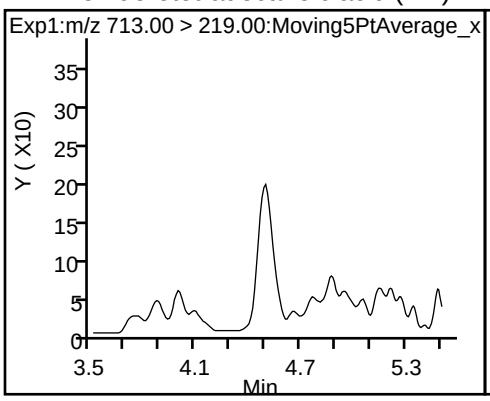
41 Perfluorotridecanoic acid (ND)



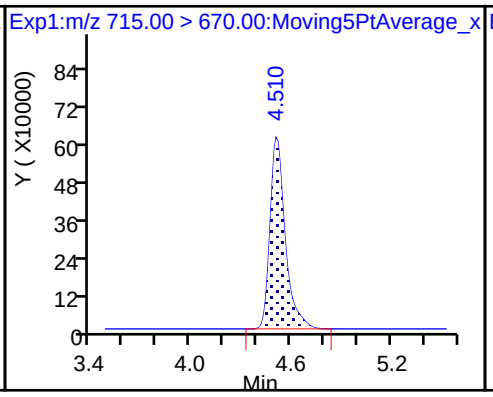
42 Perfluorotetradecanoic acid (ND)



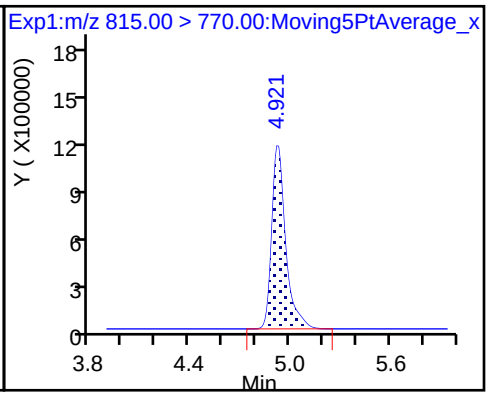
42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 320-213555/9

Matrix: Water Lab File ID: 2018.03.16ICAL_010.d

Analysis Method: EPA 537 (Mod) Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 1(mL) Date Analyzed: 03/17/2018 00:04

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213555 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00935	J	0.050	0.040	0.0043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	95		50-150
STL01892	13C4-PFHpA	98		50-150
STL00990	13C4 PFOA	101		50-150
STL00995	13C5 PFNA	100		50-150
STL00994	18O2 PFHxS	98		50-150
STL00991	13C4 PFOS	98		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_010.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 17-Mar-2018 00:04:26 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 18-Mar-2018 12:48:48 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: phomsophat Date: 18-Mar-2018 12:40:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.446	1.440	0.006	1.004	9326	0.004691			9.8	
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.440	0.0	0.537	5358630	2.38		95.2	93501	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	3806196	2.40		95.8	147220	
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.730	0.005	0.647	86927	2.22		95.4	485	
D 60 M2-4:2FTS										
329.00 > 81.00	1.945	1.942	0.003	0.726	678201	NC			6975	
D 7 13C2 PFHxA										
315.00 > 270.00	1.986	1.979	0.007	0.741	4250104	2.40		95.9	107854	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.311	0.017	1.006	10936	0.006267			25.3	
363.00 > 169.00	2.315	2.311	0.004	1.000	4191		2.61(1.13-3.40)		83.8	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	4208935	2.44		97.7	87896	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	23540	0.009353			3.6	
399.00 > 99.00	2.341	2.326	0.015	1.006	6860		3.43(1.50-4.49)		3.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5336775	2.32		98.2	52678	
D 12 M2-6:2FTS										
429.00 > 81.00	2.657	2.651	0.006	0.991	1057774	2.40		101	27588	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.657	2.652	0.005	1.000	3447	0.004649			216	
* 62 13C2-PFOA										
415.00 > 370.00	2.680	2.678	0.002		4410810	2.50			79106	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.680	2.678	0.002	1.000	12378	0.006616			4.1	
413.00 > 169.00	2.680	2.678	0.002	1.000	9094		1.36(0.84-2.52)		38.2	M
D 14 13C4 PFOA										
417.00 > 372.00	2.680	2.678	0.002	1.000	4189432	2.52		101	97054	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.688	2.684	0.004	1.000	10132	0.004876			258	
449.00 > 99.00	2.696	2.684	0.012	1.003	2331		4.35(1.94-5.82)		81.1	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.050	0.008	1.141	3779181	2.35		98.3	50099	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	3335145	2.51		100	59592	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.397	3.388	0.009	1.003	12721	0.005544			138	
D 21 13C8 FOSA										
506.00 > 78.00	3.388	3.388	0.0	1.264	5903535	2.54		101	66646	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.406	3.406	0.0	0.997	2715	0.005150			109	
D 26 M2-8:2FTS										
529.00 > 81.00	3.415	3.406	0.009	1.274	1004269	2.42		101	28014	
D 23 13C2 PFDA										
515.00 > 470.00	3.424	3.416	0.008	1.277	2864933	2.58		103	46070	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.578	3.570	0.008	1.335	909460	2.48		99.1	32662	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.578	3.571	0.007	1.000	5228	0.0138			65.8	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.748	3.740	0.008	1.398	912547	2.60		104	1838	
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.758	3.746	0.012	1.003	4563	0.0128			72.8	M
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.747	0.001	1.398	2059521	2.37		94.6	53119	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.750	0.008	1.003	6769	0.009805			21.6	
563.00 > 169.00	3.748	3.750	-0.002	1.000	2036		3.32(2.12-6.36)		273	
D 36 13C2 PFDoA										
615.00 > 570.00	4.046	4.041	0.005	1.509	2030457	2.46		98.4	12061	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.304	0.014	1.000	6590	0.007887			1.2	
663.00 > 169.00	4.318	4.304	0.014	1.000	2088		3.16(1.25-3.76)		39.1	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.554	4.545	0.009	1.699	1887839	2.50		100	15105	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.964	4.956	0.008	1.852	2604449	2.36		94.5	10010	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	4.960	0.004	1.000	29897	NC			2.7	
813.00 > 169.00	4.964	4.960	0.004	1.000	5706		5.24(2.86-8.58)		67.7	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL0_00006 Amount Added: 1.00 Units: mL

Report Date: 18-Mar-2018 12:48:57 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_010.d

Injection Date: 17-Mar-2018 00:04:26 Instrument ID: A8_N

Lims ID: ICB

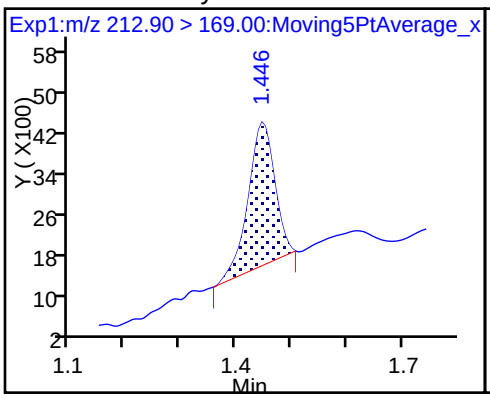
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9

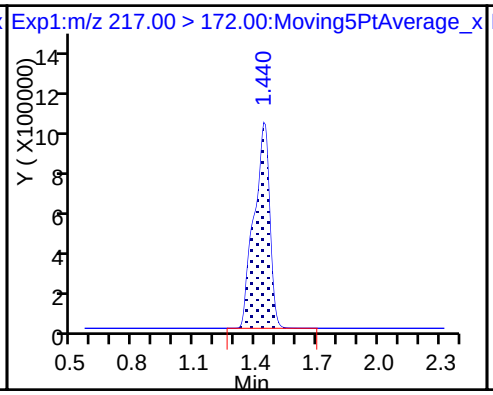
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

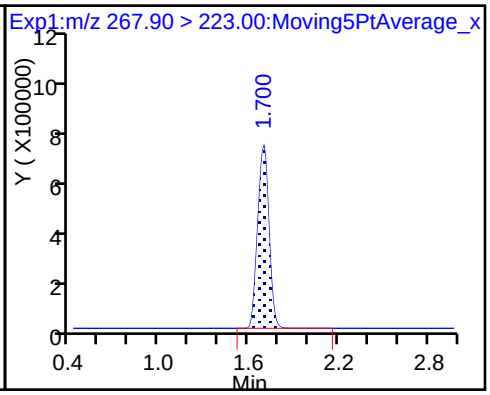
2 Perfluorobutyric acid



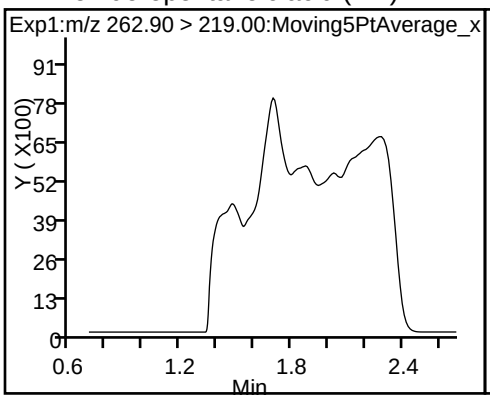
D 1 13C4 PFBA



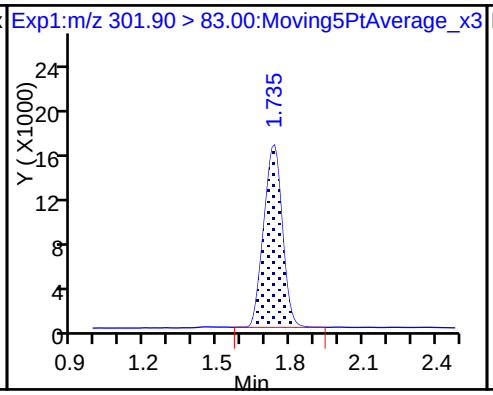
D 3 13C5-PFPeA



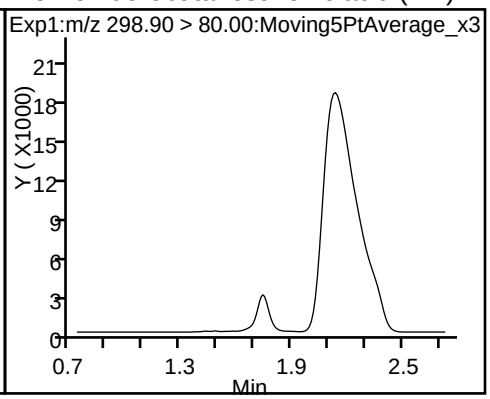
4 Perfluoropentanoic acid (ND)



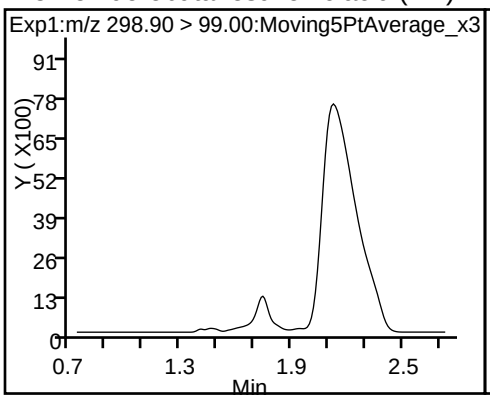
D 47 13C3-PFBS



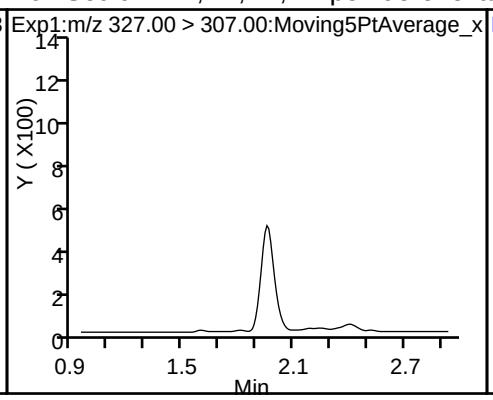
5 Perfluorobutanesulfonic acid (ND)



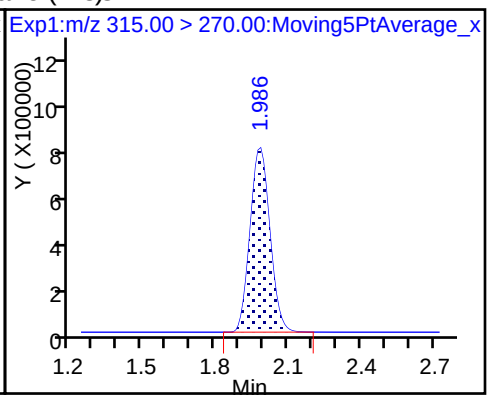
5 Perfluorobutanesulfonic acid (ND)



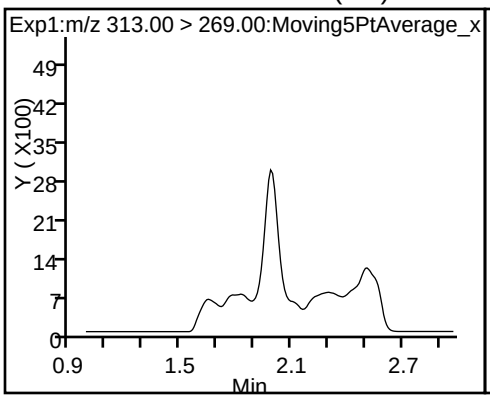
61 Sodium 1H,1H,2H,2H-perfluorohexane (ND)



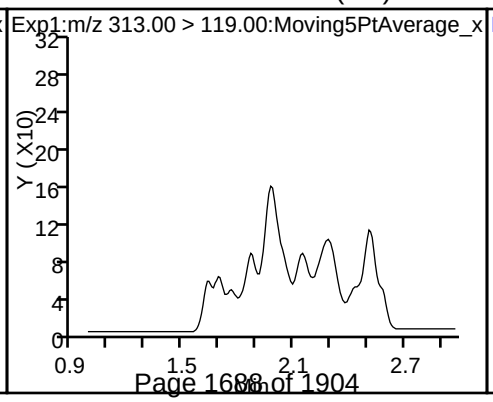
D 13C2 PFHxA



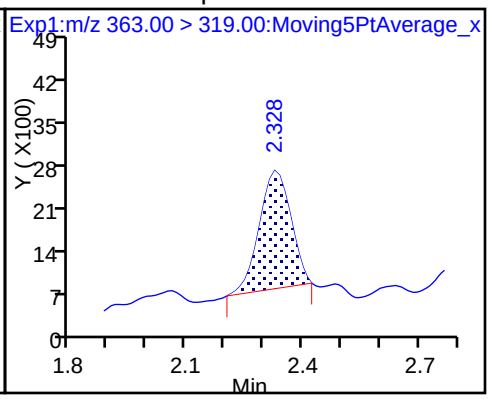
6 Perfluorohexanoic acid (ND)



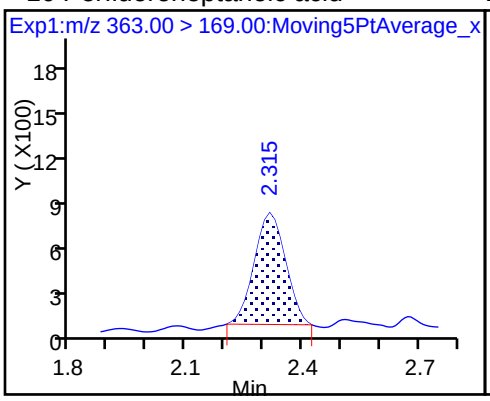
6 Perfluorohexanoic acid (ND)



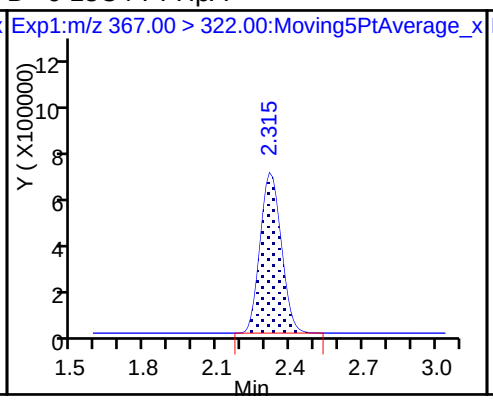
10 Perfluoroheptanoic acid



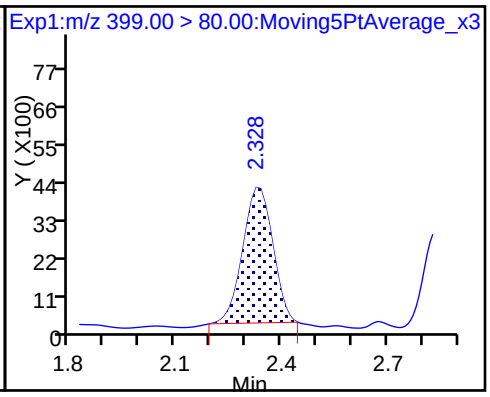
10 Perfluoroheptanoic acid



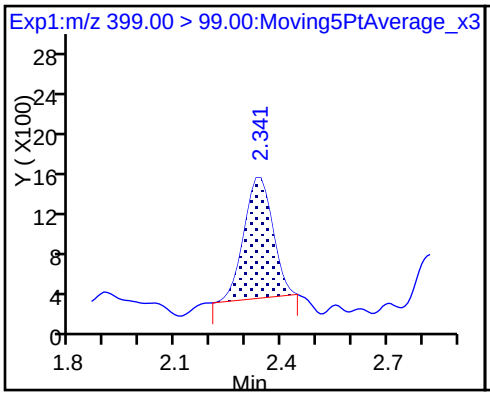
D 9 13C4-PFHpA



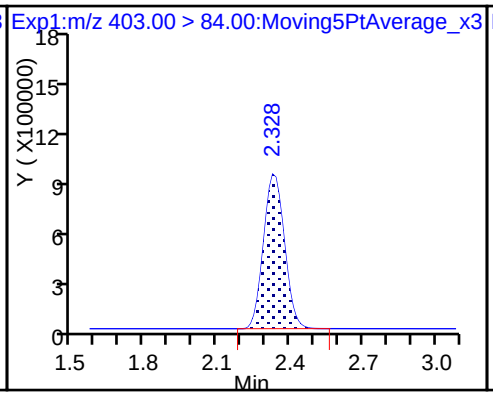
8 Perfluorohexanesulfonic acid



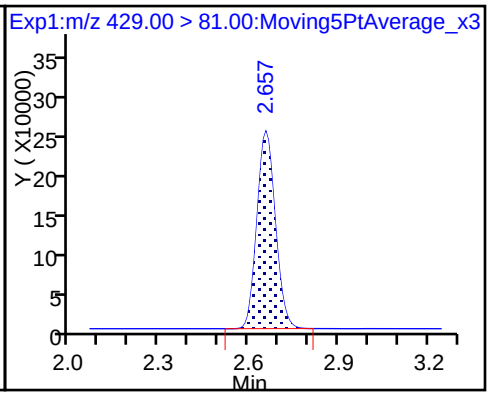
8 Perfluorohexanesulfonic acid



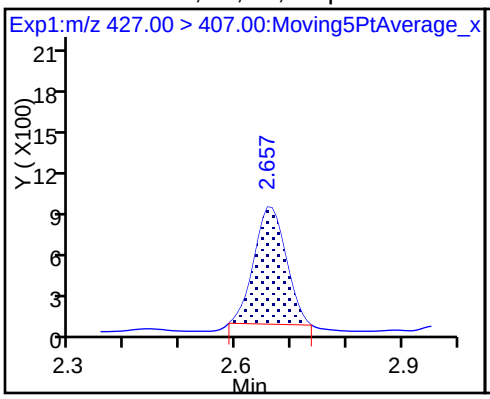
D 11 18O2 PFHxS



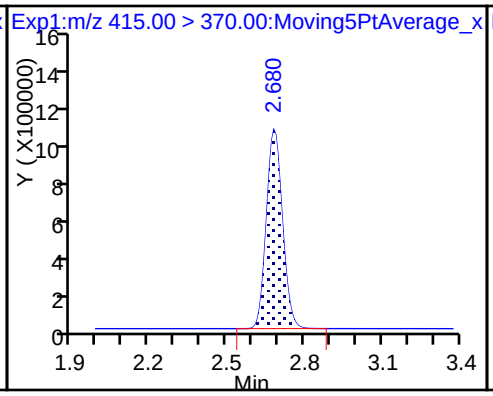
D 12 M2-6:2FTS



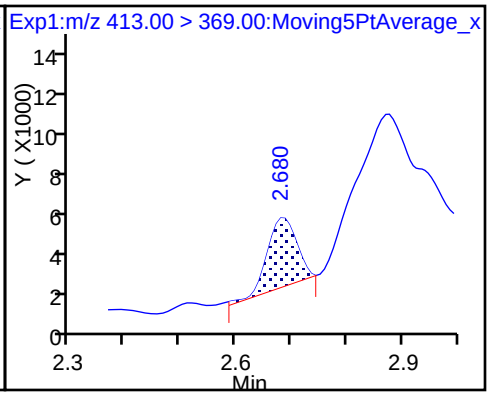
13 Sodium 1H,1H,2H,2H-perfluorooctane



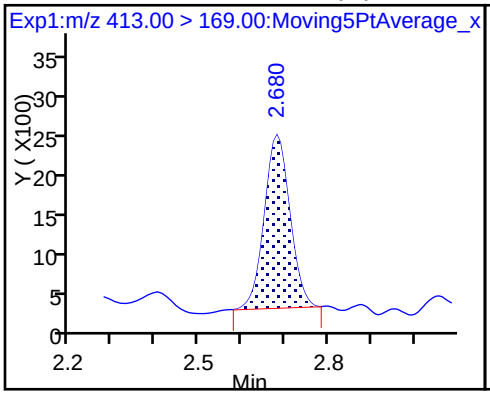
62 13C2-PFOA



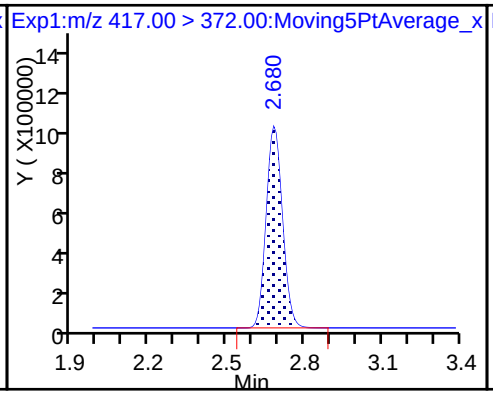
15 Perfluorooctanoic acid



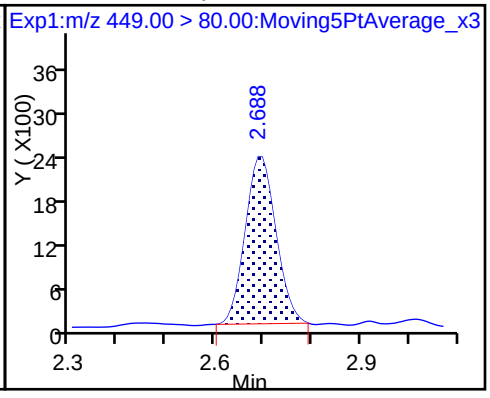
15 Perfluorooctanoic acid (M)



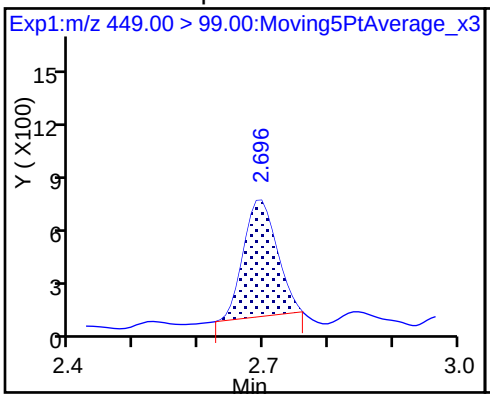
D 14 13C4 PFOA



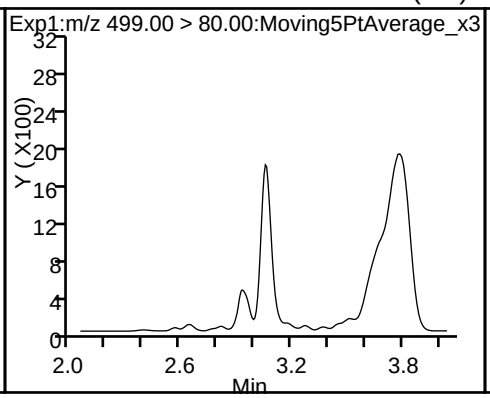
16 Perfluoroheptanesulfonic acid



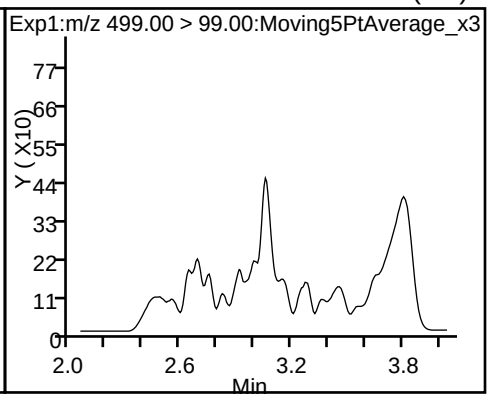
16 Perfluoroheptanesulfonic acid



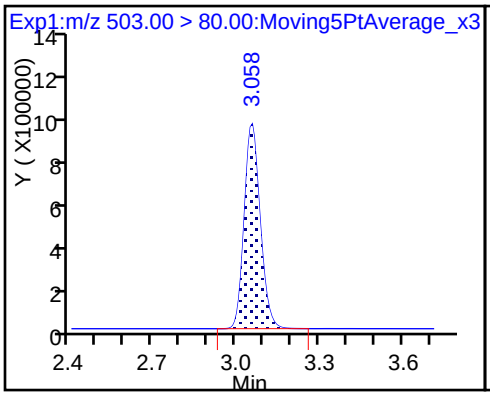
17 Perfluorooctane sulfonic acid (ND)



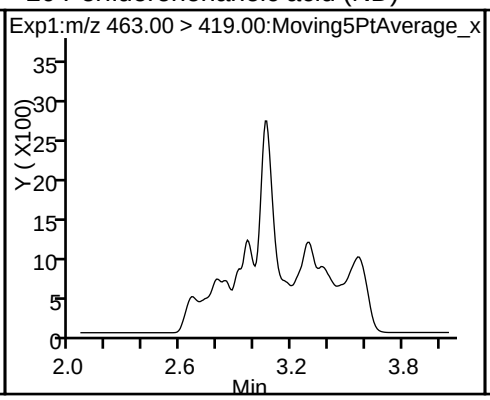
17 Perfluorooctane sulfonic acid (ND)



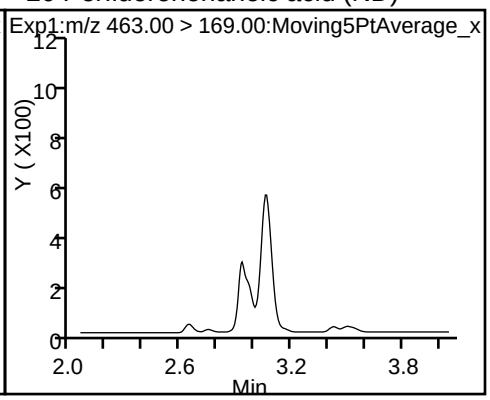
D 18 13C4 PFOS



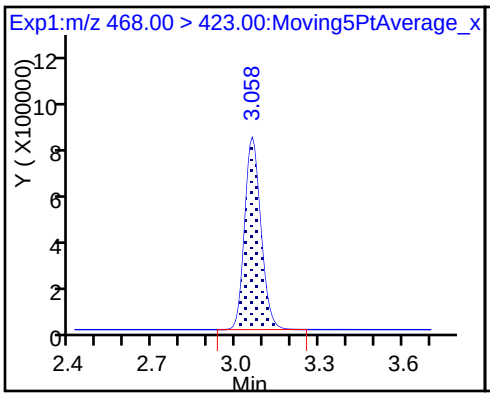
20 Perfluorononanoic acid (ND)



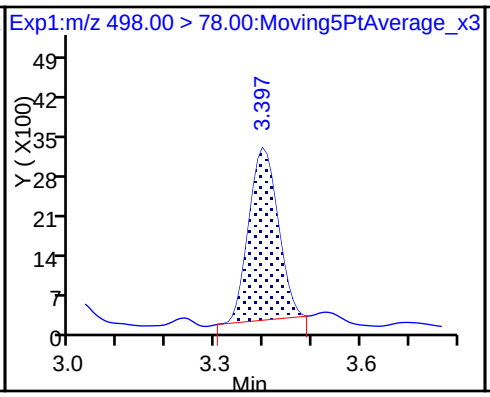
20 Perfluorononanoic acid (ND)



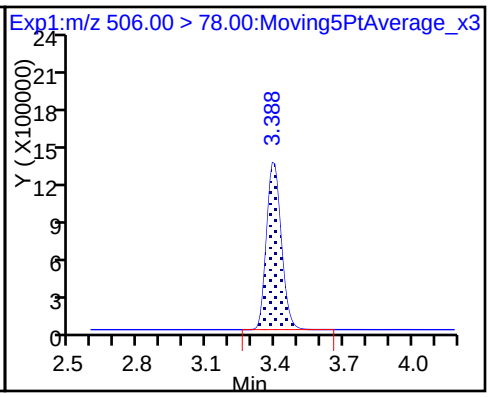
D 19 13C5 PFNA



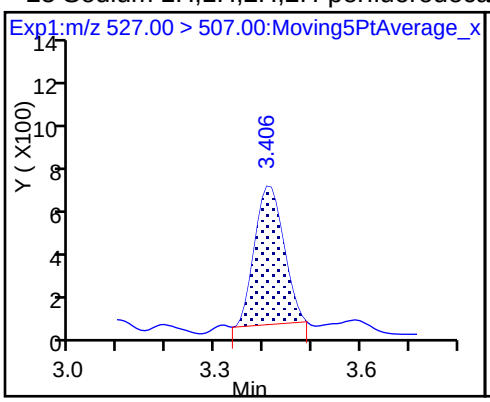
22 Perfluorooctane Sulfonamide



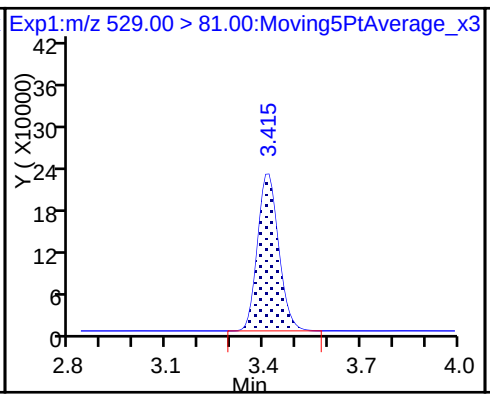
D 21 13C8 FOSA



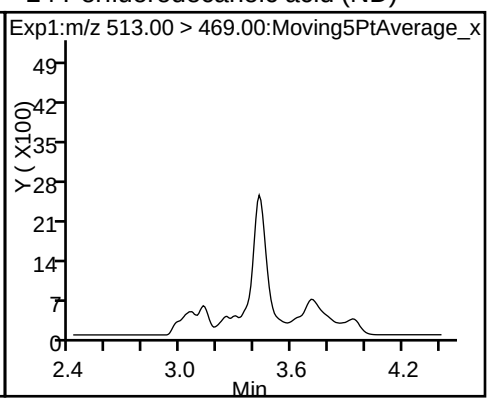
25 Sodium 1H,1H,2H,2H-perfluorodecane



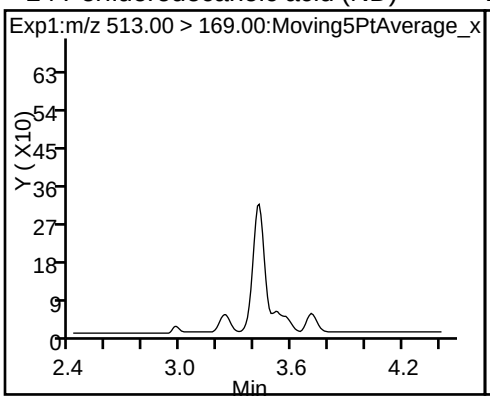
D 26 M2-8:2FTS



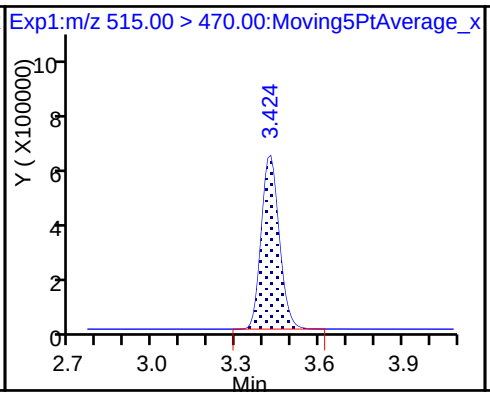
24 Perfluorodecanoic acid (ND)



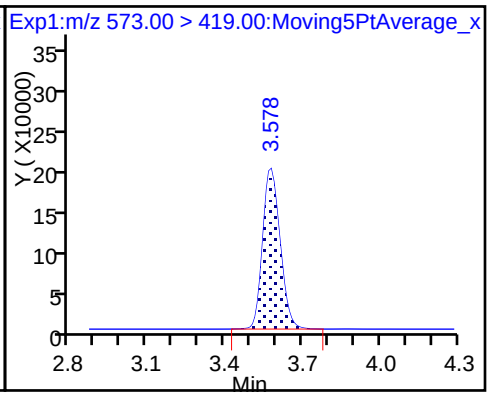
24 Perfluorodecanoic acid (ND)



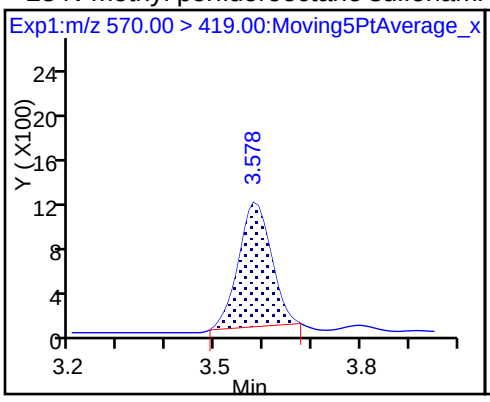
D 23 13C2 PFDA



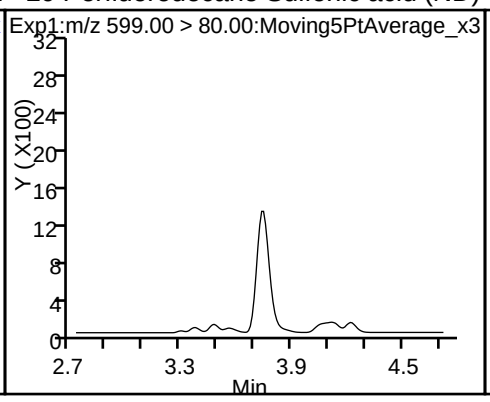
D 27 d3-NMeFOSAA



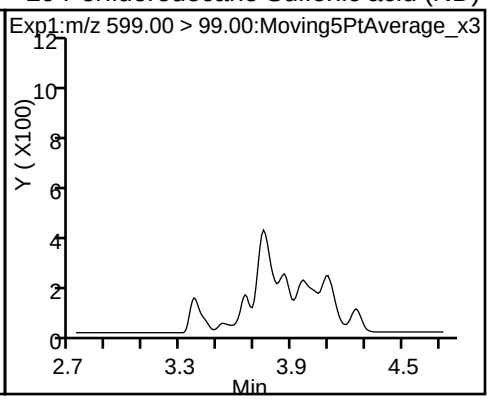
28 N-methyl perfluorooctane sulfonami



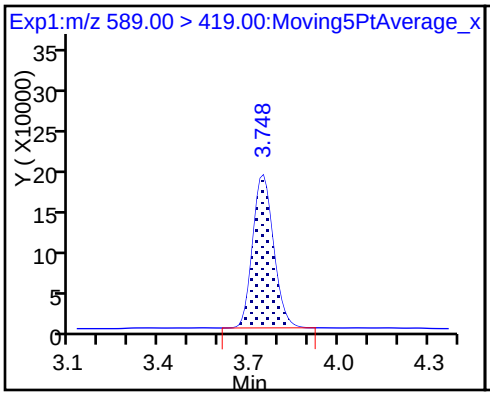
29 Perfluorodecane Sulfonic acid (ND)



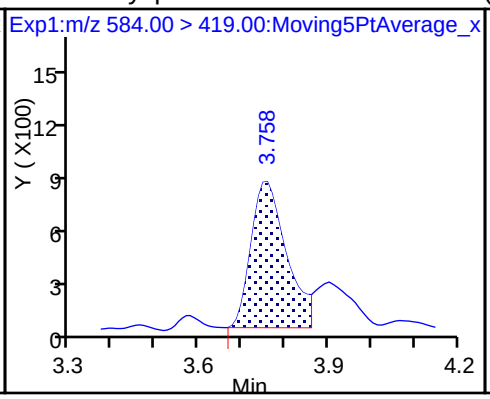
29 Perfluorodecane Sulfonic acid (ND)



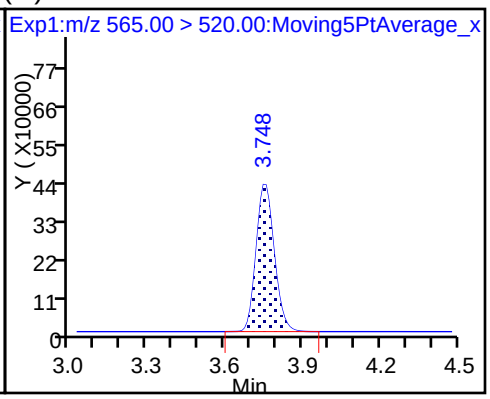
D 32 d5-NEtFOSAA



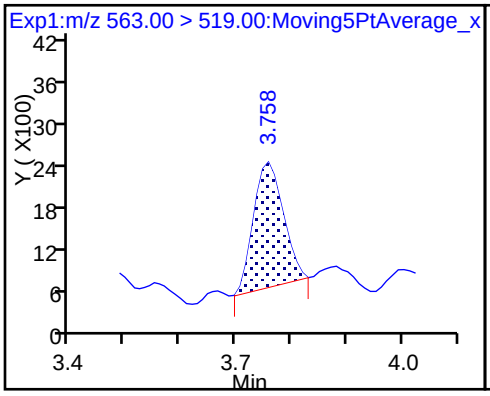
33 N-ethyl perfluorooctane sulfonamid



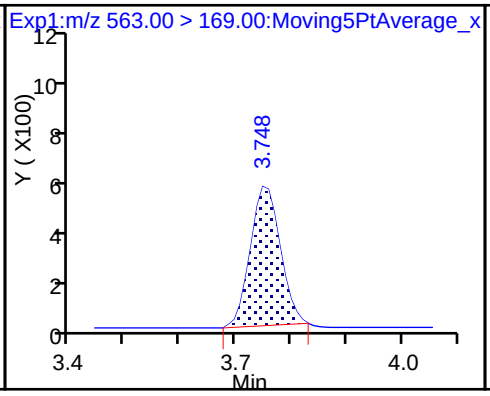
D 30 13C2 PFUnA



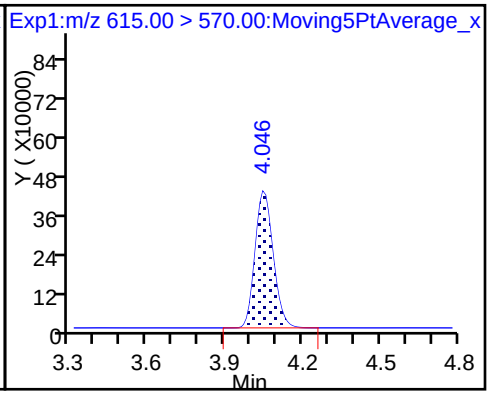
31 Perfluoroundecanoic acid



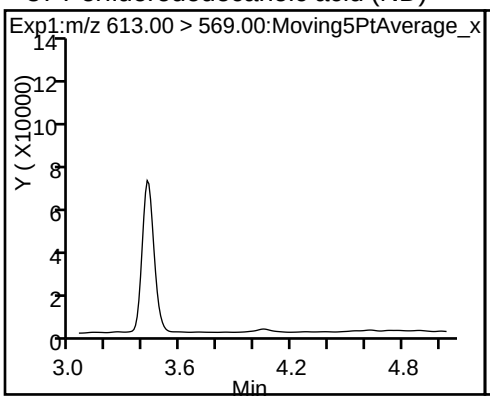
31 Perfluoroundecanoic acid



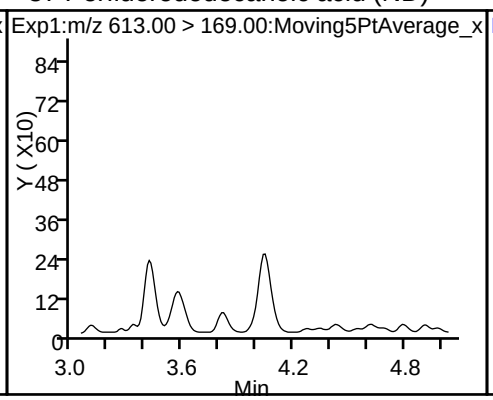
D 36 13C2 PFDoA



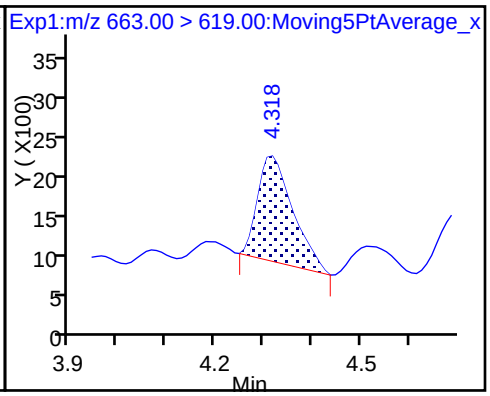
37 Perfluorododecanoic acid (ND)



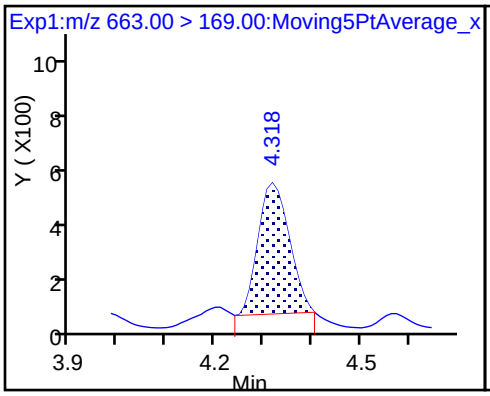
37 Perfluorododecanoic acid (ND)



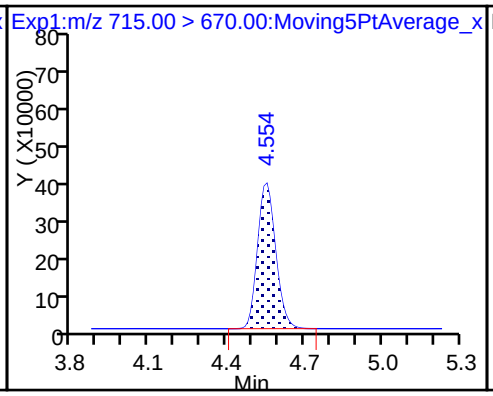
41 Perfluorotridecanoic acid



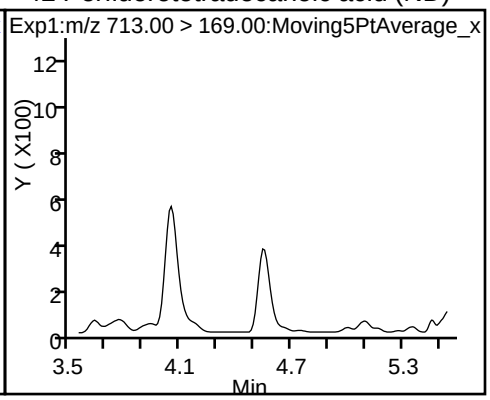
41 Perfluorotridecanoic acid



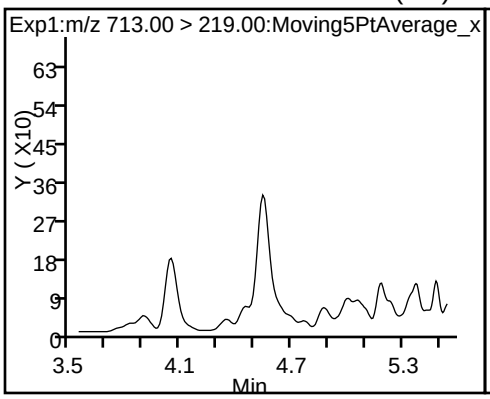
D 43 13C2-PFTeDA



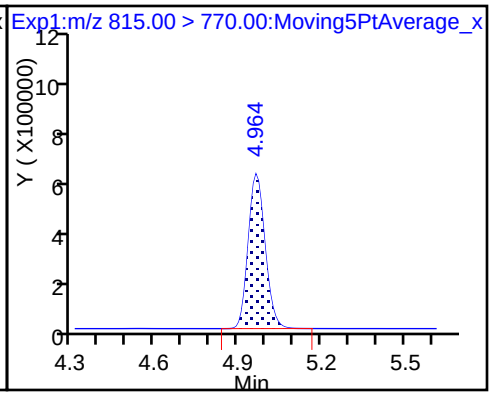
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

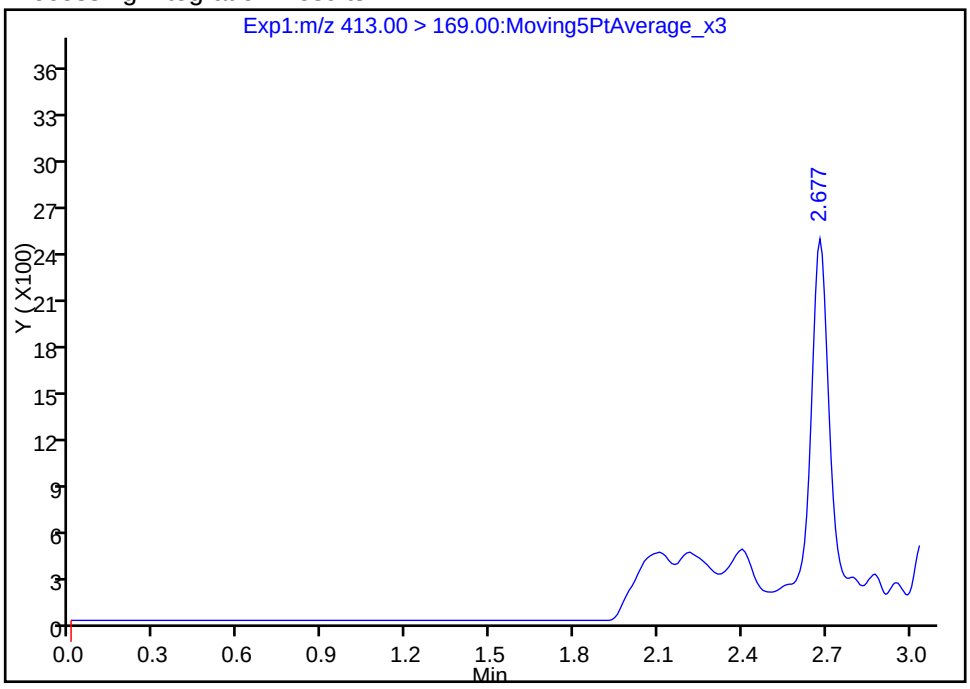
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_010.d
Injection Date: 17-Mar-2018 00:04:26 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

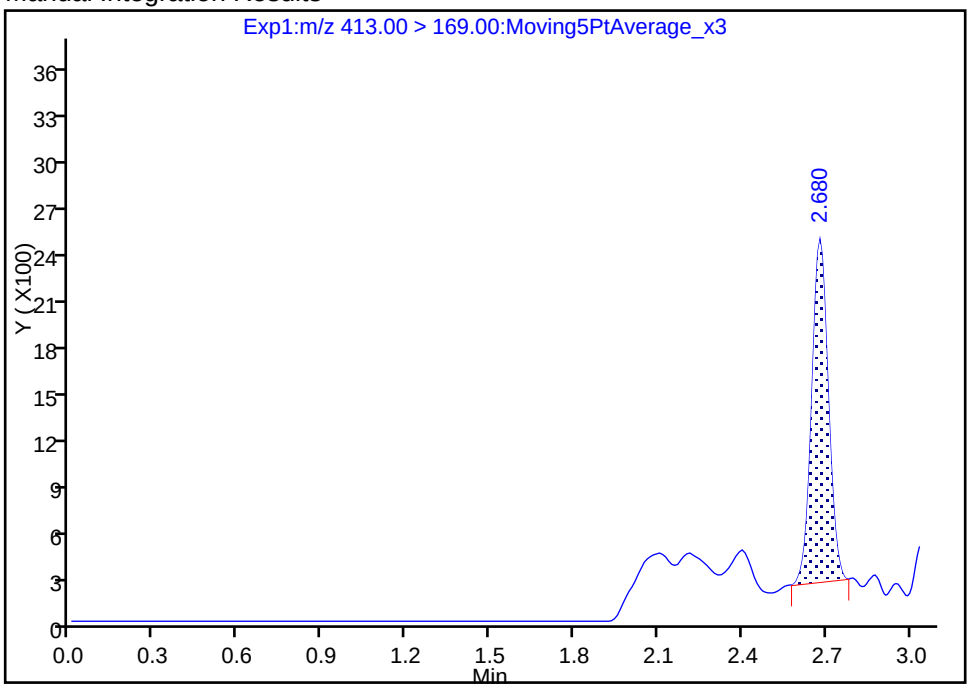
Processing Integration Results

RT: 2.68
Area: 0
Amount: 0.006616
Amount Units: ng/ml



Manual Integration Results

RT: 2.68
Area: 9094
Amount: 0.006616
Amount Units: ng/ml



Reviewer: phomsophat, 18-Mar-2018 12:42:38
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: ICB 320-214176/9

Matrix: Water | Lab File ID: 2018.03.21LLICALAX_009.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 03/21/2018 19:19

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214176 | Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00864	J	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0116	J M	0.050	0.040	0.0043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	98		50-150
STL01892	13C4-PFHpA	96		50-150
STL00990	13C4 PFOA	101		50-150
STL00995	13C5 PFNA	100		50-150
STL00994	18O2 PFHxS	96		50-150
STL00991	13C4 PFOS	94		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_009.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 21-Mar-2018 19:19:09 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 08:44:52 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK059

First Level Reviewer: roycea Date: 22-Mar-2018 08:33:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.447	-0.001	0.538	6349511	2.46		98.4	71434	
2 Perfluorobutyric acid										
212.90 > 169.00	1.453	1.449	0.004	1.004	9548	0.003990			4.8	
D 3 13C5-PFPeA										
267.90 > 223.00	1.709	1.710	-0.001	0.635	4229310	2.47		98.8	115803	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.743	0.001	0.648	89289	2.29		98.3	687	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.959	0.001	0.729	605578	NC			7896	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.998	-0.006	0.740	4720249	2.49		99.8	119583	
D 9 13C4-PFHpA										
367.00 > 322.00	2.335	2.333	0.002	0.868	4475621	2.40		95.9	84678	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.335	2.335	0.0	1.000	16009	0.008644			30.0	
363.00 > 169.00	2.335	2.335	0.0	1.000	4886		3.28(1.13-3.40)		49.6	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.348	2.346	0.002	1.000	28695	0.0116			338	M
399.00 > 99.00	2.348	2.346	0.002	1.000	8241		3.48(1.50-4.49)		34.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.348	2.348	0.0	0.873	5250833	2.28		96.4	59833	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.675	2.672	0.003	1.003	5257	0.007818			314	
D 12 M2-6:2FTS										
429.00 > 81.00	2.667	2.672	-0.005	0.991	915957	2.37		99.6	17858	
* 62 13C2-PFOA										
415.00 > 370.00	2.691	2.695	-0.004		5094636	2.50			79762	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.691	2.695	-0.004	1.000	4840712	2.53		101	75896	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.699	2.697	0.001	1.003	15686	0.007171			4.7	
413.00 > 169.00	2.699	2.697	0.001	1.003	8809		1.78(0.84-2.52)		23.0	M
D 18 13C4 PFOS										
503.00 > 80.00	3.060	3.068	-0.008	1.137	3764119	2.25		94.0	33199	
D 19 13C5 PFNA										
468.00 > 423.00	3.067	3.070	-0.003	1.140	4207575	2.50		99.9	74864	
D 21 13C8 FOSA										
506.00 > 78.00	3.392	3.396	-0.004	1.261	5544325	2.45		98.1	46742	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.392	3.397	-0.005	1.000	9338	0.004271			91.5	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.420	3.426	-0.006	1.000	2893	0.004178			78.8	
D 26 M2-8:2FTS										
529.00 > 81.00	3.420	3.426	-0.006	1.271	1299398	2.49		104	36432	
D 23 13C2 PFDA										
515.00 > 470.00	3.429	3.435	-0.006	1.274	3778394	2.56		102	53205	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.584	3.591	-0.007	1.332	1918031	2.47		98.7	34096	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.584	3.594	-0.010	1.000	10280	0.0134			68.9	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.754	3.759	-0.005	1.395	2340700	2.64		106	12683	
D 30 13C2 PFUnA										
565.00 > 520.00	3.764	3.768	-0.004	1.399	3379092	2.56		102	58441	
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.764	3.768	-0.004	1.003	13170	0.0151			243	M
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.764	3.768	-0.004	1.000	11143	0.009562			46.2	
563.00 > 169.00	3.764	3.768	-0.004	1.000	1967		5.66(2.12-6.36)		113	
D 36 13C2 PFDoA										
615.00 > 570.00	4.052	4.066	-0.014	1.506	3716673	2.48		99.2	28371	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.063	4.068	-0.005	1.003	6021	0.003871			5.9	
613.00 > 169.00	4.063	4.068	-0.005	1.003	1927		3.12(2.13-6.40)		33.8	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.561	4.568	-0.007	1.695	4444086	2.43		97.1	26665	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.978	4.987	-0.009	1.850	7185870	2.39		95.8	21596	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.987	4.989	-0.002	1.002	68825	NC			21.8	
813.00 > 169.00	4.978	4.989	-0.011	1.000	11691		5.89(2.86-8.58)		129	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.348	5.354	-0.006	1.000	20201	NC			6.5	
913.00 > 169.00	5.341	5.354	-0.013	0.999	2035		9.93(3.83-11.48)		19.8	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL0_00006 Amount Added: 1.00 Units: mL

Report Date: 22-Mar-2018 08:45:21 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_009.d

Injection Date: 21-Mar-2018 19:19:09 Instrument ID: A8_N

Lims ID: ICB

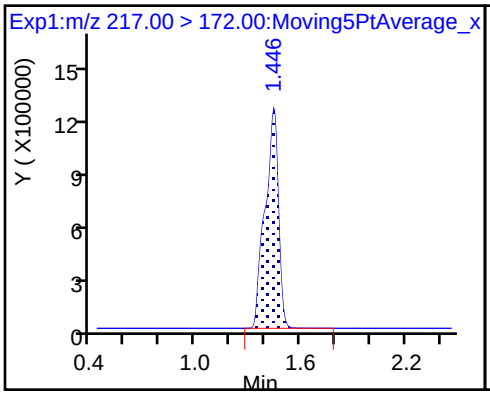
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9

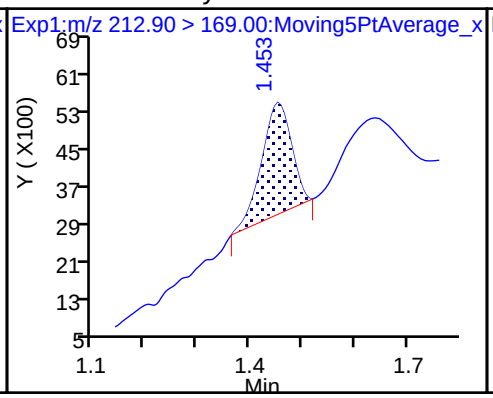
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

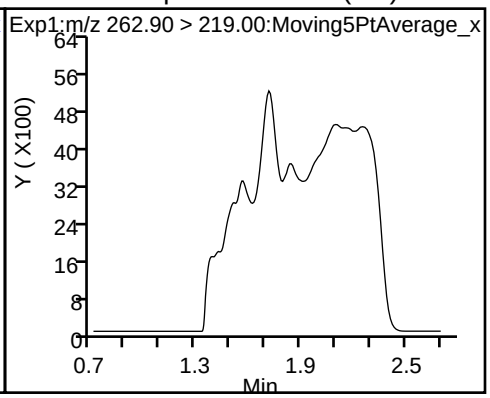
D 1 13C4 PFBA



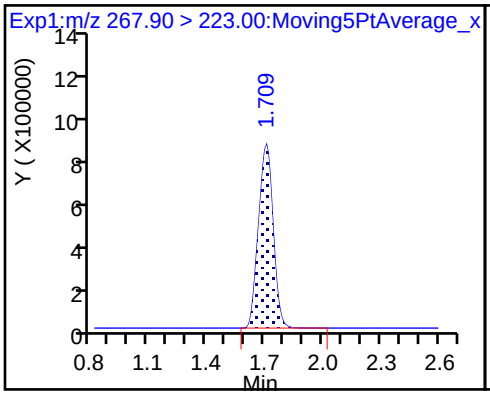
2 Perfluorobutyric acid



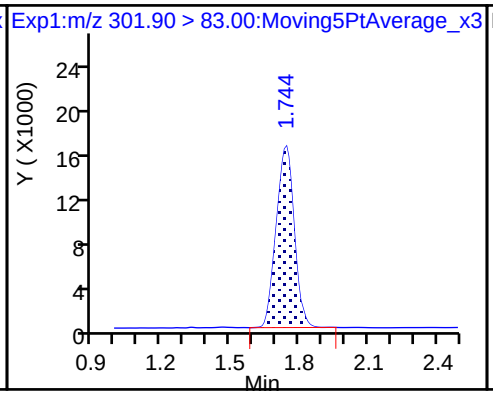
4 Perfluoropentanoic acid (ND)



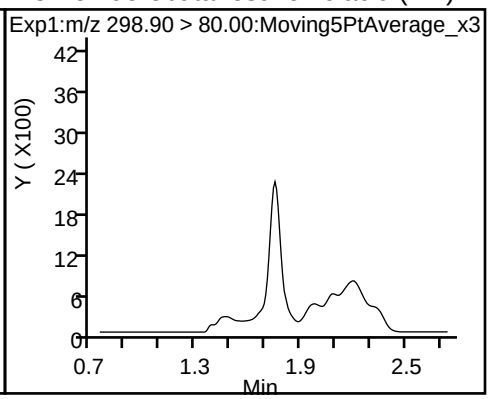
D 3 13C5-PFPeA



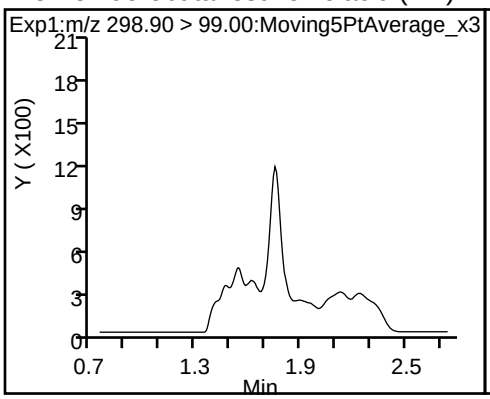
D 47 13C3-PFBS



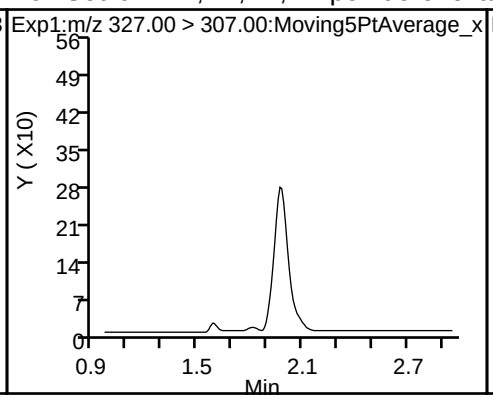
5 Perfluorobutanesulfonic acid (ND)



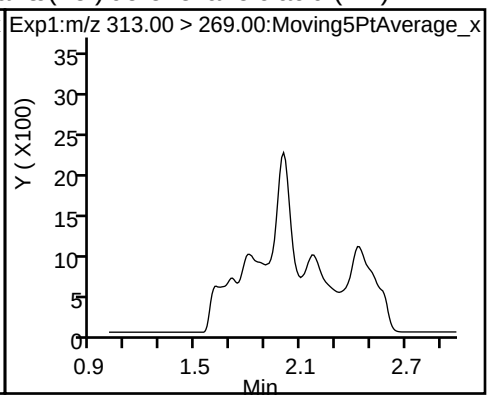
5 Perfluorobutanesulfonic acid (ND)



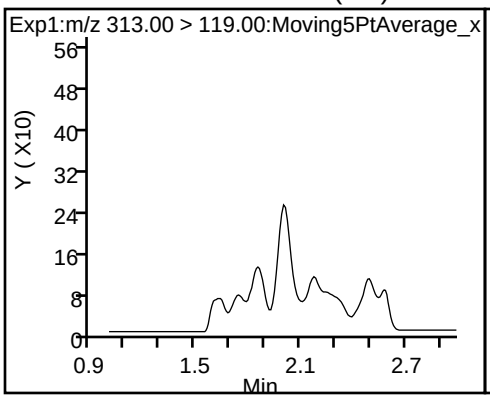
61 Sodium 1H,1H,2H,2H-perfluorohexane6(ND)



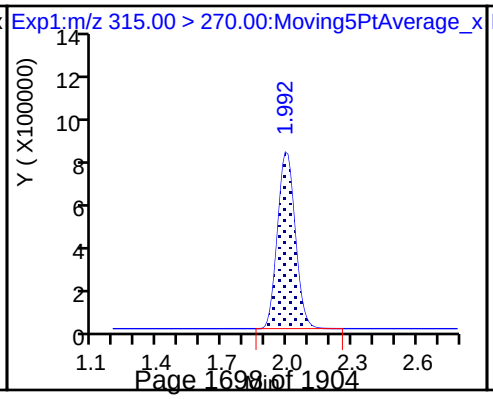
6 Perfluorohexanoic acid (ND)



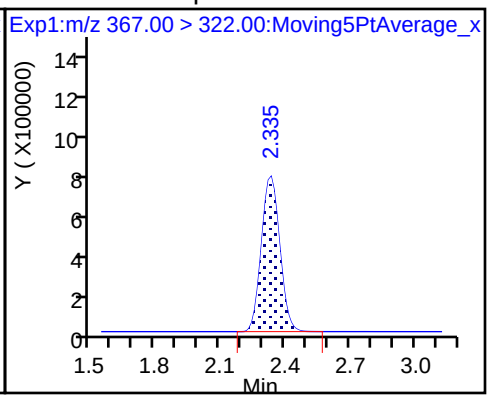
6 Perfluorohexanoic acid (ND)



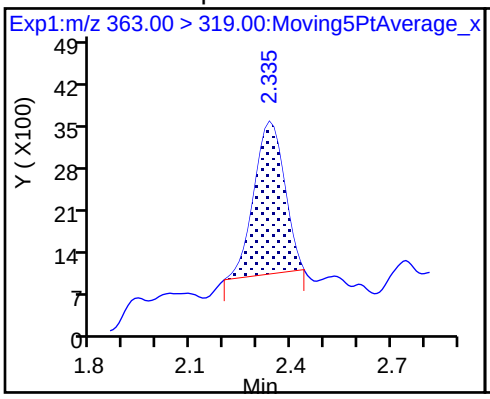
D 7 13C2 PFHxA



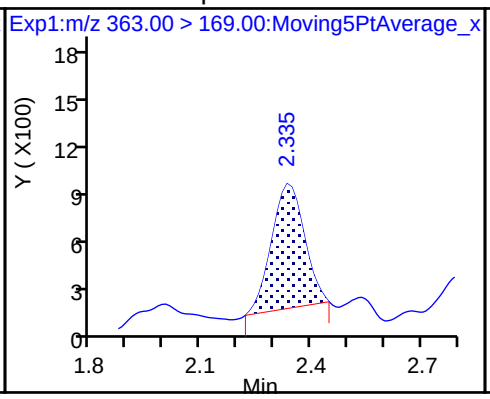
D 9 13C4-PFHpA



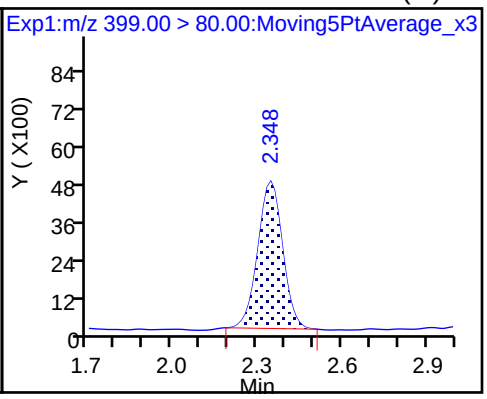
10 Perfluoroheptanoic acid



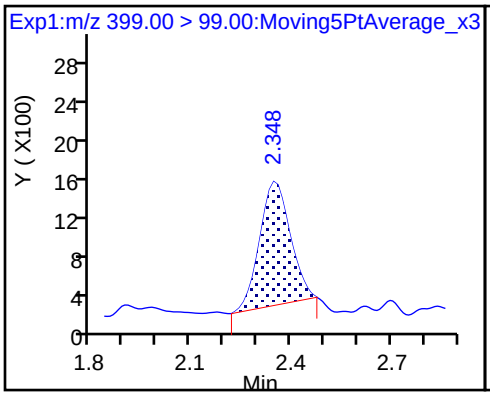
10 Perfluoroheptanoic acid



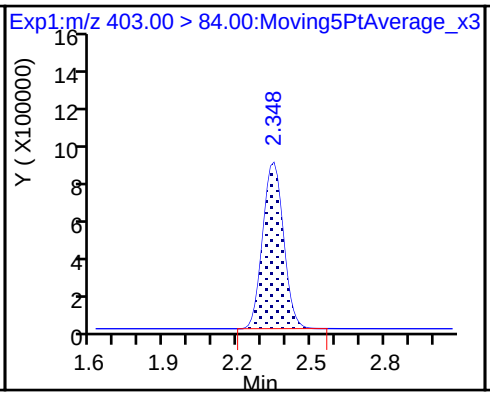
8 Perfluorohexanesulfonic acid (M)



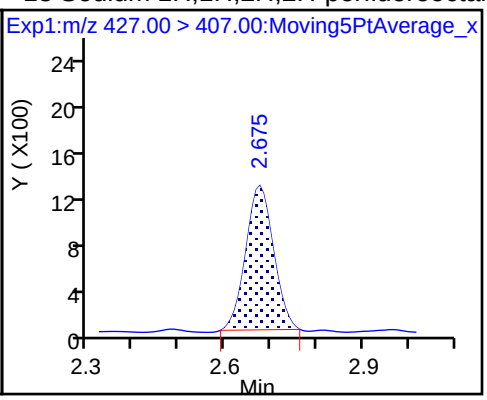
8 Perfluorohexanesulfonic acid



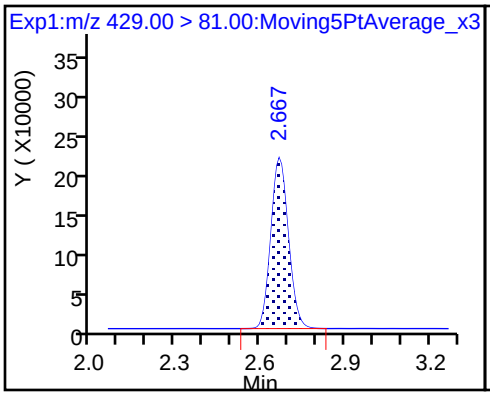
D 11 18O2 PFHxS



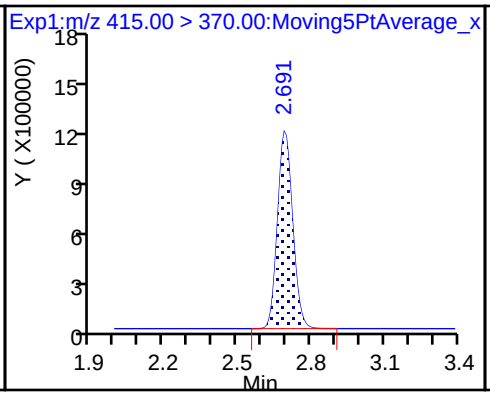
13 Sodium 1H,1H,2H,2H-perfluorooctane



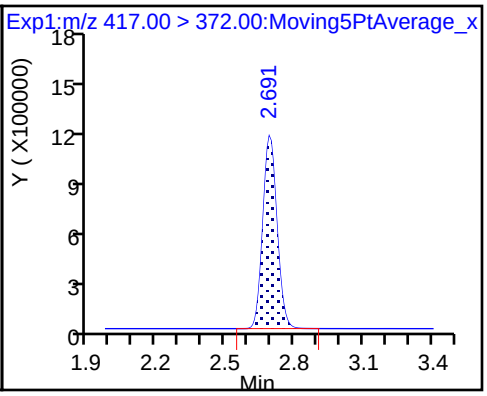
D 12 M2-6:2FTS



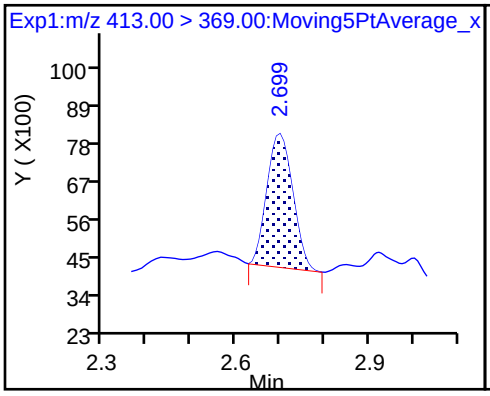
* 62 13C2-PFOA



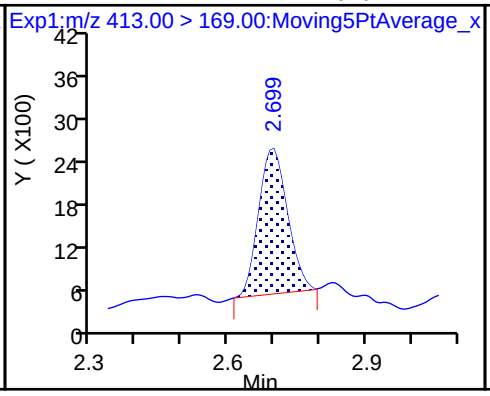
D 14 13C4 PFOA



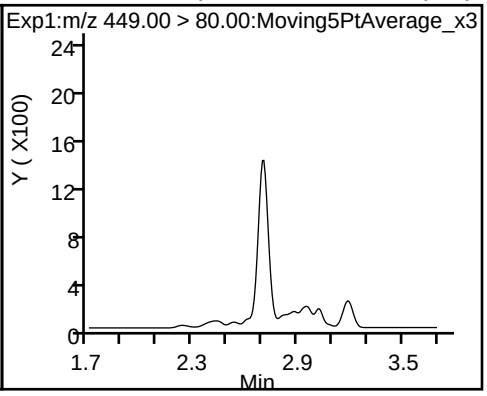
15 Perfluorooctanoic acid



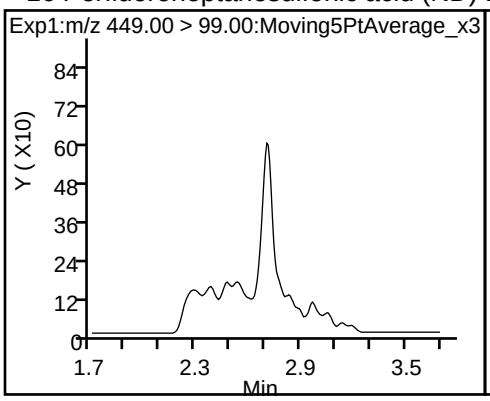
15 Perfluorooctanoic acid (M)



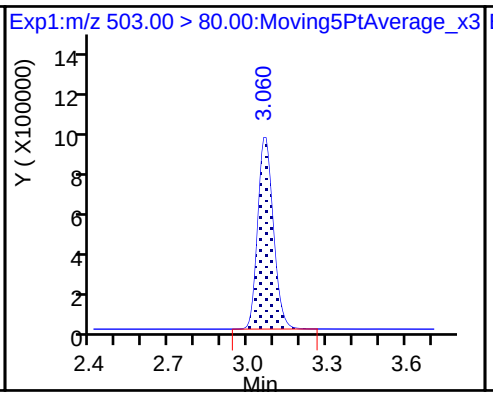
16 Perfluoroheptanesulfonic acid (ND)



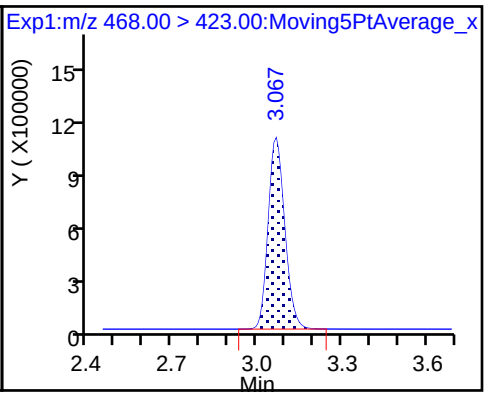
16 Perfluoroheptanesulfonic acid (ND)



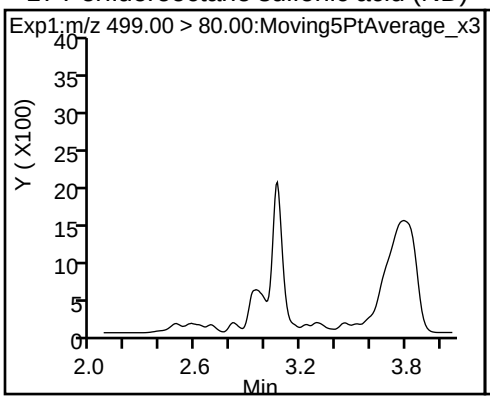
D 18 13C4 PFOS



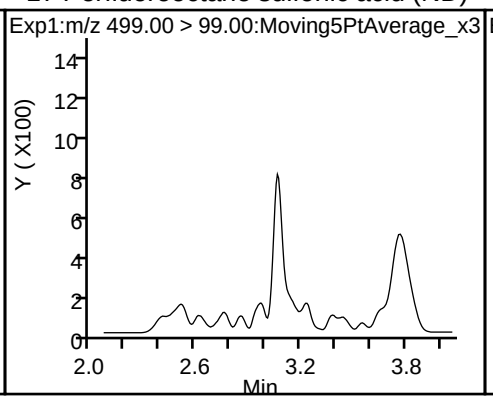
D 19 13C5 PFNA



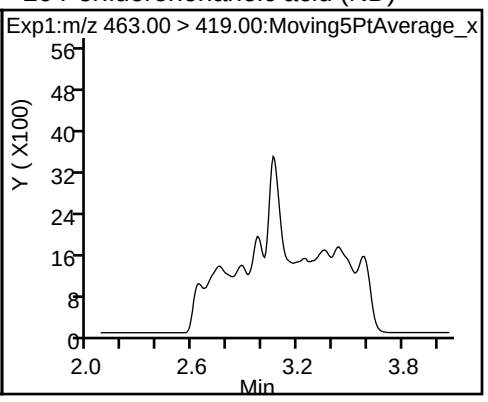
17 Perfluorooctane sulfonic acid (ND)



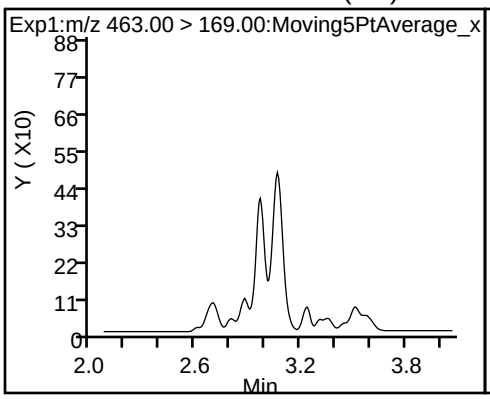
17 Perfluorooctane sulfonic acid (ND)



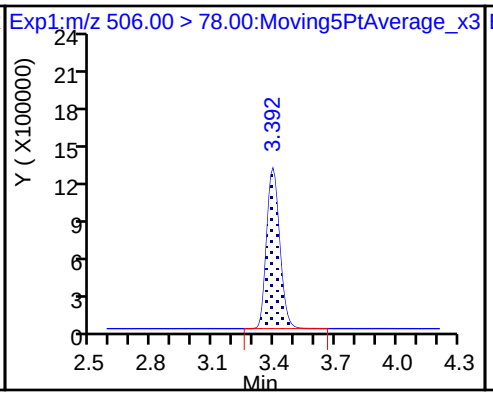
20 Perfluorononanoic acid (ND)



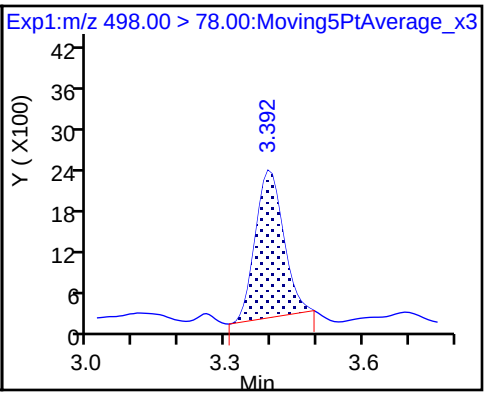
20 Perfluorononanoic acid (ND)



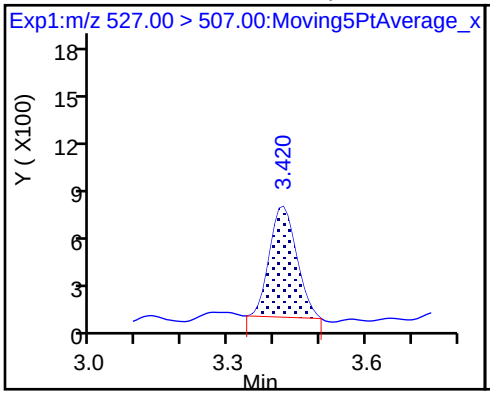
D 21 13C8 FOSA



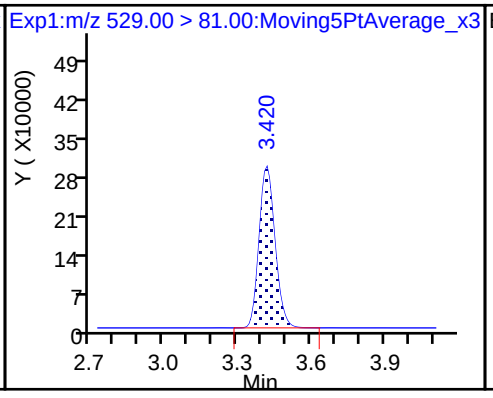
22 Perfluorooctane Sulfonamide



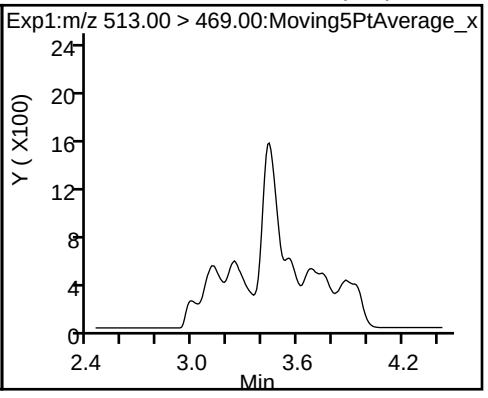
25 Sodium 1H,1H,2H,2H-perfluorodecane



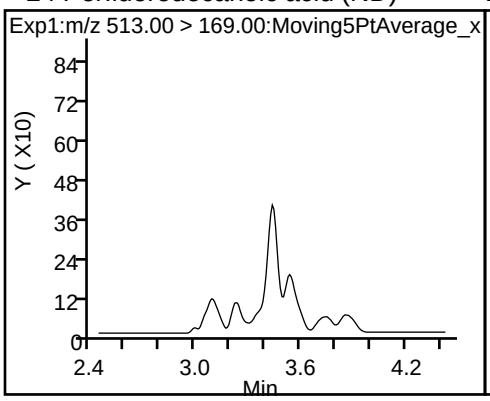
D 26 M2-8:2FTS



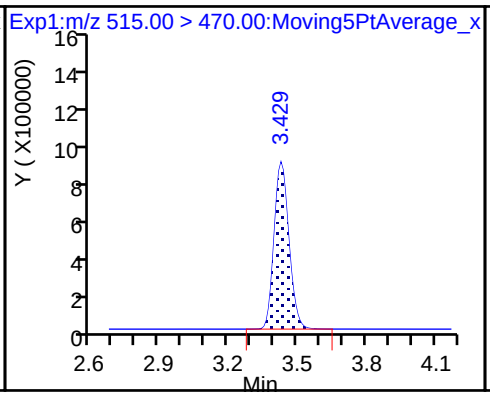
24 Perfluorodecanoic acid (ND)



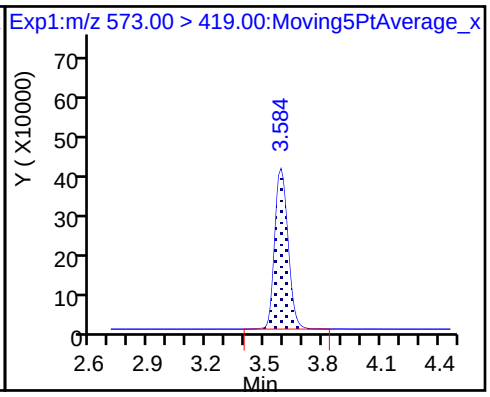
24 Perfluorodecanoic acid (ND)



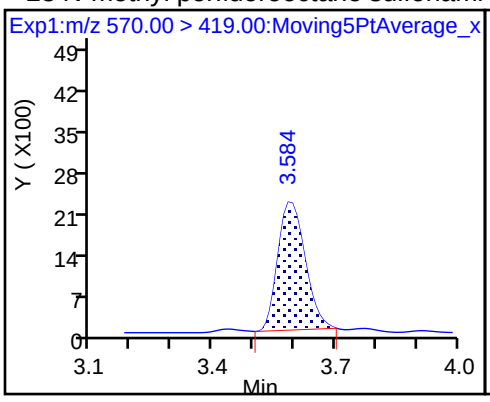
D 23 13C2 PFDA



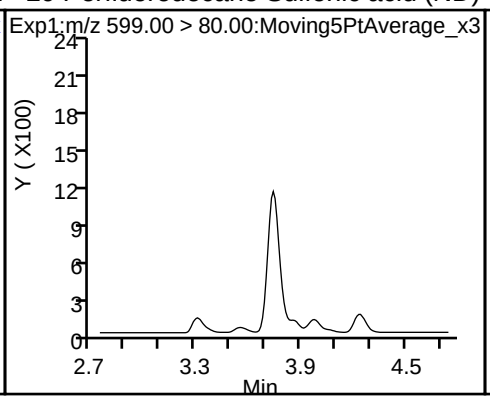
D 27 d3-NMeFOSAA



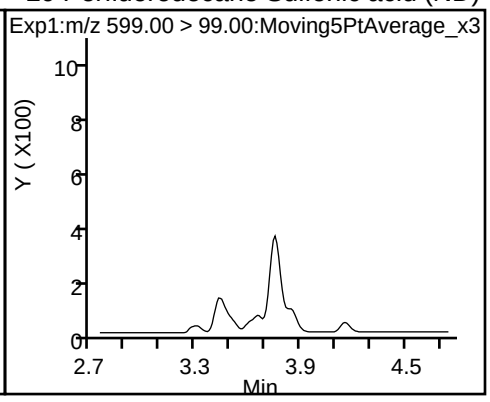
28 N-methyl perfluorooctane sulfonami



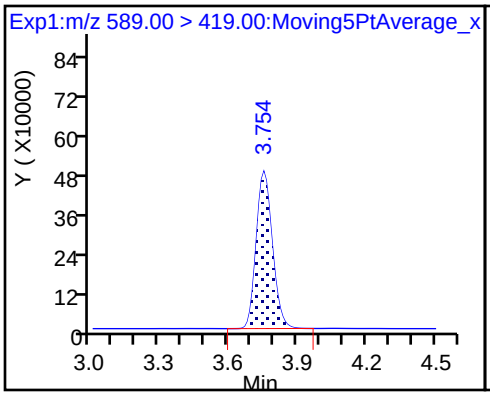
29 Perfluorodecane Sulfonic acid (ND)



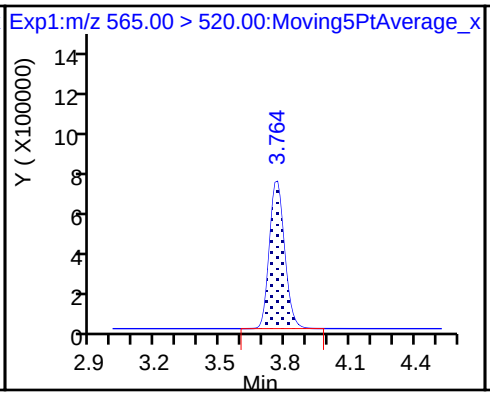
29 Perfluorodecane Sulfonic acid (ND)



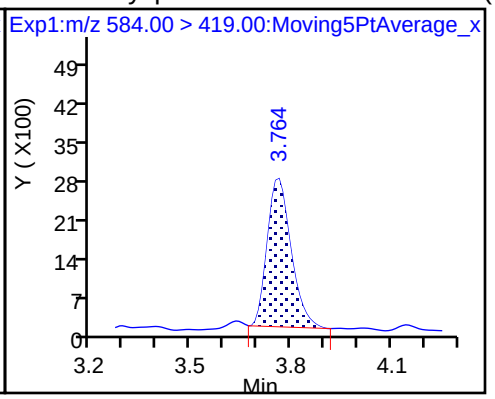
D 32 d5-NEtFOSAA



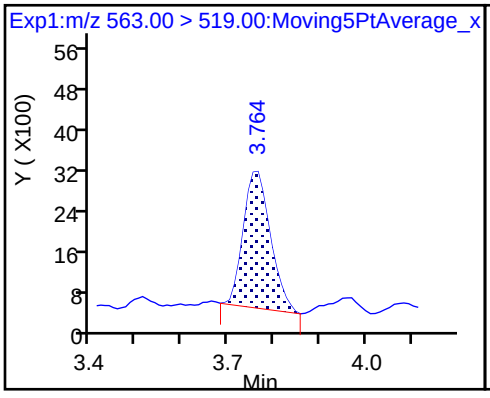
D 30 13C2 PFUnA



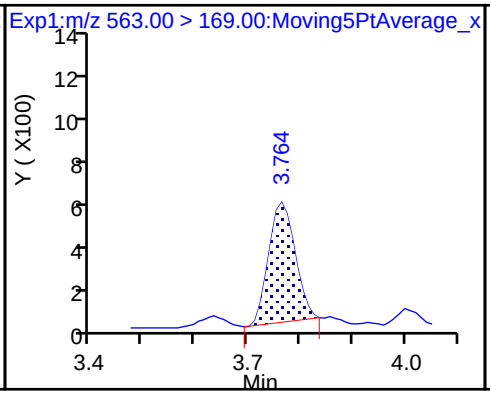
33 N-ethyl perfluorooctane sulfonamid (M)



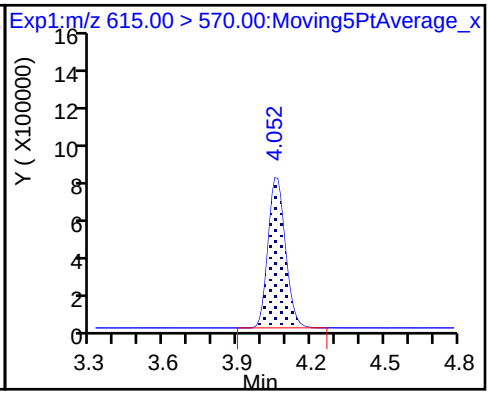
31 Perfluoroundecanoic acid



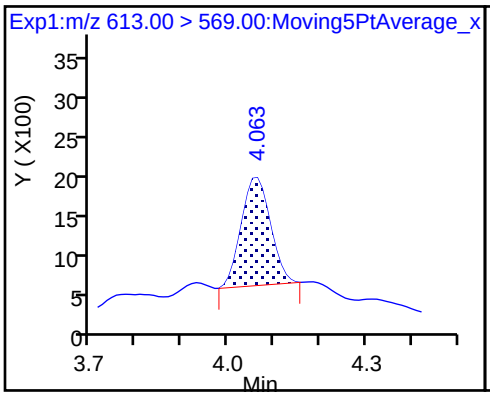
31 Perfluoroundecanoic acid



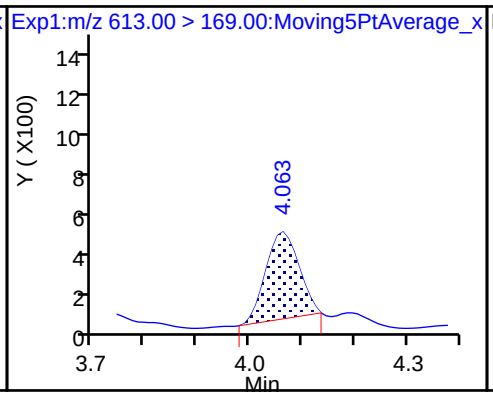
D 36 13C2 PFDoA



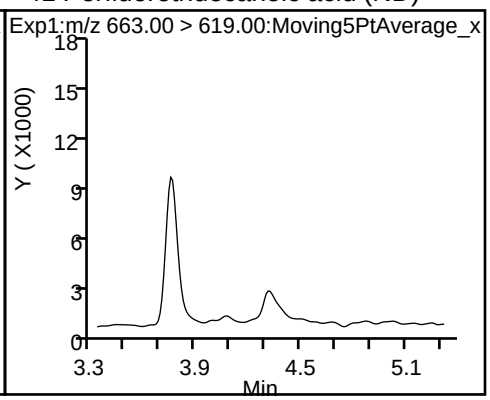
37 Perfluorododecanoic acid



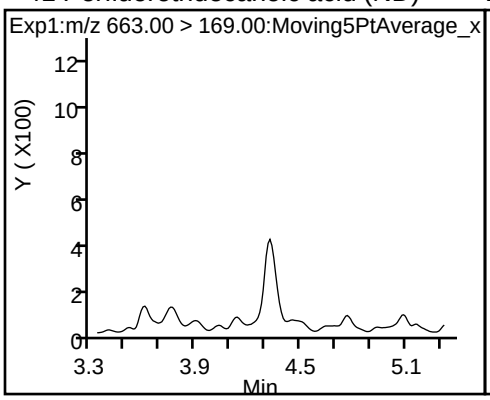
37 Perfluorododecanoic acid



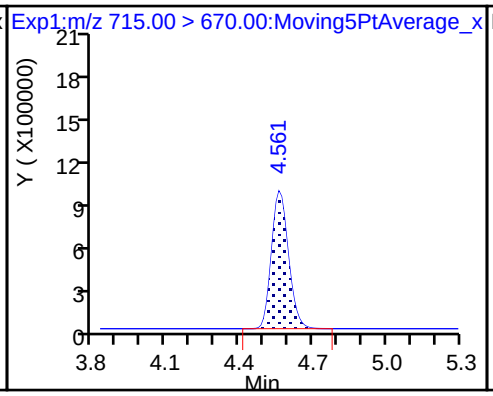
41 Perfluorotridecanoic acid (ND)



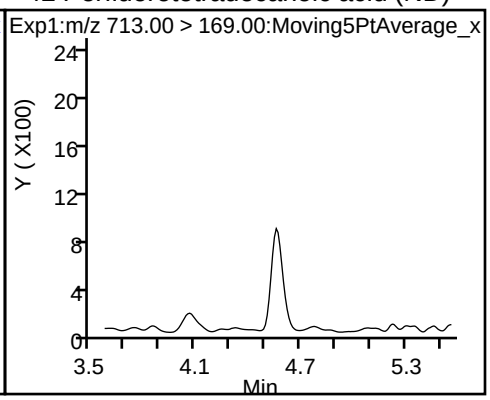
41 Perfluorotridecanoic acid (ND)



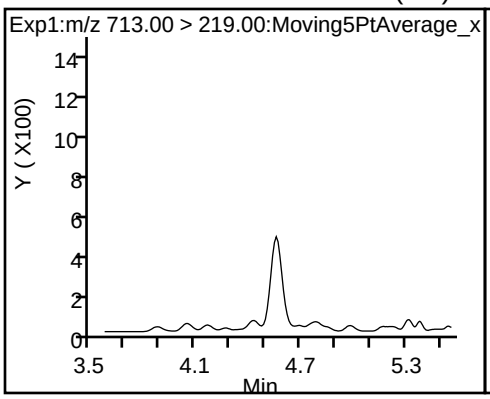
D 43 13C2-PFTeDA



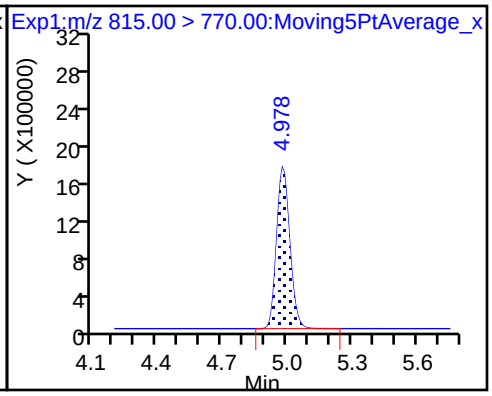
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

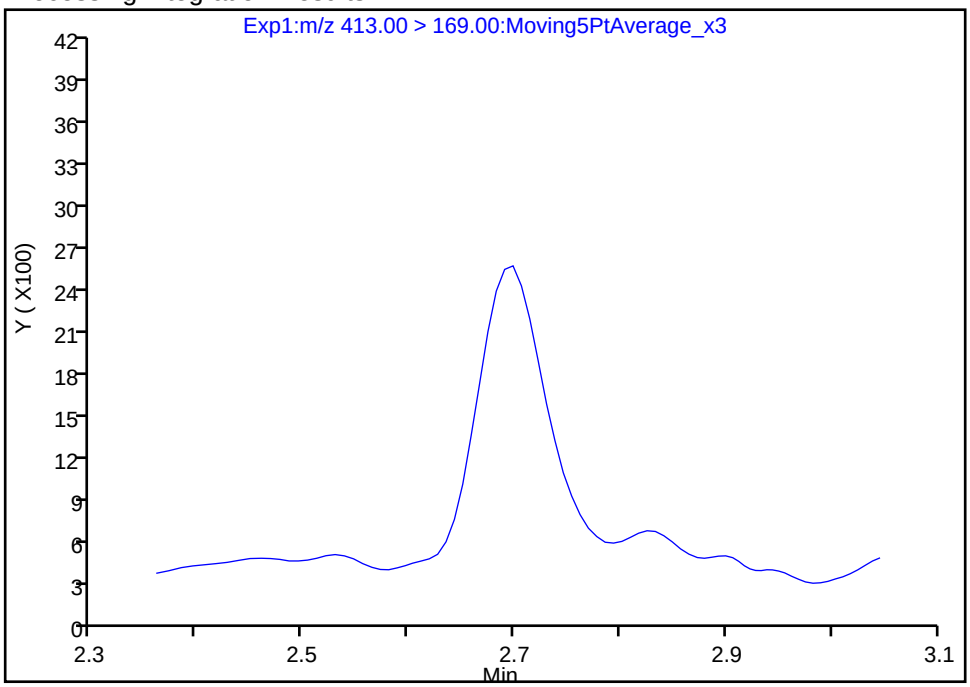
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_009.d
Injection Date: 21-Mar-2018 19:19:09 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

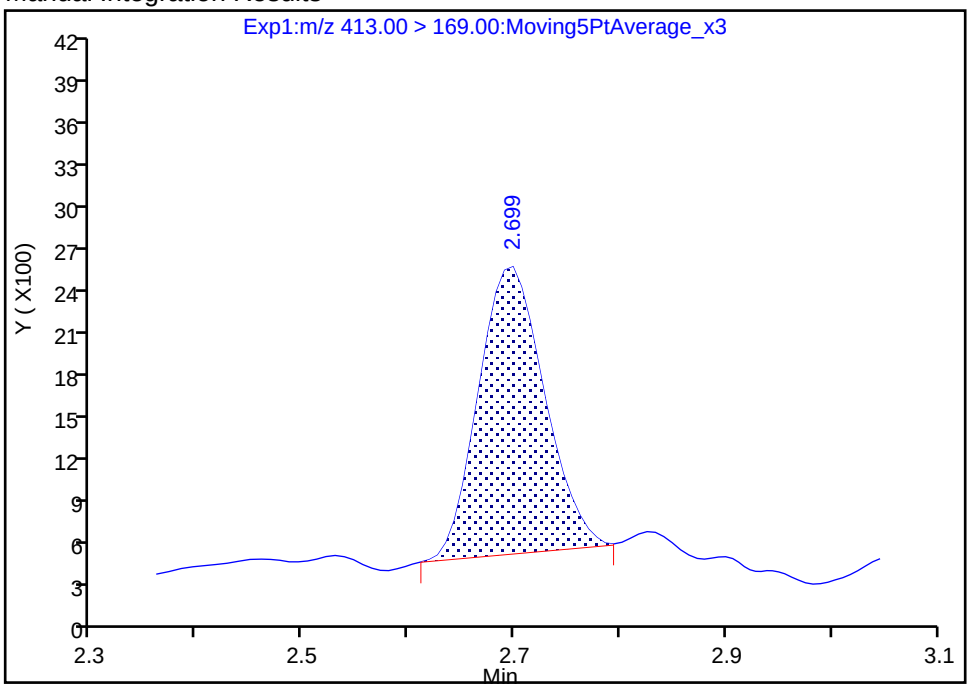
Processing Integration Results

RT: 2.70
Area: 0
Amount: 0.007171
Amount Units: ng/ml



Manual Integration Results

RT: 2.70
Area: 8809
Amount: 0.007171
Amount Units: ng/ml



Reviewer: roycea, 22-Mar-2018 08:32:00
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

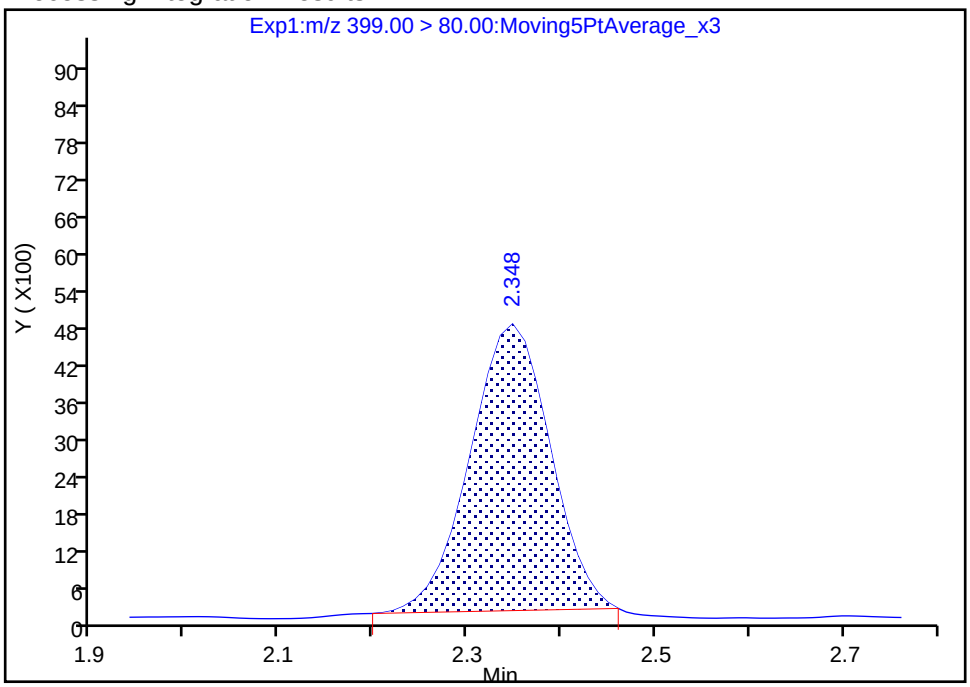
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_009.d				
Injection Date:	21-Mar-2018 19:19:09	Instrument ID:	A8_N		
Lims ID:	ICB				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

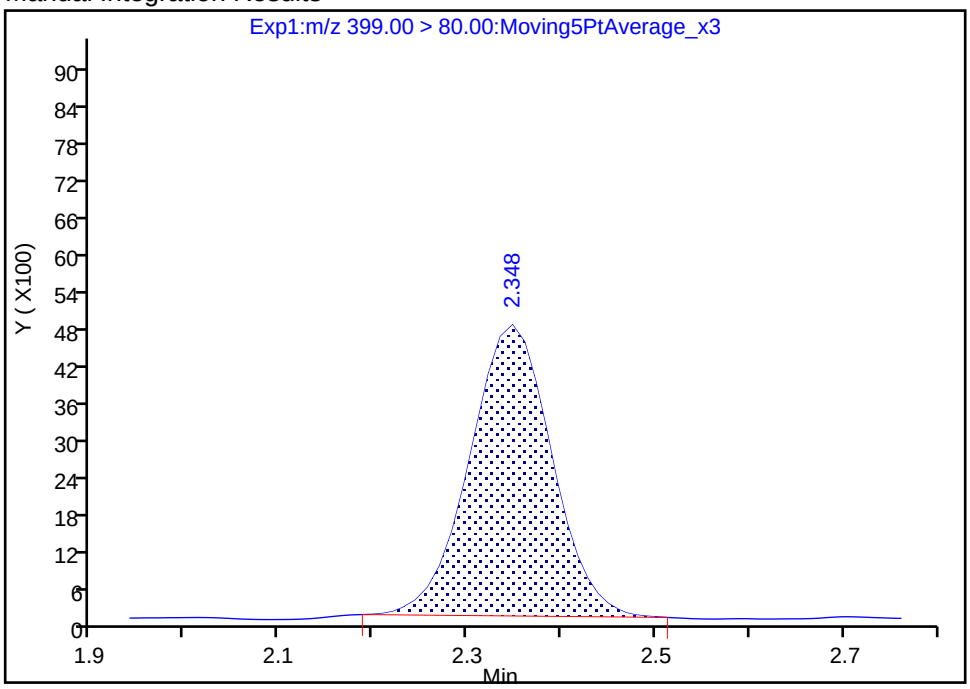
Processing Integration Results

RT: 2.35
Area: 27573
Amount: 0.011158
Amount Units: ng/ml



Manual Integration Results

RT: 2.35
Area: 28695
Amount: 0.011612
Amount Units: ng/ml



Reviewer: roycea, 22-Mar-2018 08:31:43

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: ICB 320-215538/9

Matrix: Solid | Lab File ID: 2018.03.29A_ICALB_009.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 03/29/2018 18:22

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 215538 | Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00852	J	0.050	0.040	0.0043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	103		50-150
STL01892	13C4-PFHpA	104		50-150
STL00990	13C4 PFOA	102		50-150
STL00995	13C5 PFNA	102		50-150
STL00994	18O2 PFHxS	100		50-150
STL00991	13C4 PFOS	103		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_009.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 29-Mar-2018 18:22:08 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 30-Mar-2018 11:48:31 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK004

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.436	-0.003	1.000	5853979	2.45		98.1	57439	
2 Perfluorobutyric acid										
212.90 > 169.00	1.444	1.437	0.007	1.008	3077	0.001422			2.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.698	1.702	-0.004	0.555	3915849	2.52		101	95335	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.716	1.706	0.010	1.011	2502	0.001335			0.8	
D 47 13C3-PFBS										
301.90 > 83.00	1.734	1.738	-0.004	1.000	85436	2.40		103	485	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.955	0.001	1.000	644659	NC			8477	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.991	-0.002	1.000	4246443	2.48		99.2	108456	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.092	-0.002	1.000	220076	NC			4737	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.326	0.003	1.000	4271808	2.59		104	88408	
10 Perfluoroheptanoic acid										R
363.00 > 319.00	2.079	2.327	-0.249	0.893	9636	0.005190			3.5	R
363.00 > 169.00	1.967	2.327	-0.360	0.845	1840		5.24(1.13-3.40)		2.5	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.342	2.339	0.003	1.000	19475	0.008519			105	
399.00 > 99.00	2.342	2.339	0.003	1.000	4577		4.25(1.50-4.49)		27.4	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.340	0.002	1.000	4840752	2.36		99.7	89790	
65 Adona										
377.00 > 251.00	2.368	2.372	-0.004	1.000	8270	NC			180	
377.00 > 85.00	2.368	2.372	-0.004	1.000	3625		2.28(0.84-2.53)		48.5	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.658	2.664	-0.006	1.000	6778	0.008996			31.3	
D 12 M2-6:2FTS										
429.00 > 81.00	2.658	2.664	-0.006	1.000	958142	2.52		106	31290	
D 14 13C4 PFOA										
417.00 > 372.00	2.688	2.688	0.0	1.000	4119577	2.54		102	74192	
* 62 13C2-PFOA										
415.00 > 370.00	2.688	2.689	-0.001		4317989	2.50			66510	
D 18 13C4 PFOS										
503.00 > 80.00	3.060	3.060	0.0	1.000	3514813	2.46		103	71104	
D 19 13C5 PFNA										
468.00 > 423.00	3.060	3.061	-0.001	1.000	3492298	2.55		102	82534	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.280	3.272	0.008	1.000	6790	NC			98.0	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.000	4957090	2.46		98.4	61853	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.389	0.0	1.000	4868	0.002486			54.2	
D 26 M2-8:2FTS										
529.00 > 81.00	3.416	3.413	0.003	1.000	1083337	2.45		102	45516	
D 23 13C2 PFDA										
515.00 > 470.00	3.426	3.423	0.003	1.000	2883181	2.49		99.7	37340	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.575	3.578	-0.003	1.000	1488712	2.41		96.2	26599	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.585	3.581	0.004	1.003	7730	0.0123			73.1	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.740	3.749	-0.009	1.000	1628449	2.51		100	3842	
D 30 13C2 PFUnA										
565.00 > 520.00	3.750	3.753	-0.003	1.000	2478150	2.62		105	48717	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.750	3.755	-0.005	1.003	5746	0.009618			78.7	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.750	3.755	-0.005	1.000	4984	0.006267			22.3	
563.00 > 169.00	3.761	3.755	0.006	1.003	2193		2.27(2.12-6.36)		72.2	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.907	3.910	-0.003	1.000	10174	NC			175	
D 36 13C2 PFDoA										
615.00 > 570.00	4.050	4.052	-0.002	1.000	2631496	2.50		100	16837	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.552	4.558	-0.006	1.000	3468285	2.60		104	18785	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.965	4.977	-0.012	1.000	5348942	2.59		104	14656	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.974	4.977	-0.003	1.002	53953	NC			13.0	
813.00 > 169.00	4.965	4.977	-0.012	1.000	8626		6.25(2.86-8.58)		71.2	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Reagents:

LCPFC_LL0_00006 Amount Added: 1.00 Units: mL

Report Date: 30-Mar-2018 11:48:46 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_009.d

Injection Date: 29-Mar-2018 18:22:08 Instrument ID: A8_N

Lims ID: ICB

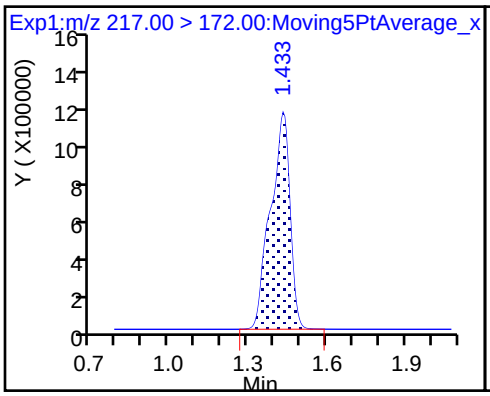
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9

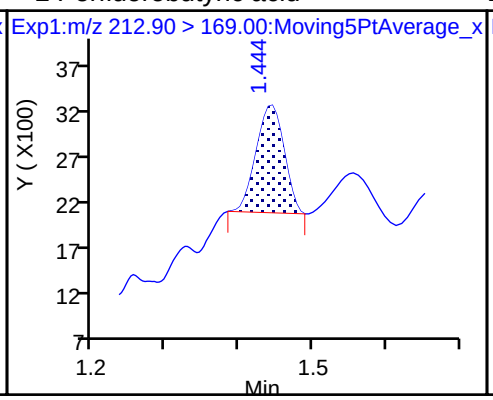
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

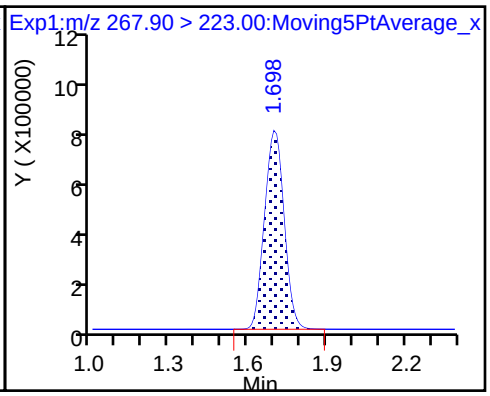
D 1 13C4 PFBA



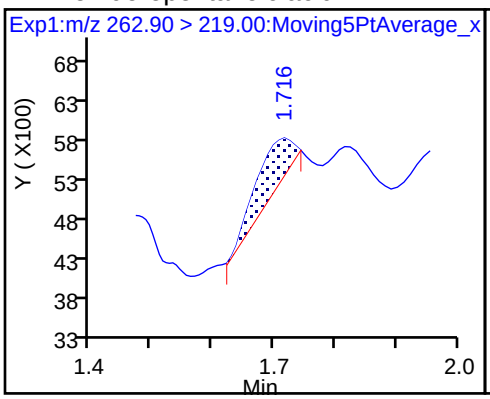
2 Perfluorobutyric acid



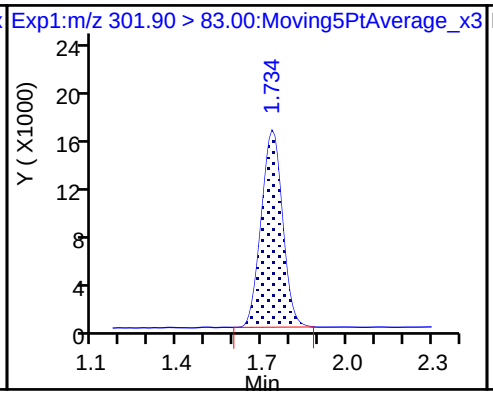
D 3 13C5-PFPeA



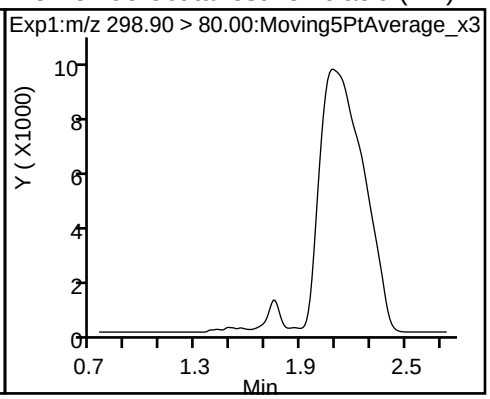
4 Perfluoropentanoic acid



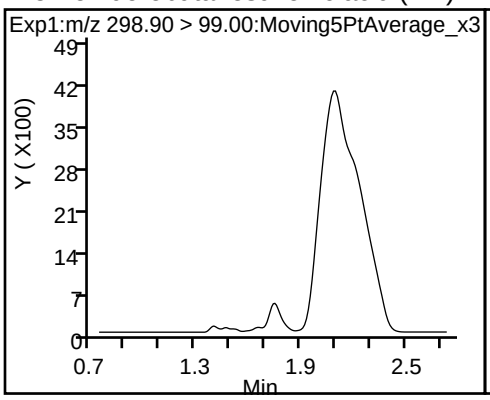
D 47 13C3-PFBS



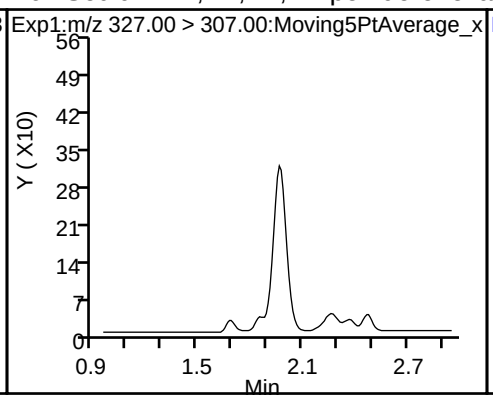
5 Perfluorobutanesulfonic acid (ND)



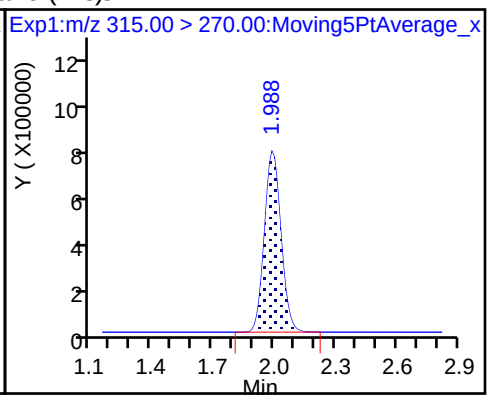
5 Perfluorobutanesulfonic acid (ND)



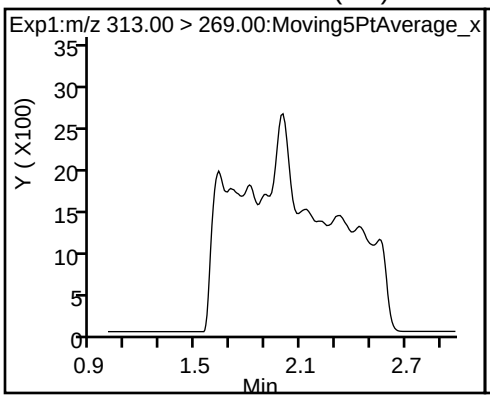
61 Sodium 1H,1H,2H,2H-perfluorohexane (ND)



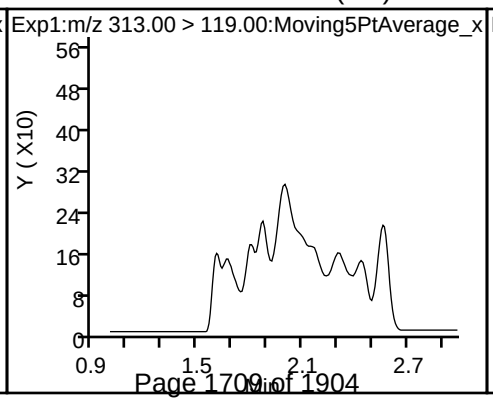
D 13C2 PFHxA



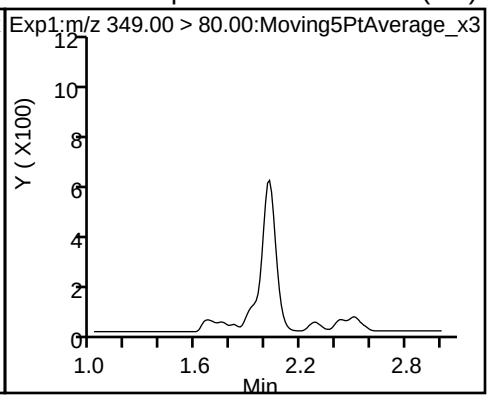
6 Perfluorohexanoic acid (ND)



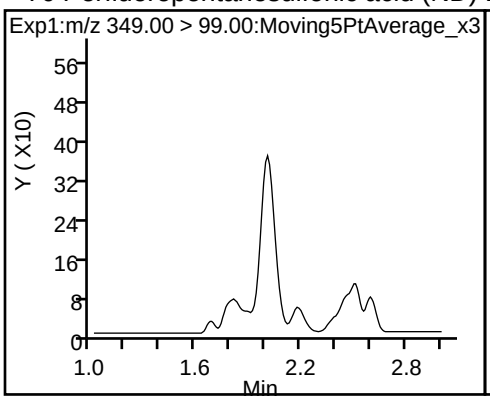
6 Perfluorohexanoic acid (ND)



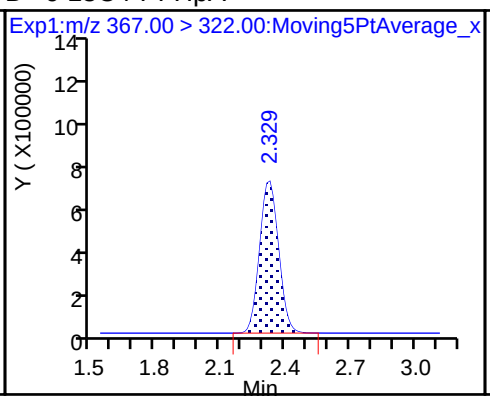
70 Perfluoropentanesulfonic acid (ND)



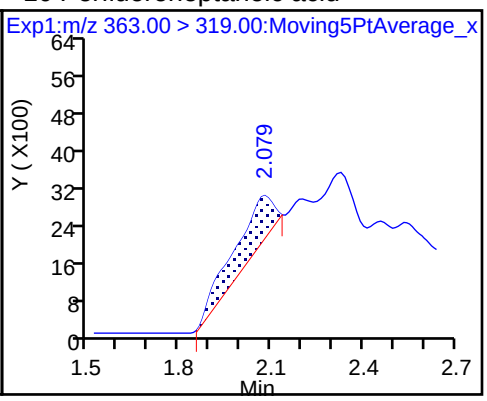
70 Perfluoropentanesulfonic acid (ND)



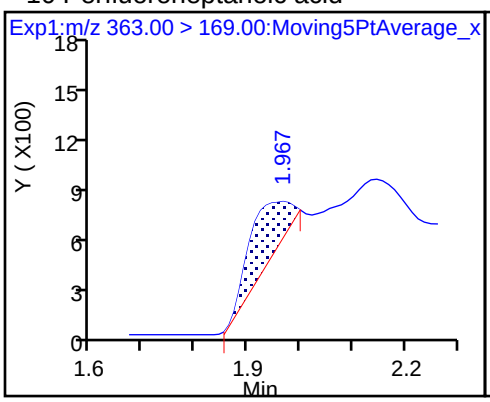
D 9 13C4-PFHpA



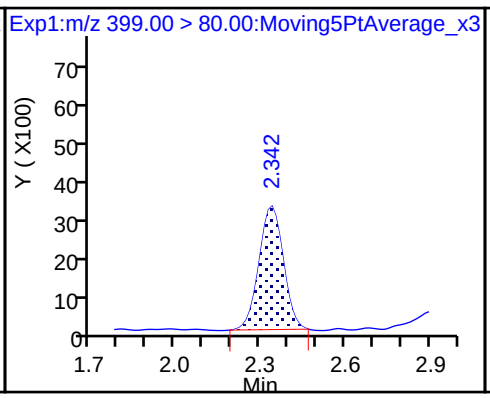
10 Perfluoroheptanoic acid



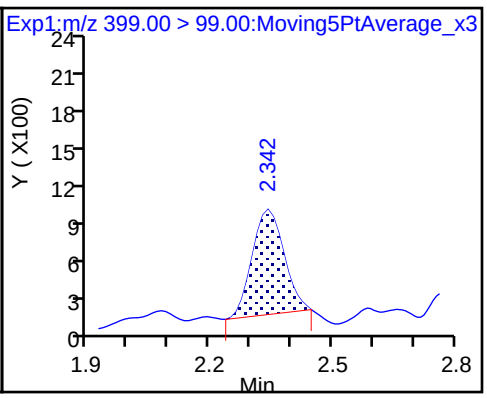
10 Perfluoroheptanoic acid



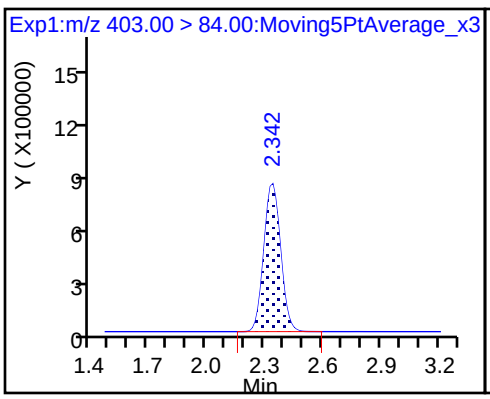
8 Perfluorohexanesulfonic acid



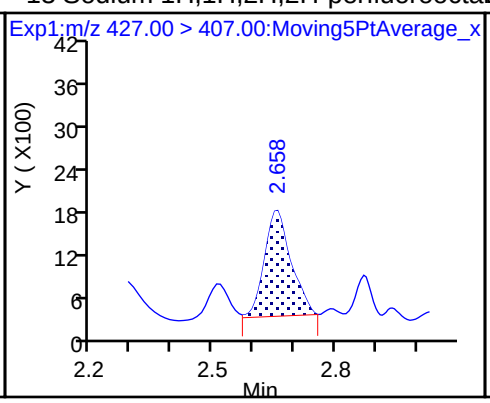
8 Perfluorohexanesulfonic acid



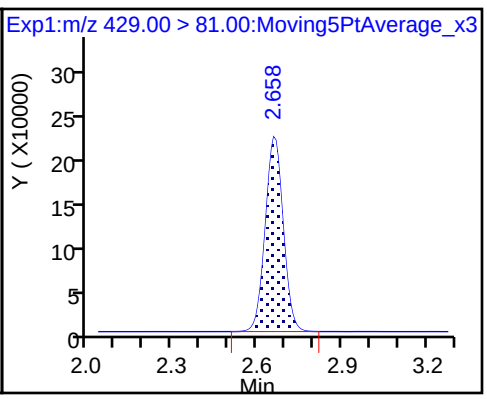
D 11 18O2 PFHxS



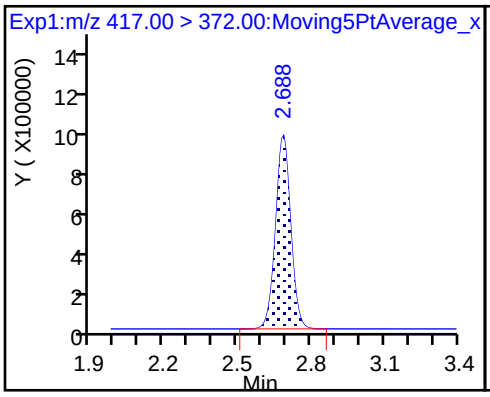
13 Sodium 1H,1H,2H,2H-perfluorooctane



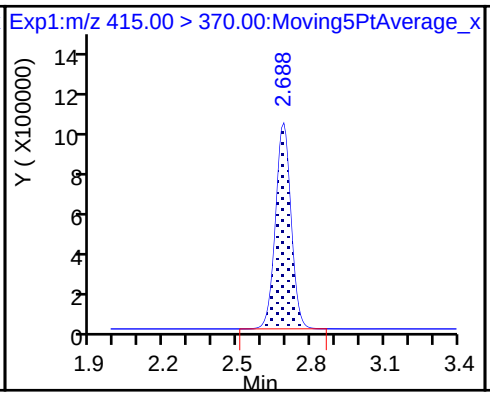
D 12 M2-6:2FTS



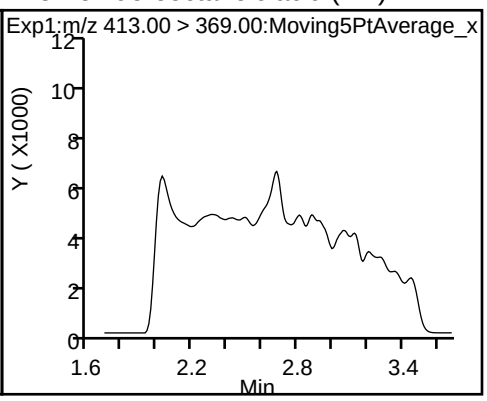
D 14 13C4 PFOA



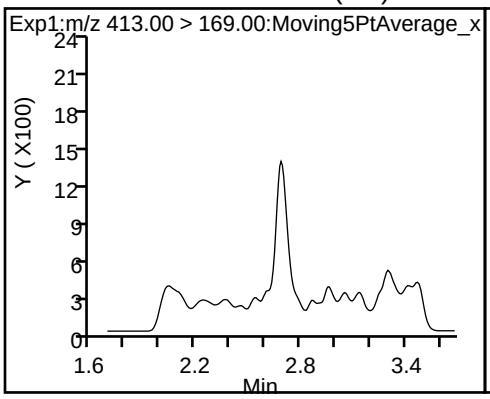
* 62 13C2-PFOA



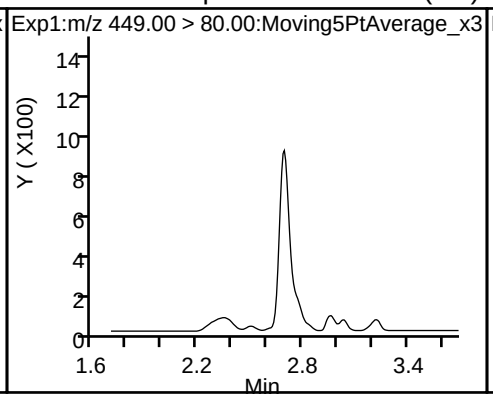
15 Perfluorooctanoic acid (ND)



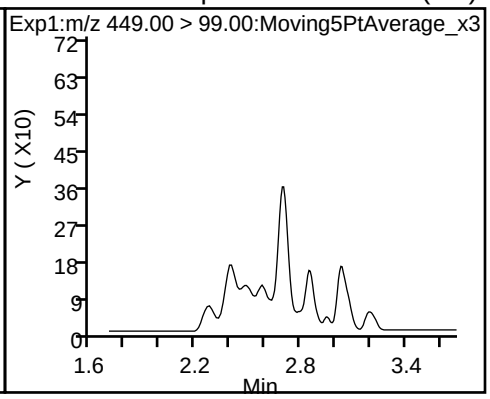
15 Perfluorooctanoic acid (ND)



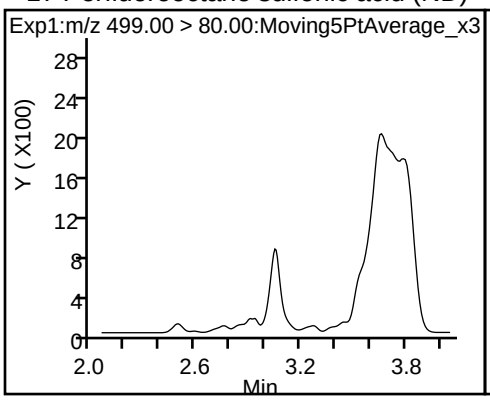
16 Perfluoroheptanesulfonic acid (ND)



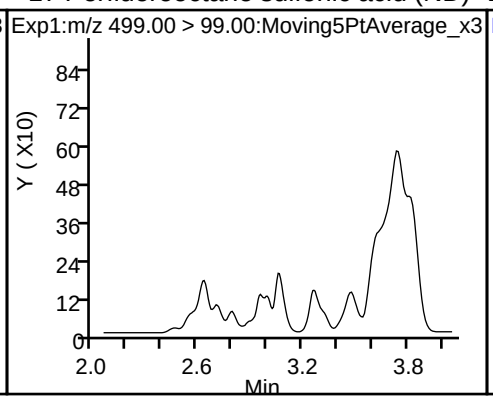
16 Perfluoroheptanesulfonic acid (ND)



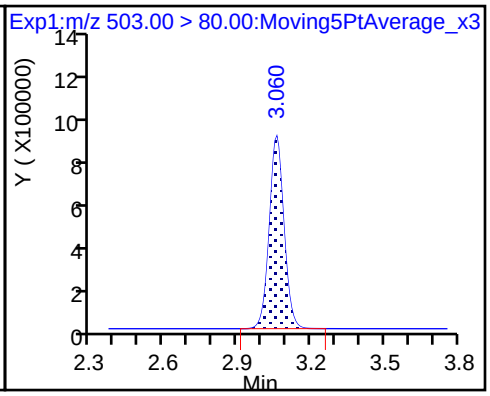
17 Perfluorooctane sulfonic acid (ND)



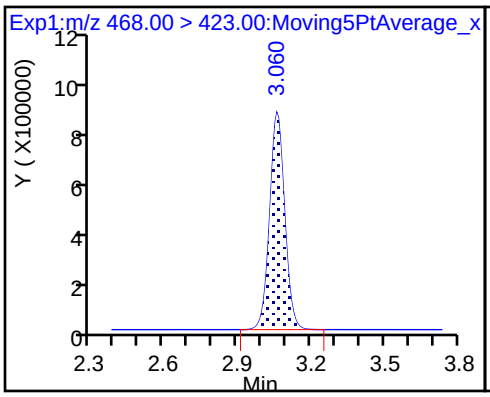
17 Perfluorooctane sulfonic acid (ND)



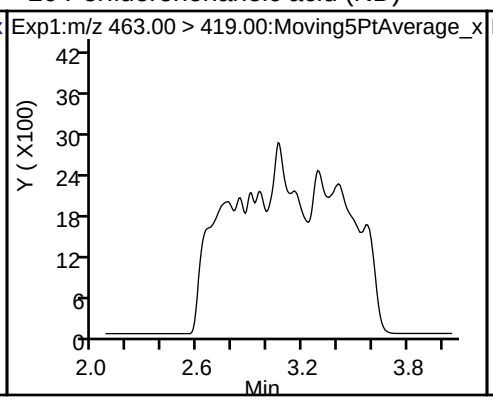
D 18 13C4 PFOS



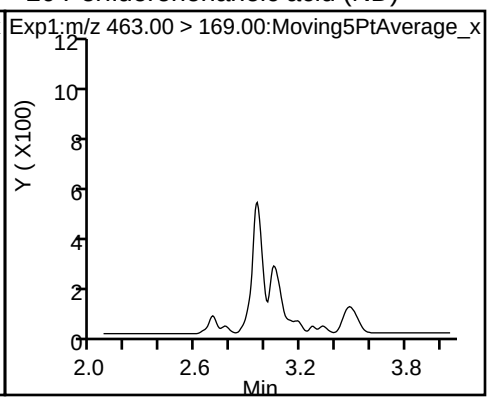
D 19 13C5 PFNA



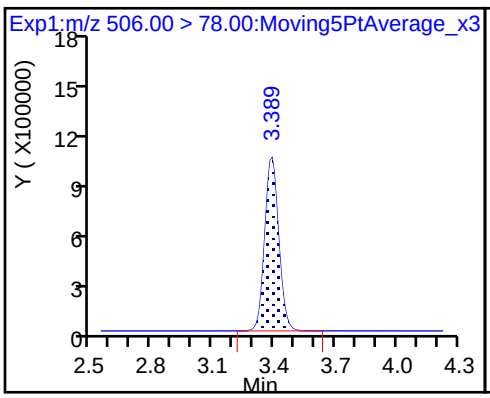
20 Perfluorononanoic acid (ND)



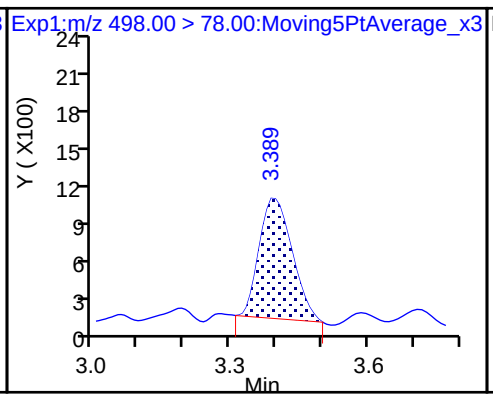
20 Perfluorononanoic acid (ND)



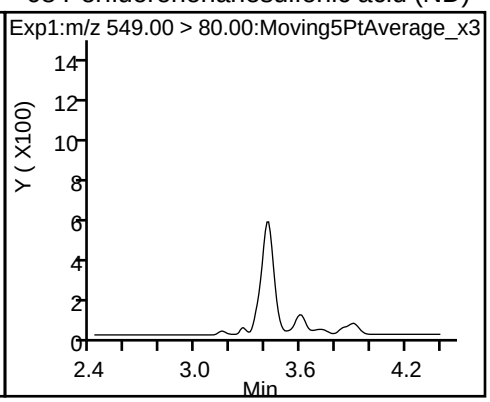
D 21 13C8 FOSA



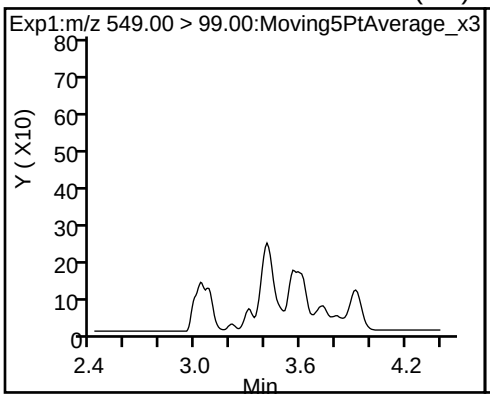
22 Perfluorooctane Sulfonamide



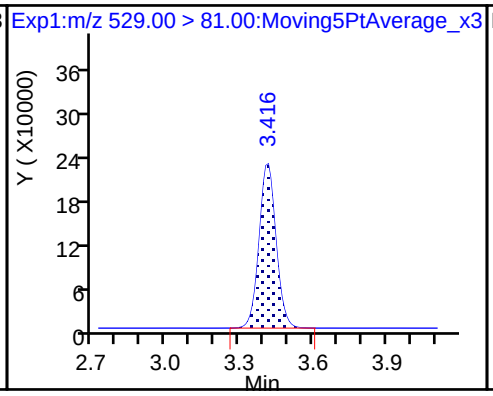
68 Perfluorononanesulfonic acid (ND)



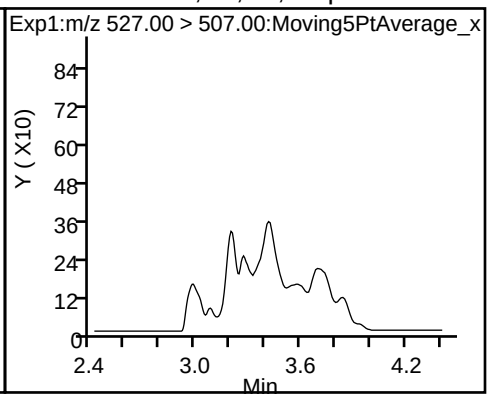
68 Perfluorononanesulfonic acid (ND)



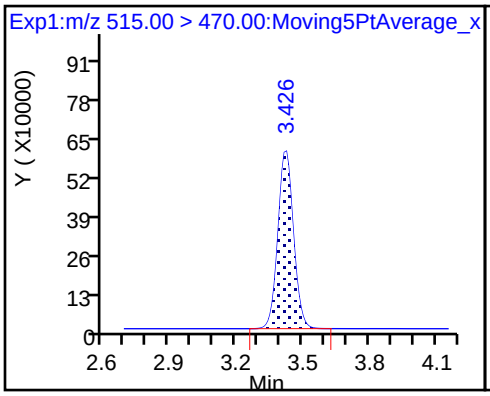
D 26 M2-8:2FTS



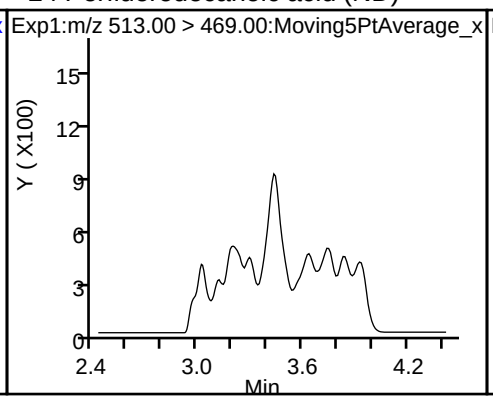
25 Sodium 1H,1H,2H,2H-perfluorodecane (ND)



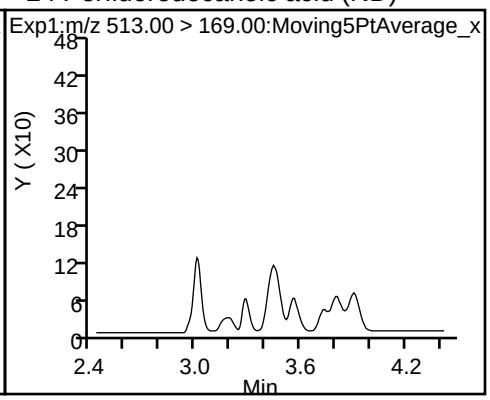
D 23 13C2 PFDA



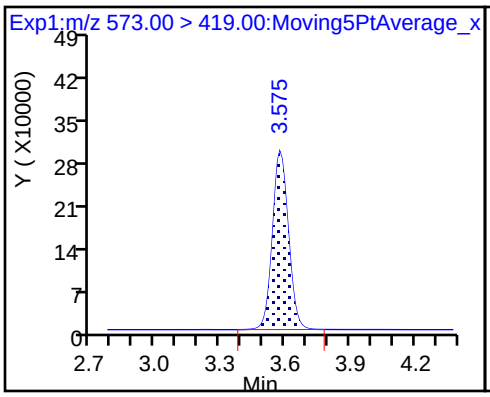
24 Perfluorodecanoic acid (ND)



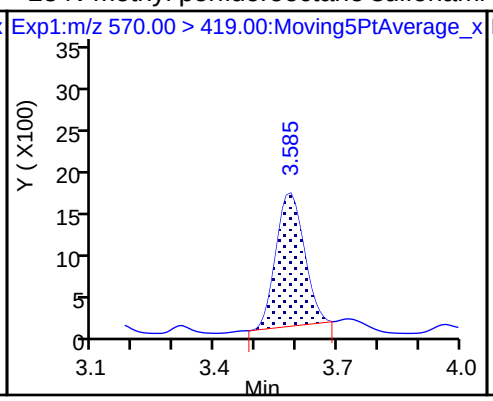
24 Perfluorodecanoic acid (ND)



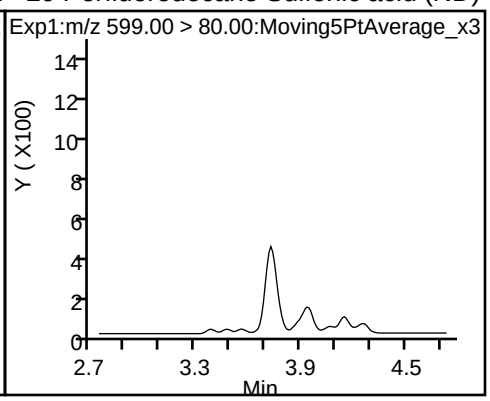
D 27 d3-NMeFOSAA



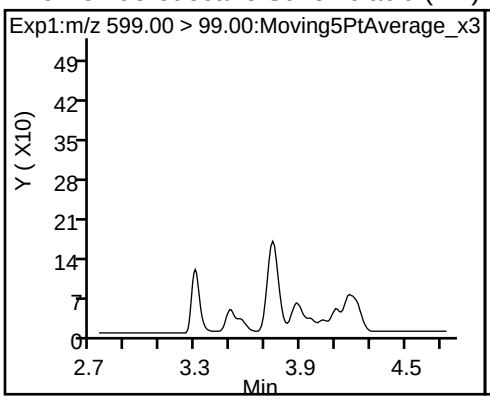
28 N-methyl perfluorooctane sulfonami



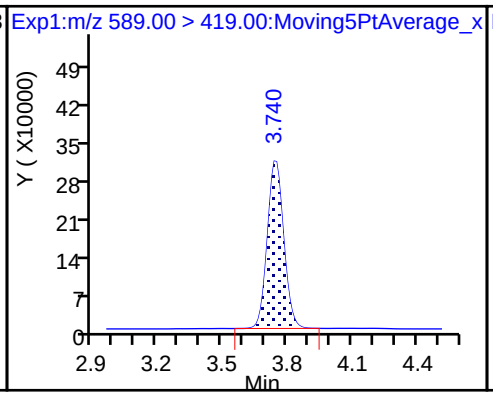
29 Perfluorodecane Sulfonic acid (ND)



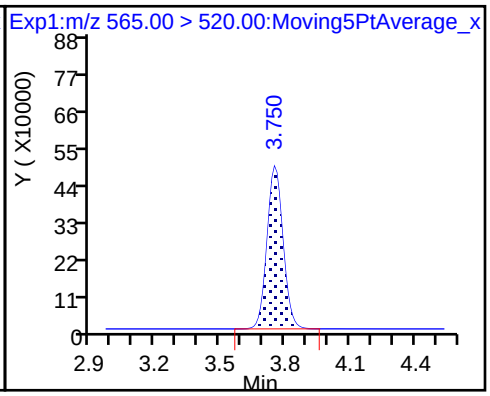
29 Perfluorodecane Sulfonic acid (ND)



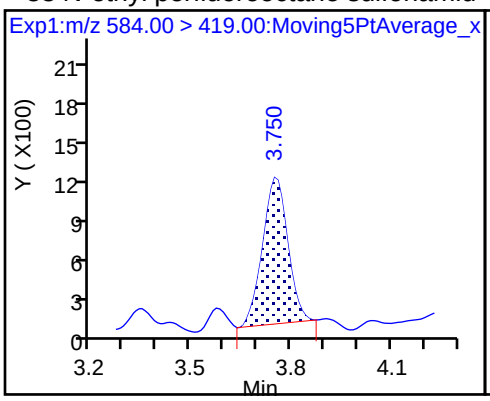
D 32 d5-NEtFOSAA



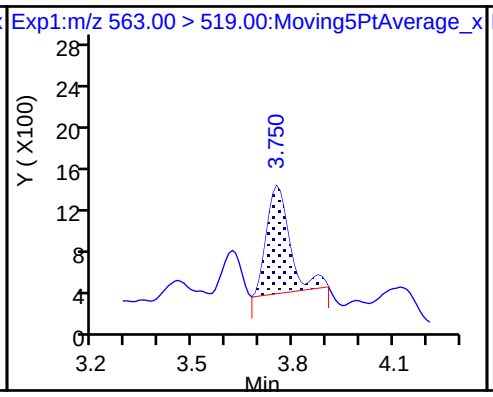
D 30 13C2 PFUnA



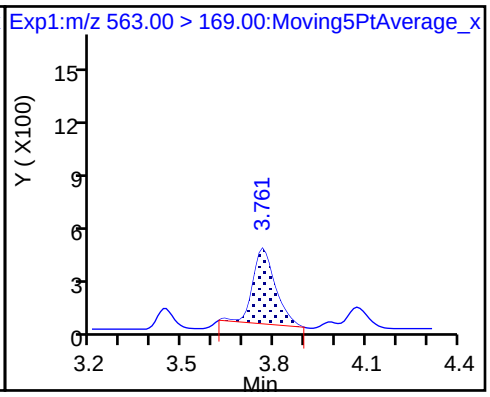
33 N-ethyl perfluorooctane sulfonamid



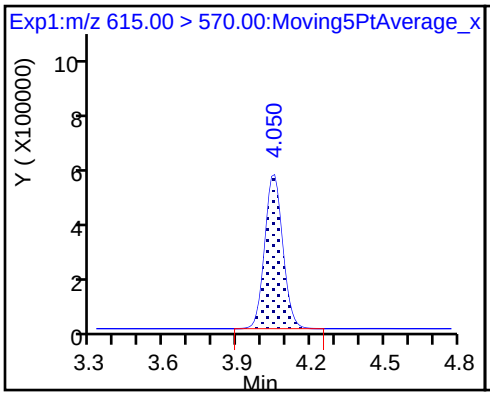
31 Perfluoroundecanoic acid



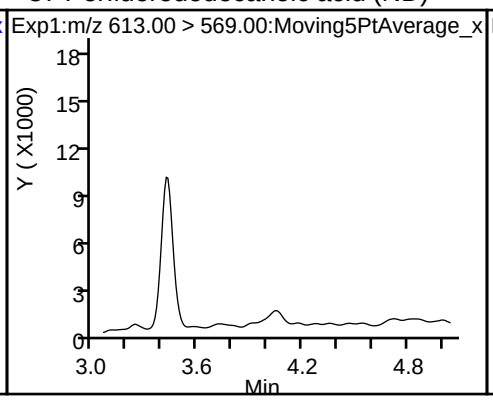
31 Perfluoroundecanoic acid



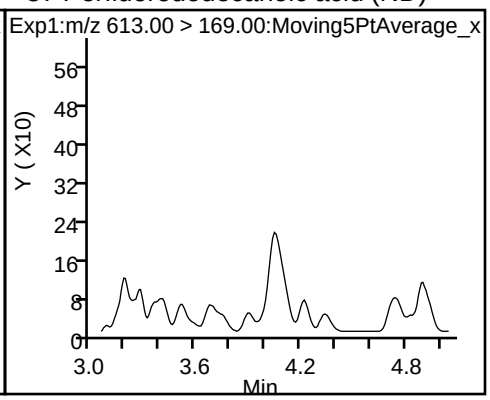
D 36 13C2 PFDoA



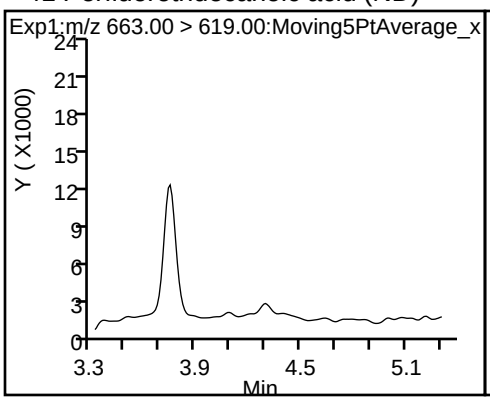
37 Perfluorododecanoic acid (ND)



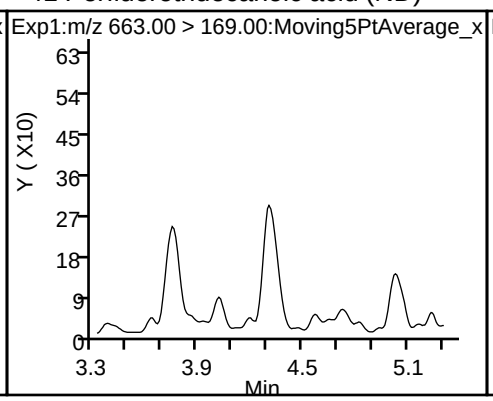
37 Perfluorododecanoic acid (ND)



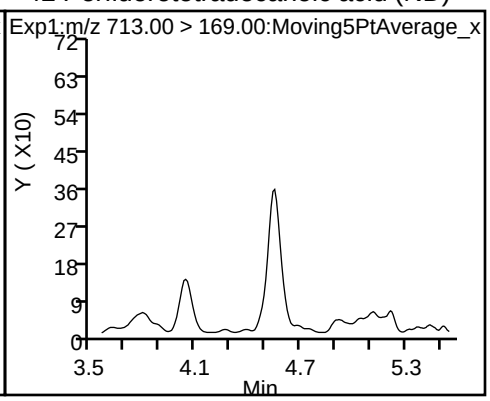
41 Perfluorotridecanoic acid (ND)



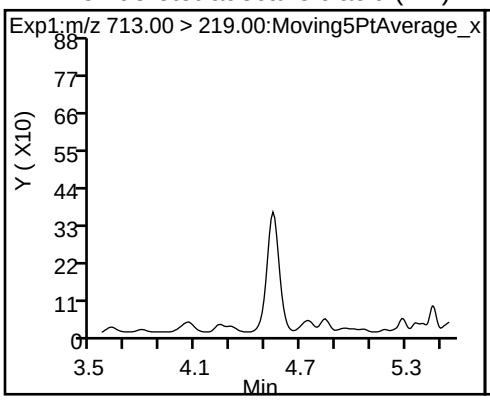
41 Perfluorotridecanoic acid (ND)



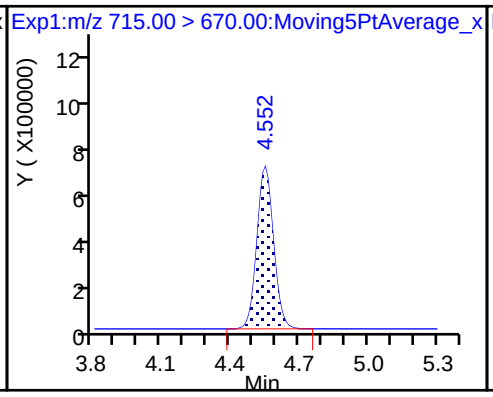
42 Perfluorotetradecanoic acid (ND)



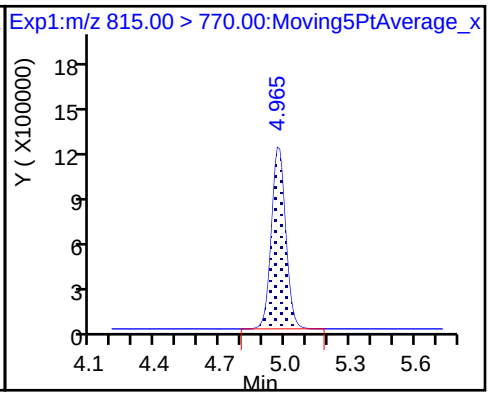
42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-213387/2-A

Matrix: Water | Lab File ID: 2018.03.19LLAA_028.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 250.0(mL) | Date Analyzed: 03/19/2018 13:18

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213706 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	42.5		2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	46.6	Q	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	43.0		2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	40.3		2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	36.6		2.0	1.0	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	40.7		4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	91		50-150
STL01892	13C4-PFHpA	96		50-150
STL00990	13C4 PFOA	95		50-150
STL00995	13C5 PFNA	97		50-150
STL00994	18O2 PFHxS	93		50-150
STL00991	13C4 PFOS	90		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\2018.03.19LLAA_028.d
Lims ID: LCS 320-213387/2-A
Client ID:
Sample Type: LCS
Inject. Date: 19-Mar-2018 13:18:09 ALS Bottle#: 15 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-213387/2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 19-Mar-2018 14:07:08 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK009

First Level Reviewer: barnettj Date: 19-Mar-2018 14:06:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.444	0.002	0.535	5282941	2.31		92.2	99206	
2 Perfluorobutyric acid										
212.90 > 169.00	1.446	1.444	0.002	1.000	2202782	1.12		112	1164	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.705	-0.005	0.629	3405864	2.11		84.3	83437	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.709	1.705	0.004	1.005	1705843	1.07		107	653	
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.740	-0.005	0.642	84104	2.11		90.7	488	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.740	0.004	1.005	2819501	1.01		114	1228	
298.90 > 99.00	1.744	1.740	0.004	1.005	1158523		2.43(1.25-3.74)		1194	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.956	1.960	-0.004	1.000	484509	0.8333		89.2	22821	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.992	0.005	1.000	1752693	1.07		107	6581	
313.00 > 119.00	1.997	1.992	0.005	1.000	160471		10.92(5.03-15.10)		4228	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	2.003	-0.006	0.739	4043791	2.24		89.7	107389	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.335	-0.007	0.861	4195896	2.39		95.7	90219	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.335	0.006	1.006	1846451	1.06		106	4514	
363.00 > 169.00	2.341	2.335	0.006	1.006	739605		2.50(1.13-3.40)		11478	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.348	-0.007	0.995	2233846	0.9158		101	297	
399.00 > 99.00	2.341	2.348	-0.007	0.995	769437		2.90(1.50-4.49)		299	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.361	-0.007	0.870	5172237	2.21		93.5	112480	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.680	2.675	0.005	1.000	709101	1.02		107	41776	
D 12 M2-6:2FTS										
429.00 > 81.00	2.680	2.682	-0.002	0.991	994155	2.21		93.2	23602	
D 14 13C4 PFOA										
417.00 > 372.00	2.704	2.706	-0.002	1.000	4025844	2.38		95.1	96187	
* 62 13C2-PFOA										
415.00 > 370.00	2.704	2.706	-0.002		4487912	2.50			82189	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.704	2.706	-0.002	1.000	2093159	1.16		116	979	
413.00 > 169.00	2.704	2.706	-0.002	1.000	1073885		1.95(0.84-2.52)		4083	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.712	2.706	0.006	1.000	2036015	1.05		110	35303	
449.00 > 99.00	2.712	2.706	0.006	1.000	565642		3.60(1.94-5.82)		11303	
D 18 13C4 PFOS										
503.00 > 80.00	3.080	3.082	-0.002	1.139	3529142	2.16		90.3	43523	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.088	3.083	0.005	1.003	1625076	1.02		110	5191	
499.00 > 99.00	3.080	3.083	-0.003	1.000	384514		4.23(2.31-6.93)		3720	
20 Perfluorononanoic acid										
463.00 > 419.00	3.088	3.083	0.005	1.000	1435619	1.08		108	3790	
463.00 > 169.00	3.088	3.083	0.005	1.000	360793		3.98(1.90-5.69)		14695	
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.090	-0.002	1.142	3274005	2.42		96.7	52903	
D 21 13C8 FOSA										
506.00 > 78.00	3.406	3.410	-0.004	1.260	5158663	2.18		87.1	53266	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.415	3.412	0.003	1.003	2245480	1.12		112	25352	
D 26 M2-8:2FTS										
529.00 > 81.00	3.442	3.438	0.004	1.273	1091594	2.59		108	24711	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.442	3.439	0.003	1.000	583274	1.02		106	14708	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.452	3.448	0.004	1.000	1219784	1.13		113	6012	
513.00 > 169.00	3.452	3.448	0.004	1.000	237921		5.13(2.36-7.09)		3625	
D 23 13C2 PFDA										
515.00 > 470.00	3.452	3.456	-0.004	1.276	2835427	2.51		100	49706	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.610	3.605	0.005	1.335	829413	2.22		88.8	29429	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.610	3.617	-0.007	1.000	386443	1.12		112	5910	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.769	3.765	0.004	1.000	1068919	1.13		118	45071	
599.00 > 99.00	3.769	3.765	0.004	1.000	356338		3.00(1.39-4.16)		10670	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.779	3.774	0.005	1.397	898090	2.51		101	1724	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 30 13C2 PFUnA										
565.00 > 520.00	3.779	3.785	-0.006	1.397	2155757	2.43		97.3	64152	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.779	3.786	-0.007	1.000	653212	0.9039		90.4	2562	
563.00 > 169.00	3.779	3.786	-0.007	1.000	191813		3.41(2.12-6.36)		15300	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.779	3.786	-0.007	1.000	384182	1.09		109	7960	
35 MeFOSA										
512.00 > 169.00	3.903	3.875	0.028		378056	NC			5360	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.099	4.066	0.033		264522	NC			2545	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.078	4.084	-0.006	1.000	874449	1.10		110	176	
613.00 > 169.00	4.078	4.084	-0.006	1.000	228502		3.83(2.13-6.40)		4286	
D 36 13C2 PFDoA										
615.00 > 570.00	4.078	4.084	-0.006	1.508	1935718	2.30		92.2	11579	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.350	4.346	0.004	1.000	833404	1.05		105	178	
663.00 > 169.00	4.350	4.346	0.004	1.000	281826		2.96(1.25-3.76)		2891	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.585	4.581	0.004	1.000	259953	1.15		115	3248	
713.00 > 219.00	4.585	4.581	0.004	1.000	175857		1.48(0.71-2.13)		2032	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.585	4.581	0.004	1.696	2051622	2.68		107	16077	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.008	5.004	0.004	1.000	989630	NC			122	
813.00 > 169.00	5.008	5.004	0.004	1.000	172801		5.73(2.86-8.58)		1373	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.008	5.004	0.004	1.852	2321742	2.07		82.8	7598	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.377	5.374	0.003	1.000	784035	NC			176	
913.00 > 169.00	5.371	5.374	-0.003	0.999	100080		7.83(3.83-11.48)		1163	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 19-Mar-2018 14:07:12 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b\2018.03.19LLAA_028.d

Injection Date: 19-Mar-2018 13:18:09 Instrument ID: A8_N

Lims ID: LCS 320-213387/2-A

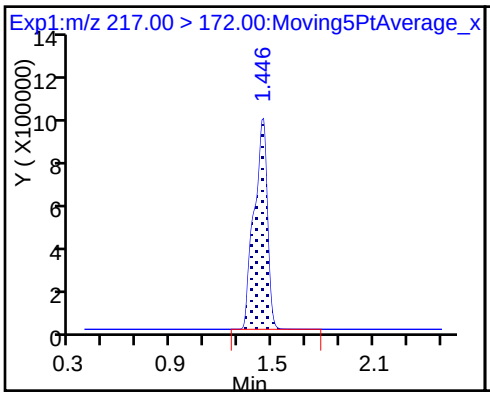
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 2

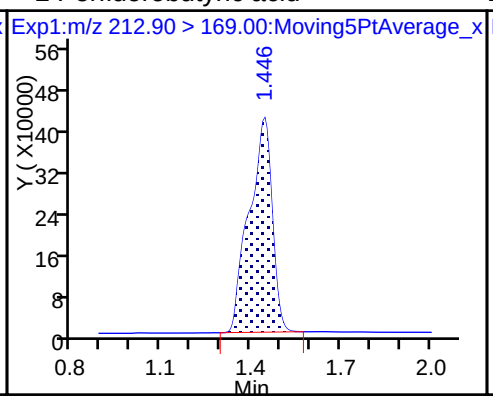
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

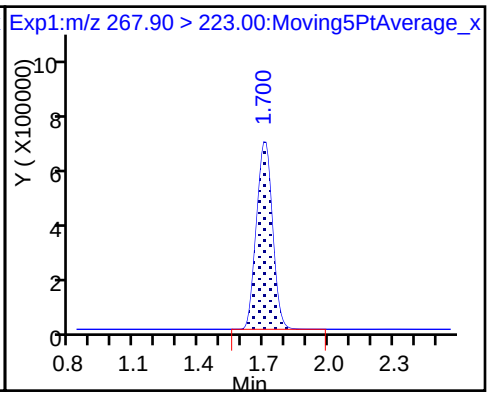
D 1 13C4 PFBA



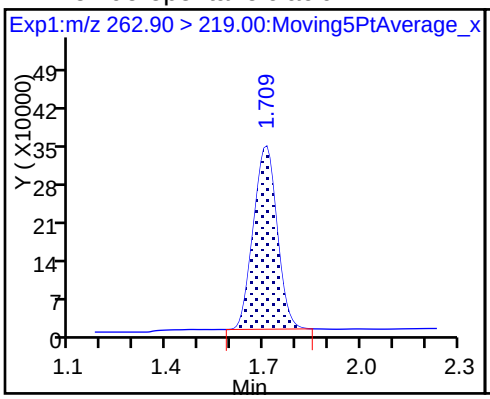
2 Perfluorobutyric acid



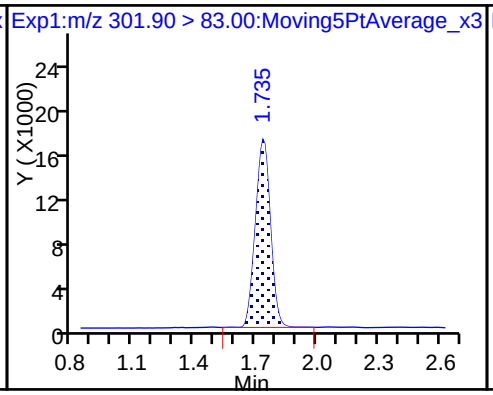
D 3 13C5-PFPeA



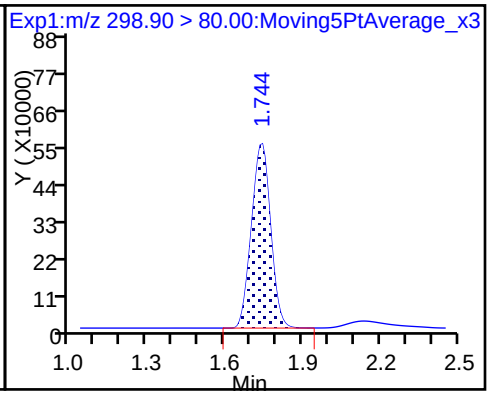
4 Perfluoropentanoic acid



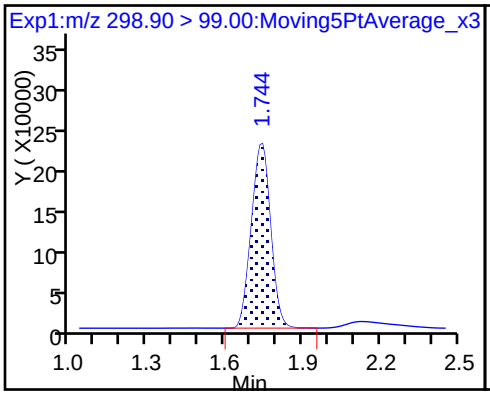
D 47 13C3-PFBS



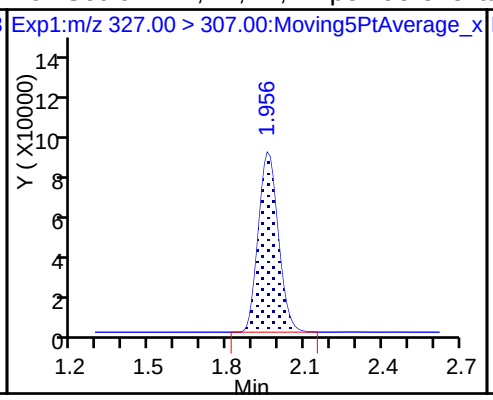
5 Perfluorobutanesulfonic acid



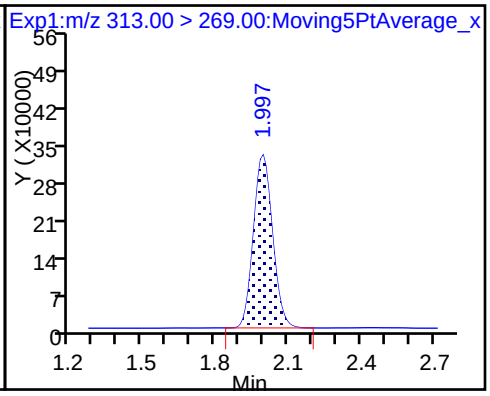
5 Perfluorobutanesulfonic acid



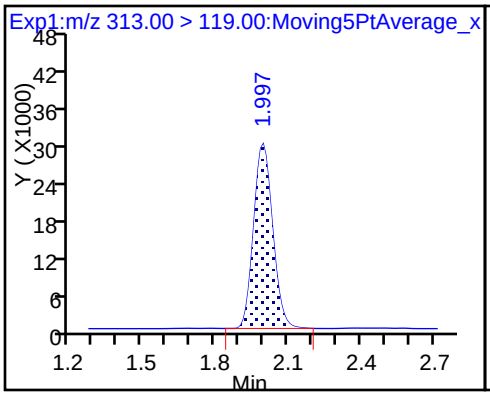
61 Sodium 1H,1H,2H,2H-perfluorohexane



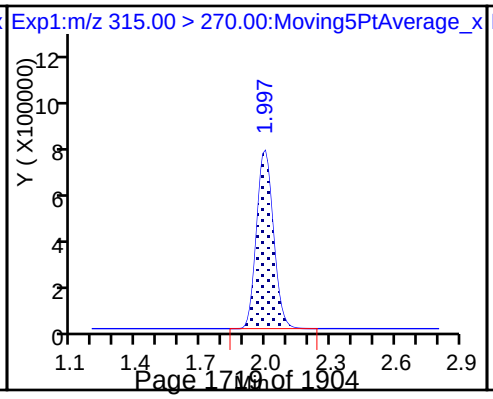
6 Perfluorohexanoic acid



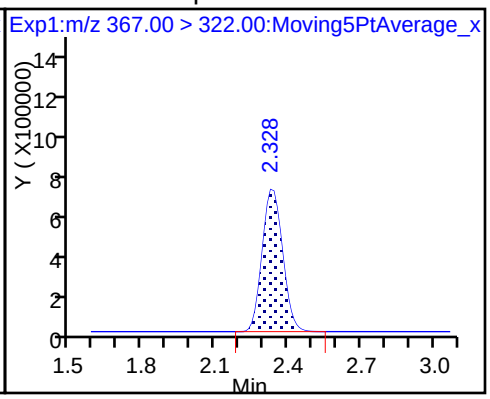
6 Perfluorohexanoic acid



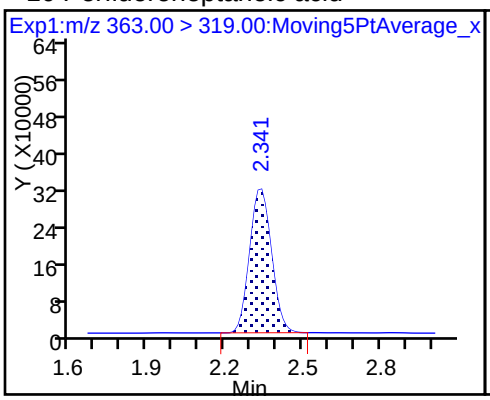
D 7 13C2 PFHxA



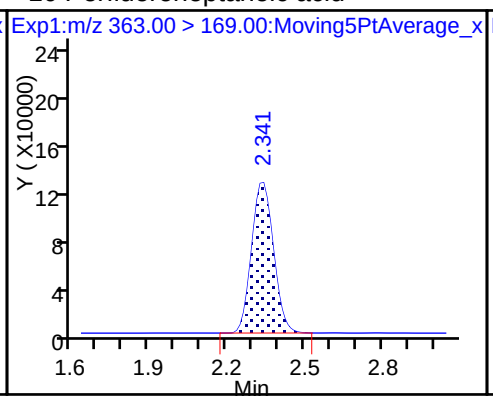
D 9 13C4-PFHpA



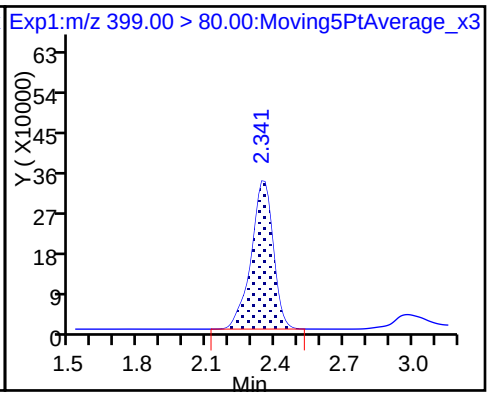
10 Perfluoroheptanoic acid



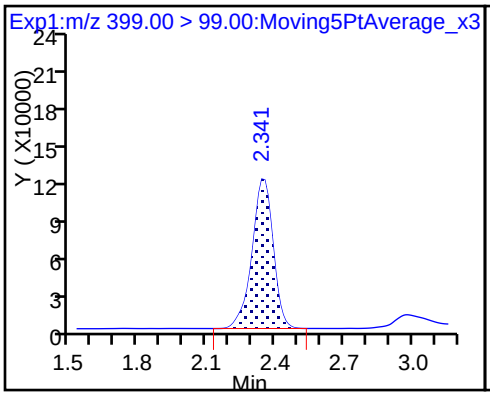
10 Perfluoroheptanoic acid



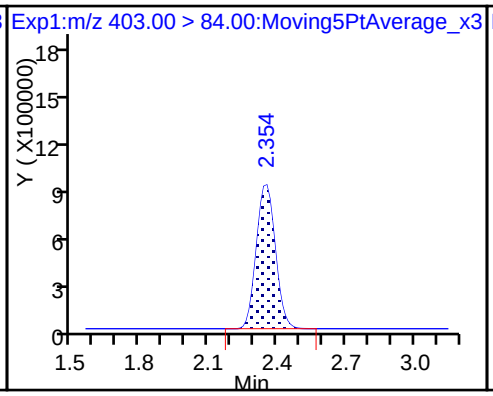
8 Perfluorohexanesulfonic acid



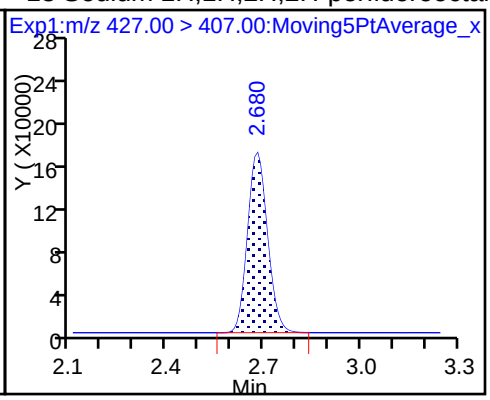
8 Perfluorohexanesulfonic acid



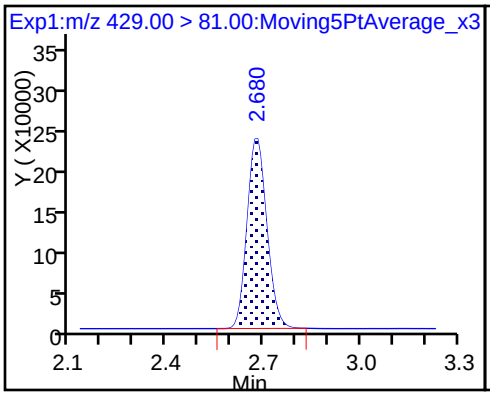
D 11 18O2 PFHxS



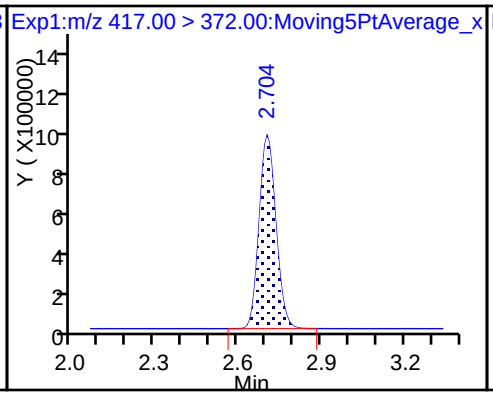
13 Sodium 1H,1H,2H,2H-perfluorooctane



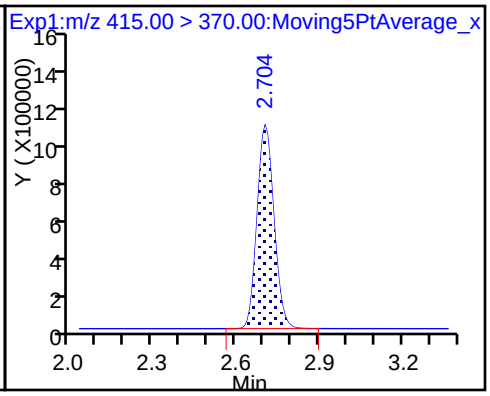
D 12 M2-6:2FTS



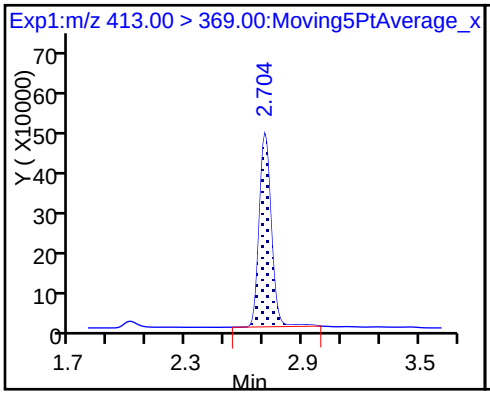
D 14 13C4 PFOA



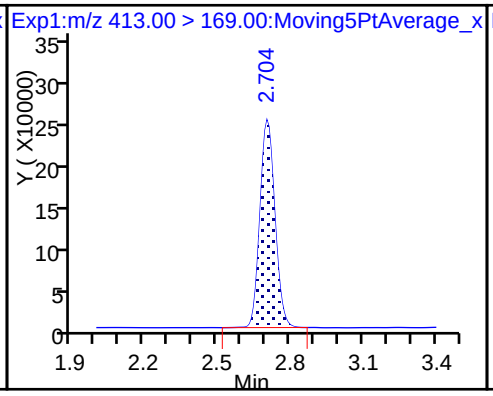
* 62 13C2-PFOA



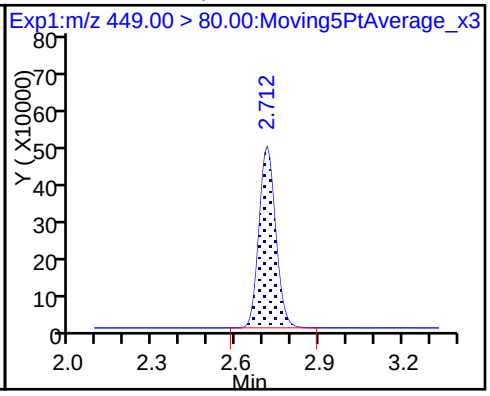
15 Perfluorooctanoic acid



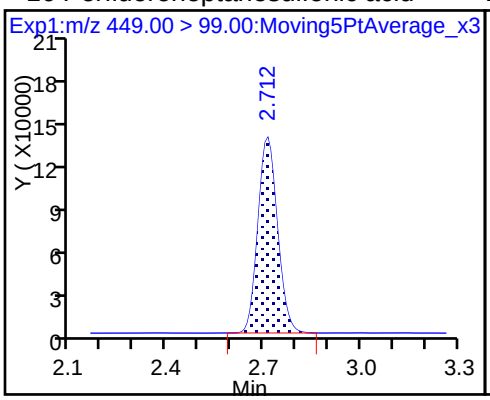
15 Perfluorooctanoic acid



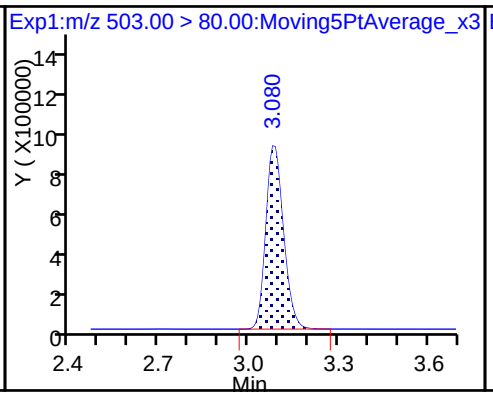
16 Perfluoroheptanesulfonic acid



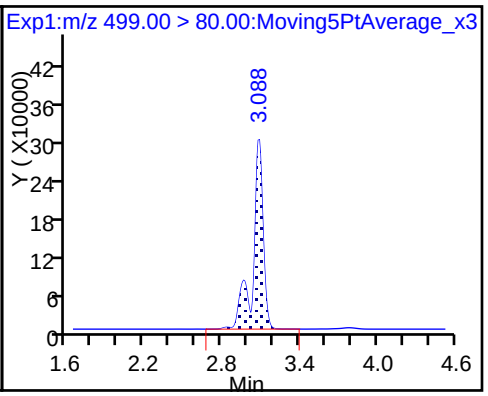
16 Perfluoroheptanesulfonic acid



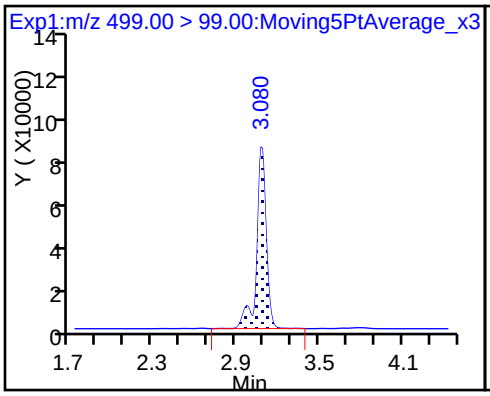
D 18 13C4 PFOS



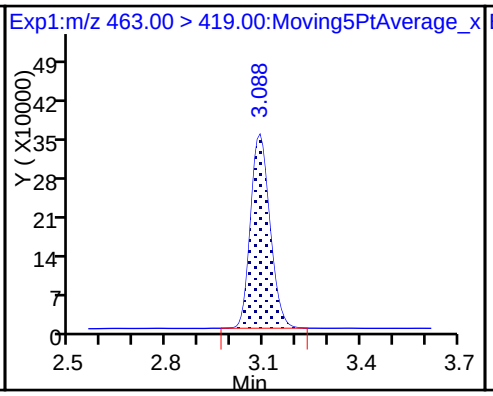
17 Perfluorooctane sulfonic acid



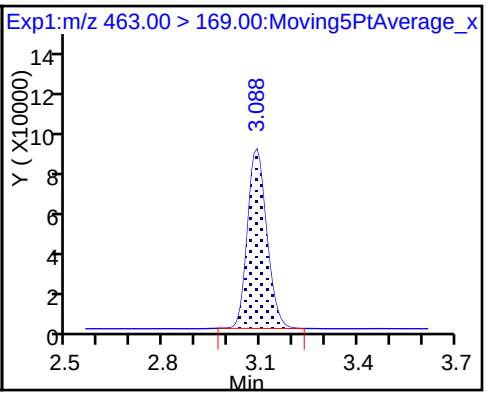
17 Perfluorooctane sulfonic acid



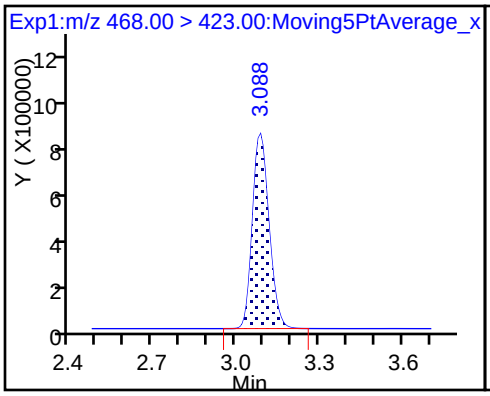
20 Perfluorononanoic acid



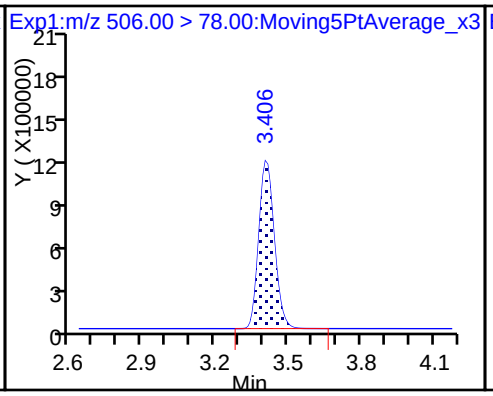
20 Perfluorononanoic acid



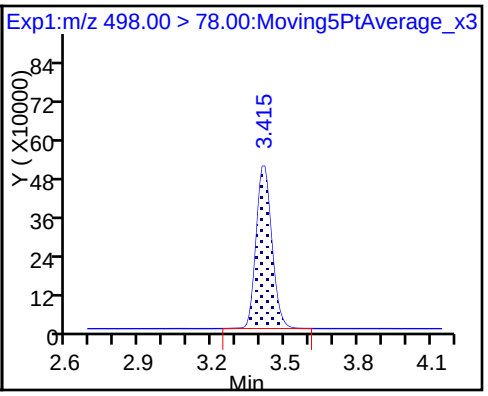
D 19 13C5 PFNA



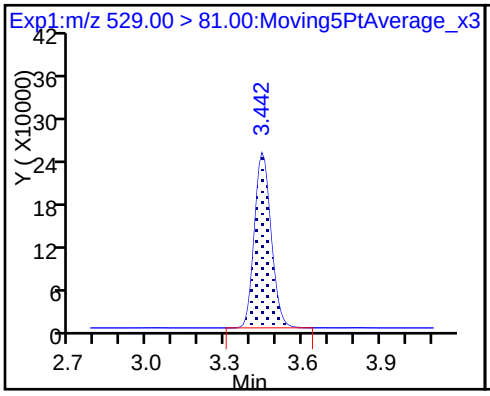
D 21 13C8 FOSA



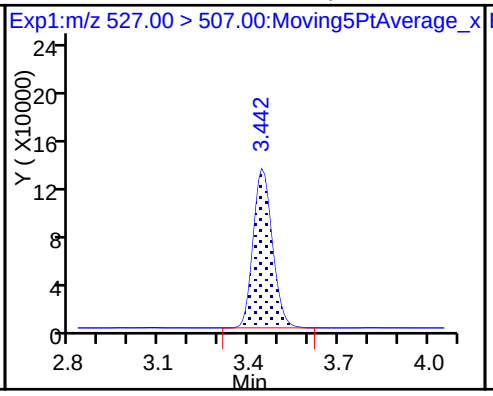
22 Perfluorooctane Sulfonamide



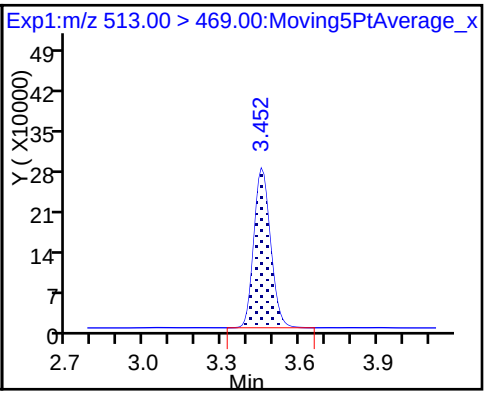
D 26 M2-8:2FTS



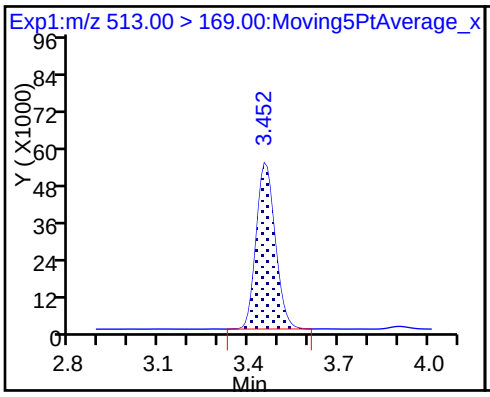
25 Sodium 1H,1H,2H,2H-perfluorodecan



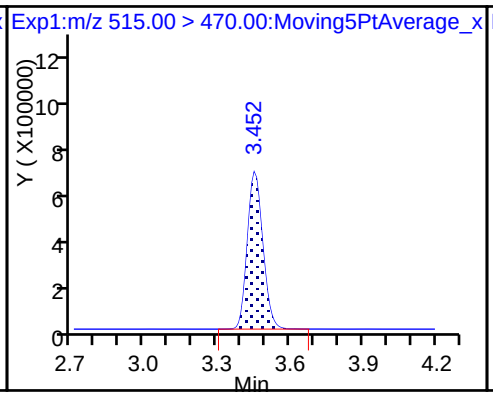
24 Perfluorodecanoic acid



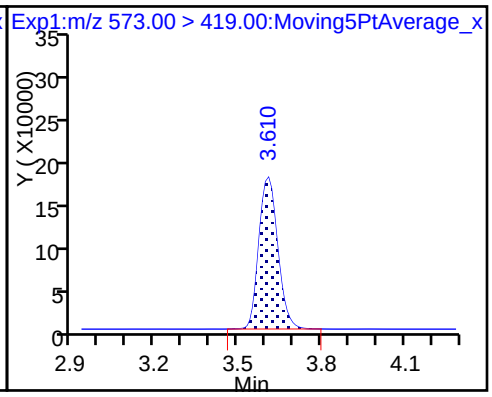
24 Perfluorodecanoic acid



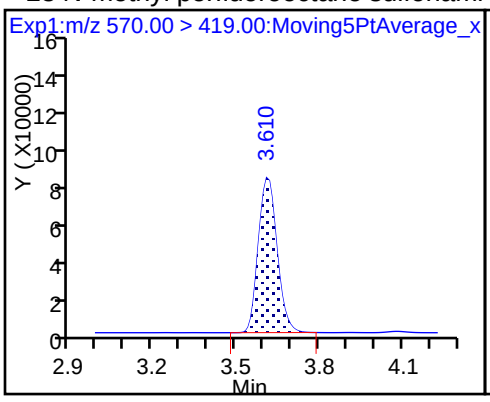
D 23 13C2 PFDA



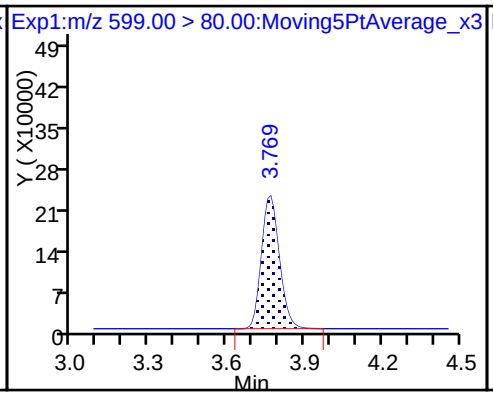
D 27 d3-NMeFOSAA



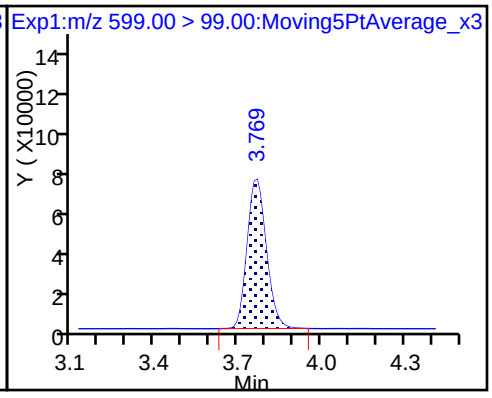
28 N-methyl perfluorooctane sulfonami



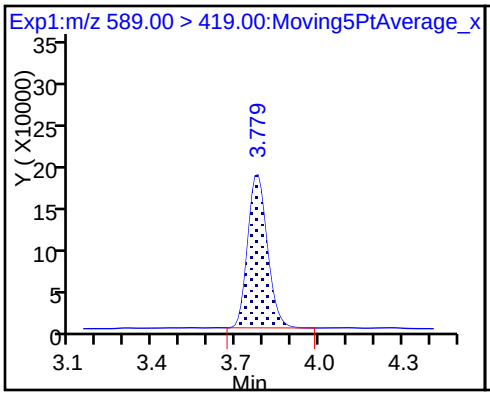
29 Perfluorodecane Sulfonic acid



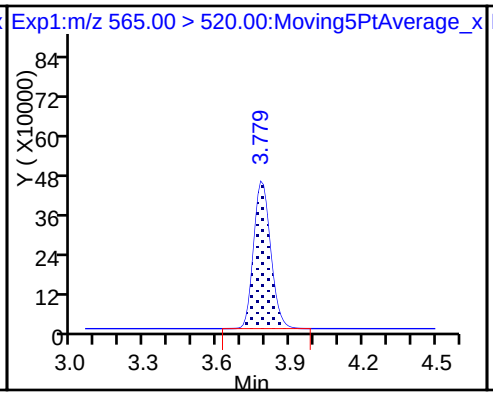
29 Perfluorodecane Sulfonic acid



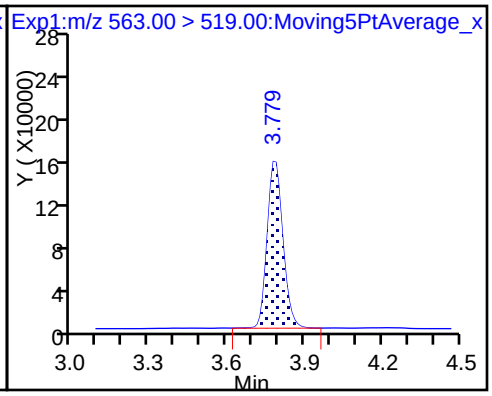
D 32 d5-NEtFOSAA



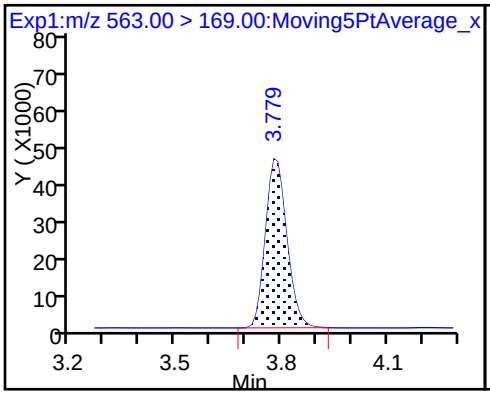
D 30 13C2 PFUnA



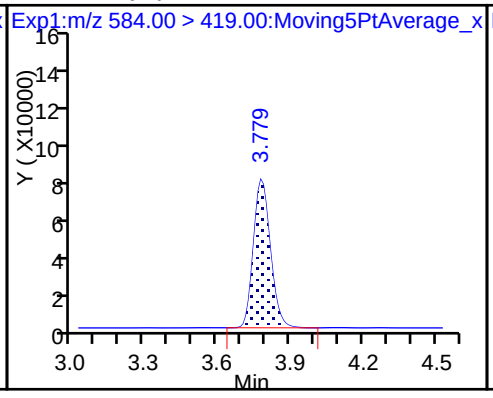
31 Perfluoroundecanoic acid



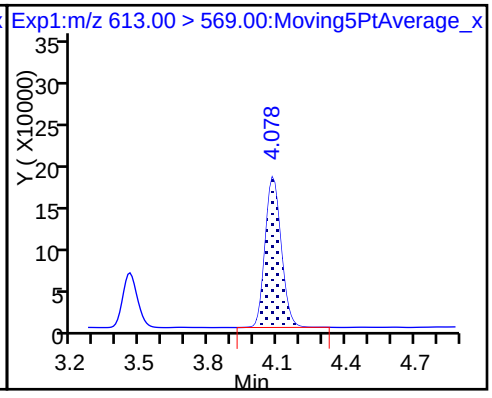
31 Perfluoroundecanoic acid



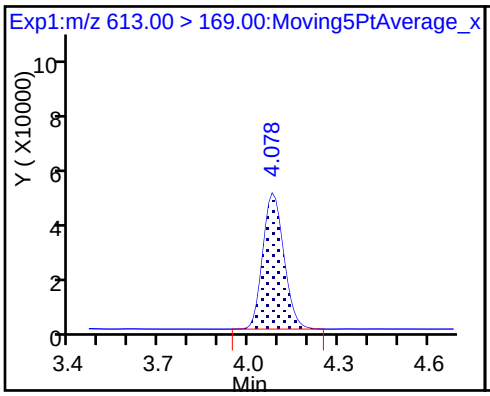
33 N-ethyl perfluorooctane sulfonamid



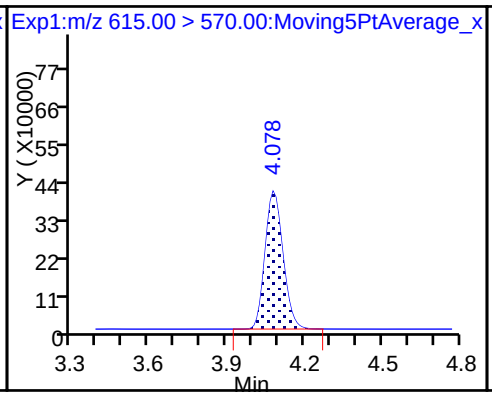
37 Perfluorododecanoic acid



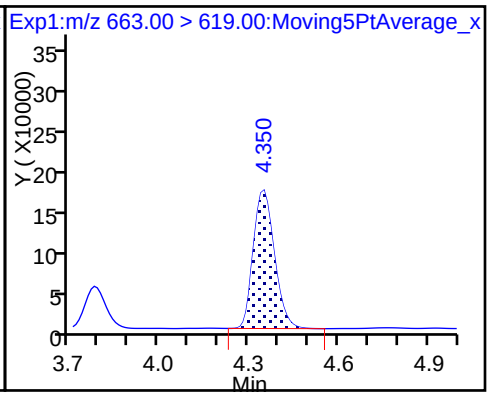
37 Perfluorododecanoic acid



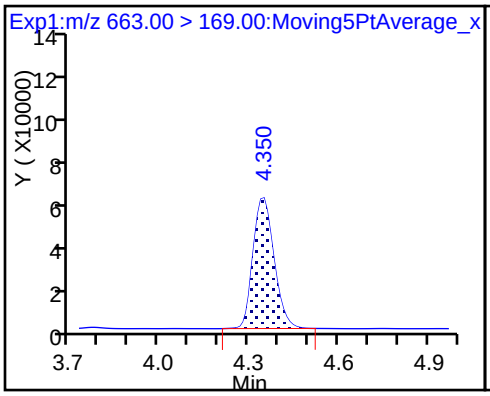
D 36 13C2 PFDoA



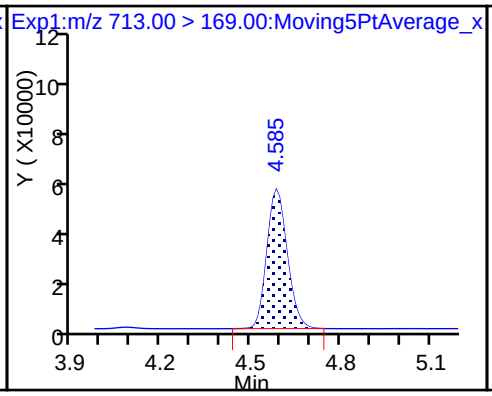
41 Perfluorotridecanoic acid



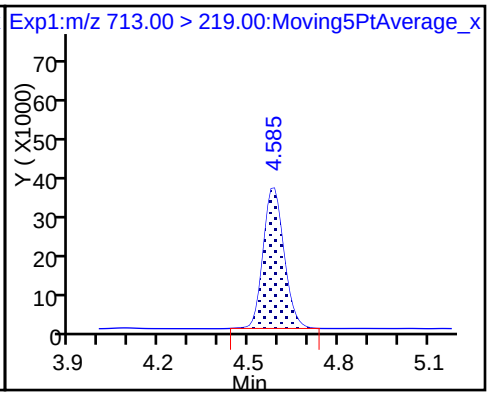
41 Perfluorotridecanoic acid



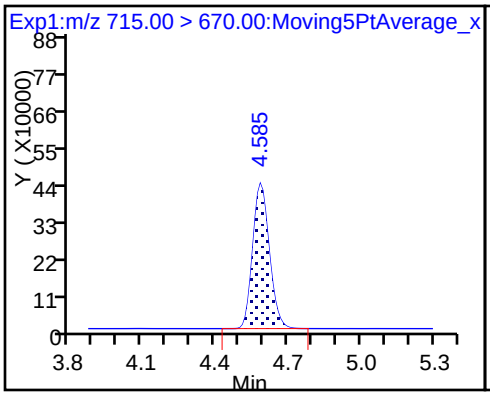
42 Perfluorotetradecanoic acid



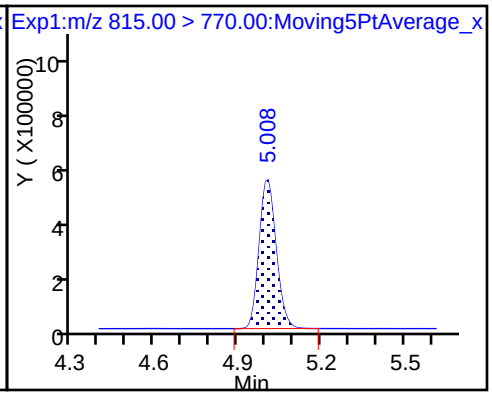
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-213404/2-A

Matrix: Solid | Lab File ID: 2018.04.07LLA1_008.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 5.00(g) | Date Analyzed: 04/07/2018 11:53

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 216849 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.47		0.30	0.20	0.078
335-67-1	Perfluorooctanoic acid (PFOA)	2.39		0.30	0.20	0.10
375-95-1	Perfluorononanoic acid (PFNA)	2.62	Q	0.30	0.20	0.081
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.27		0.40	0.18	0.059
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.15		0.30	0.20	0.062
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.33	M	1.0	0.50	0.24

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	74		50-150
STL01892	13C4-PFHpA	84		50-150
STL00990	13C4 PFOA	84		50-150
STL00995	13C5 PFNA	90		50-150
STL00994	18O2 PFHxS	82		50-150
STL00991	13C4 PFOS	80		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_008.d
Lims ID: LCS 320-213404/2-A
Client ID:
Sample Type: LCS
Inject. Date: 07-Apr-2018 11:53:26 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-213404/2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:30:34 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:28:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.424	0.0	1.000	5519030	1.93		77.2	40692	
2 Perfluorobutyric acid										
212.90 > 169.00	1.424	1.424	0.0	1.000	2717390	1.33		133	946	
D 3 13C5-PFPeA										
267.90 > 223.00	1.693	1.693	0.0	0.558	3650152	1.96		78.4	60858	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.693	1.693	0.0	1.000	2125086	1.22		122	1438	
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.729	0.0	1.000	73409	1.72		74.1	408	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.729	1.729	0.0	1.000	2822934	1.13		128	11666	
298.90 > 99.00	1.729	1.729	0.0	1.000	1219055		2.32(1.25-3.74)		7017	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.938	1.938	0.0	1.000	707591	1.30		139	37064	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.970	0.011	1.000	4002660	1.95		78.0	102193	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.970	1.970	0.0	0.995	2040834	1.25		125	3359	
313.00 > 119.00	1.970	1.970	0.0	0.995	185535		11.00(5.03-15.10)		2924	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.071	2.071	-0.001	1.000	223972	NC			6852	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.307	-0.001	1.000	4138744	2.10		83.9	98314	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.307	-0.001	1.000	2225563	1.24		124	2485	
363.00 > 169.00	2.306	2.307	-0.001	1.000	863830		2.58(1.13-3.40)		4329	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.307	0.012	1.000	2417977	1.07		118	6385	
399.00 > 99.00	2.319	2.307	0.012	1.000	810380		2.98(1.50-4.49)		1932	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.320	-0.001	1.000	4766959	1.94		81.9	134727	
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.629	-0.001	1.000	931334	2.04		86.0	12488	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.636	2.629	0.007	1.003	810386	1.11		117	6791	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.653	0.007	1.000	4092961	2.11		84.4	148152	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.653	0.007		5174188	2.50			151753	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.660	0.0	1.000	2320314	1.20		120	1060	
413.00 > 169.00	2.660	2.660	0.0	1.000	1237126		1.88(0.84-2.52)		3886	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.660	0.007	1.000	2223372	1.22		128	18263	
449.00 > 99.00	2.667	2.660	0.007	1.000	592763		3.75(1.94-5.82)		8003	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.023	0.005	1.000	3270968	1.91		80.1	24907	
D 19 13C5 PFNA										
468.00 > 423.00	3.035	3.023	0.012	1.000	3672649	2.24		89.5	95563	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.028	3.023	0.005	1.000	1820248	1.16		125	42913	M
499.00 > 99.00	3.028	3.023	0.005	1.000	406986		4.47(2.31-6.93)		4004	
20 Perfluorononanoic acid										
463.00 > 419.00	3.035	3.023	0.012	1.000	1977398	1.31		131	5222	
463.00 > 169.00	3.028	3.023	0.005	0.998	468073		4.22(1.90-5.69)		11901	
D 21 13C8 FOSA										
506.00 > 78.00	3.375	3.359	0.016	1.000	4120849	1.71		68.3	44638	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.375	3.359	0.016	1.000	2052647	1.26		126	33660	
D 26 M2-8:2FTS										
529.00 > 81.00	3.402	3.369	0.033	1.000	1134555	2.14		89.3	11860	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.402	3.378	0.024	1.000	689623	1.08		113	22581	
D 23 13C2 PFDA										
515.00 > 470.00	3.402	3.387	0.015	1.000	3044483	2.20		87.8	86094	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.412	3.387	0.025	1.003	1527262	1.27		127	7035	
513.00 > 169.00	3.412	3.387	0.025	1.003	284011		5.38(2.36-7.09)		3536	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.552	3.537	0.015	1.000	1645911	2.22		88.8	19212	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.561	3.546	0.015	1.003	873735	1.26		126	4920	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.701	3.696	0.005	1.000	1050813	1.11		115	8261	
599.00 > 99.00	3.701	3.696	0.005	1.000	351965		2.99(1.39-4.16)		5493	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.712	3.707	0.005	1.000	1738840	2.23		89.4	14415	
D 30 13C2 PFUnA										
565.00 > 520.00	3.722	3.718	0.004	1.000	2425190	2.14		85.7	61295	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.722	3.718	0.004	1.000	1026377	1.32		132	3529	
563.00 > 169.00	3.712	3.718	-0.006	0.997	244154		4.20(2.12-6.36)		9165	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.712	3.718	-0.006	1.000	789947	1.24		124	7399	
35 MeFOSA										
512.00 > 169.00	3.869	3.875	-0.006		237808	NC			1019	
D 36 13C2 PFDoA										
615.00 > 570.00	4.010	4.007	0.003	1.000	2693920	2.14		85.5	26530	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.010	4.007	0.003	1.000	1497570	1.29		129	1100	
613.00 > 169.00	4.010	4.007	0.003	1.000	377246		3.97(2.13-6.40)		3143	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.273	4.270	0.003	1.000	1580174	1.27		127	898	
663.00 > 169.00	4.273	4.270	0.003	1.000	496288		3.18(1.25-3.76)		5091	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.512	4.511	0.001	1.000	3407790	2.13		85.2	17561	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.512	4.511	0.001	1.000	442700	1.30		130	2874	
713.00 > 219.00	4.501	4.511	-0.010	0.998	329604		1.34(0.71-2.13)		3184	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.923	4.922	0.001	1.000	5358573	2.17		86.7	11990	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.923	4.922	0.001	1.000	2617257	NC			596	
813.00 > 169.00	4.923	4.922	0.001	1.000	440620		5.94(2.86-8.58)		2146	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.277	5.276	0.001	1.000	2765784	NC			524	
913.00 > 169.00	5.277	5.276	0.001	1.000	348366		7.94(3.83-11.48)		1811	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Report Date: 09-Apr-2018 08:33:39 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_008.d

Injection Date: 07-Apr-2018 11:53:26 Instrument ID: A8_N

Lims ID: LCS 320-213404/2-A

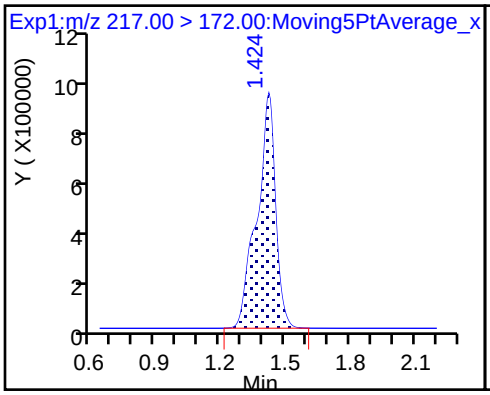
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 2

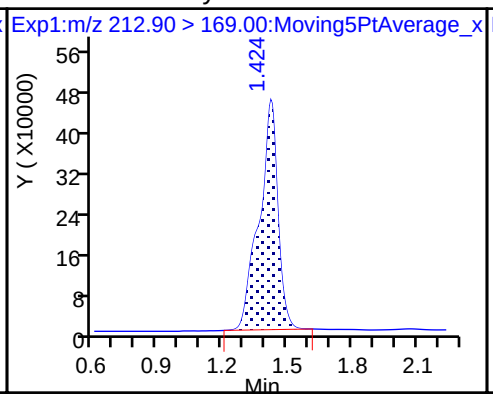
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

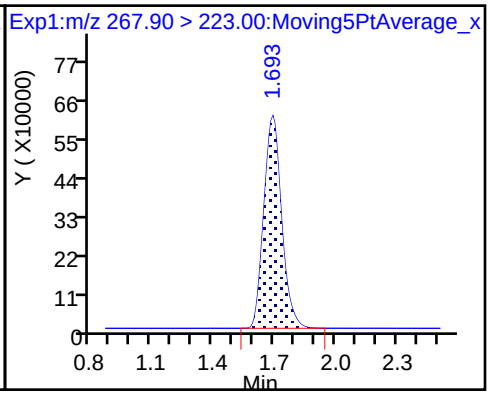
D 1 13C4 PFBA



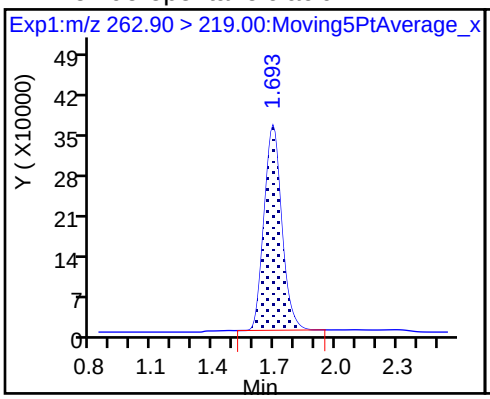
2 Perfluorobutyric acid



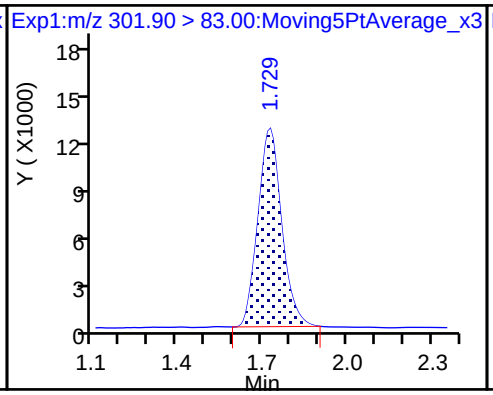
D 3 13C5-PFPeA



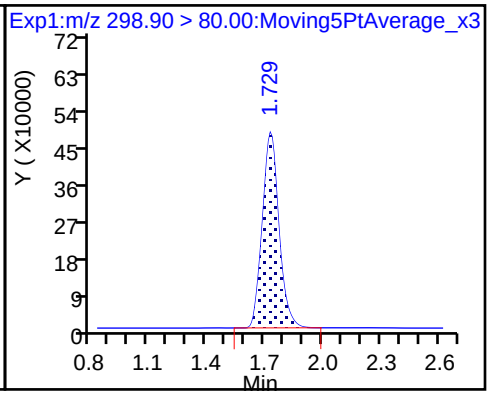
4 Perfluoropentanoic acid



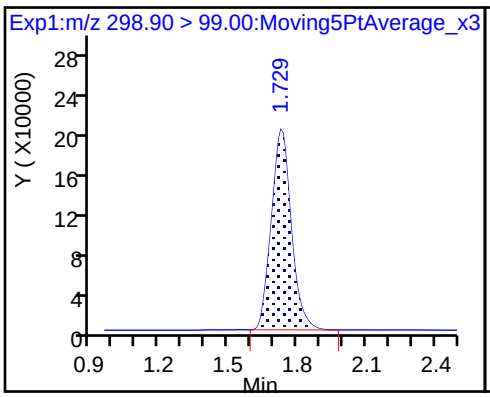
D 47 13C3-PFBS



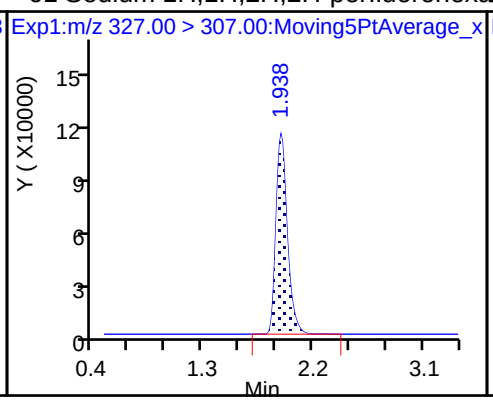
5 Perfluorobutanesulfonic acid



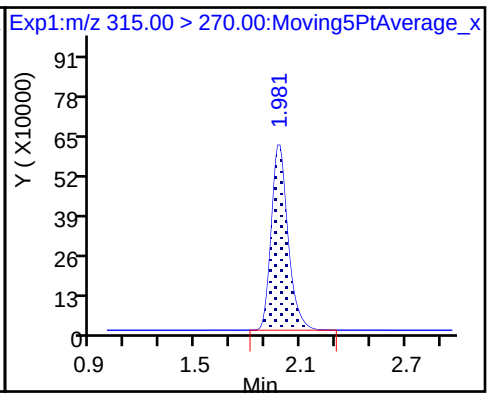
5 Perfluorobutanesulfonic acid



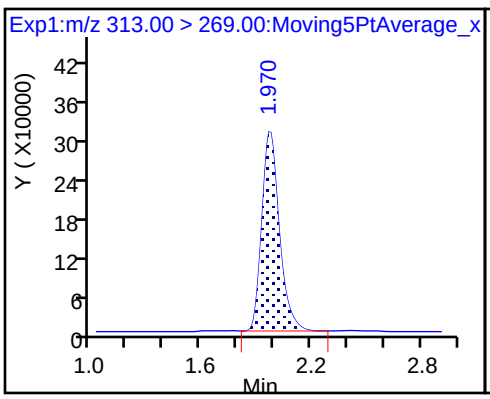
61 Sodium 1H,1H,2H,2H-perfluorohexa



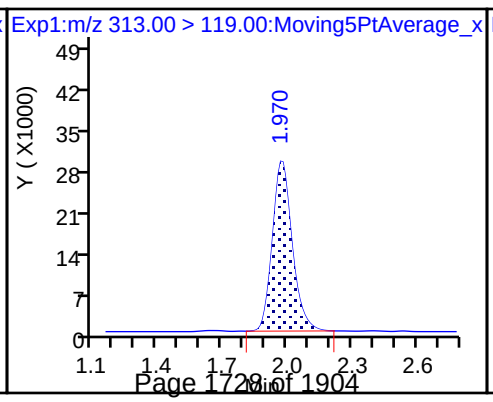
D 7 13C2 PFHxA



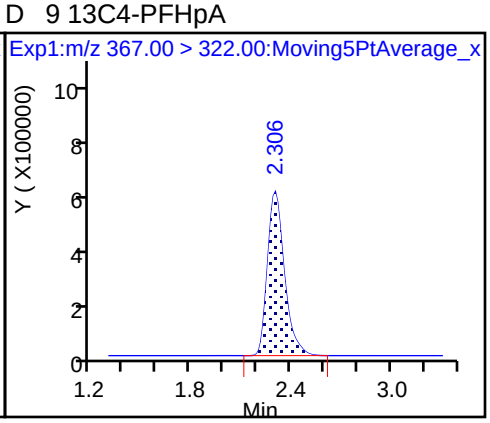
6 Perfluorohexanoic acid



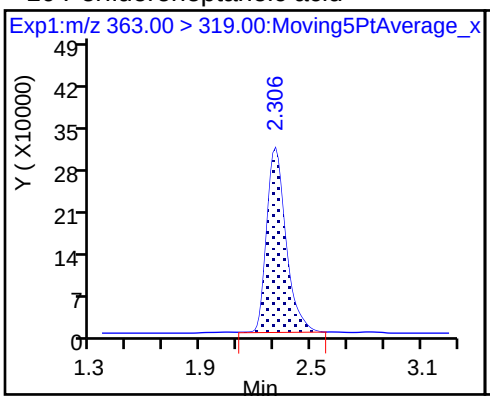
6 Perfluorohexanoic acid



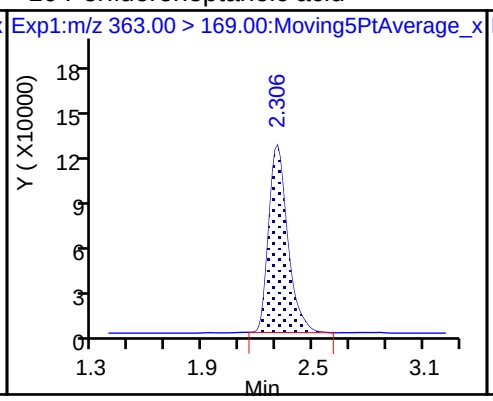
D 9 13C4-PFHpA



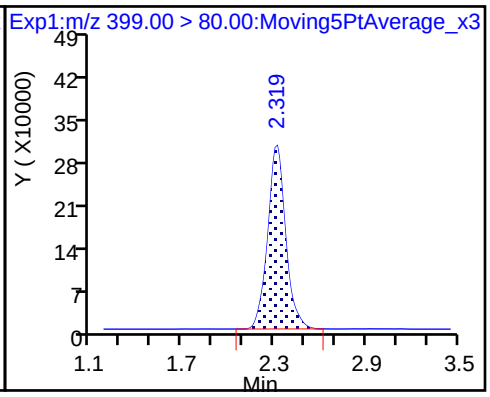
10 Perfluoroheptanoic acid



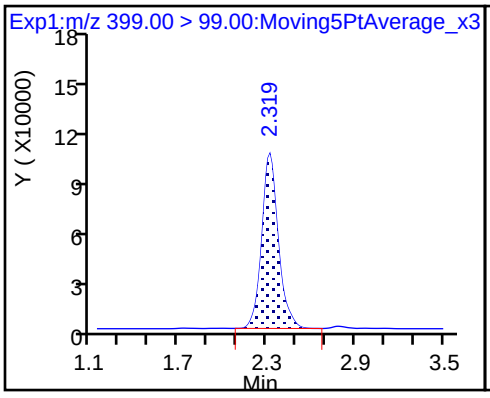
10 Perfluoroheptanoic acid



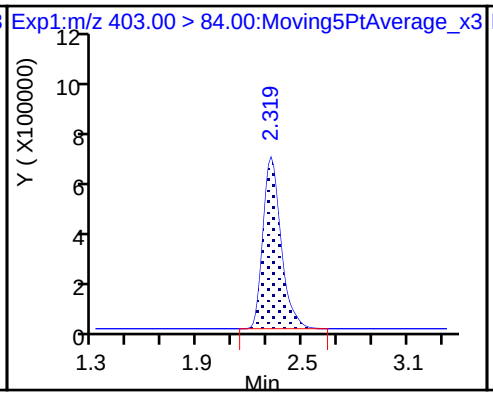
8 Perfluorohexanesulfonic acid



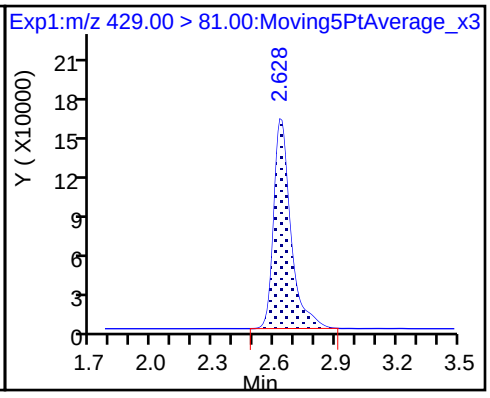
8 Perfluorohexanesulfonic acid



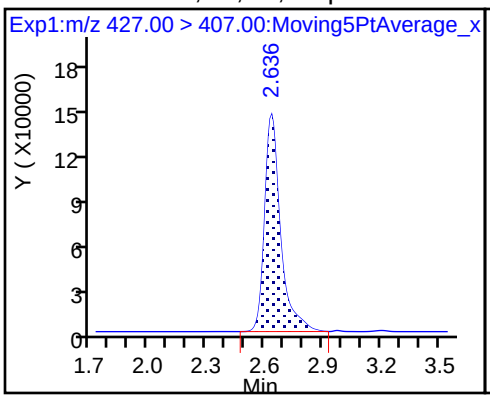
D 11 18O2 PFHxS



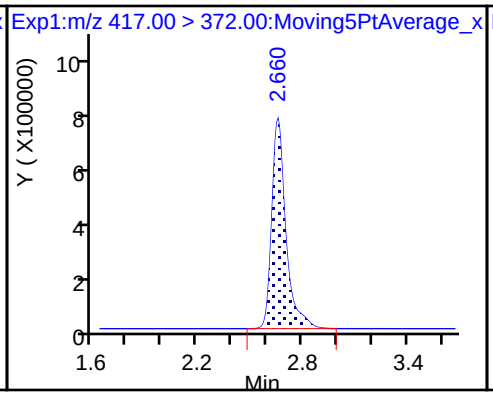
D 12 M2-6:2FTS



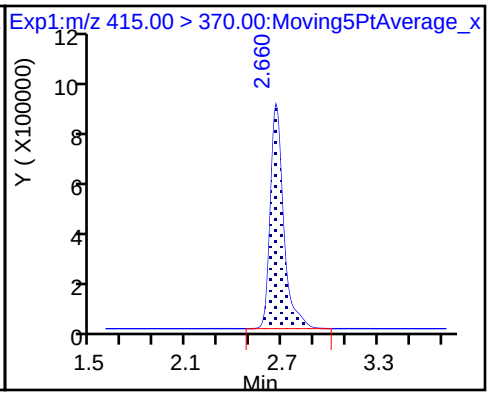
13 Sodium 1H,1H,2H,2H-perfluorooctane



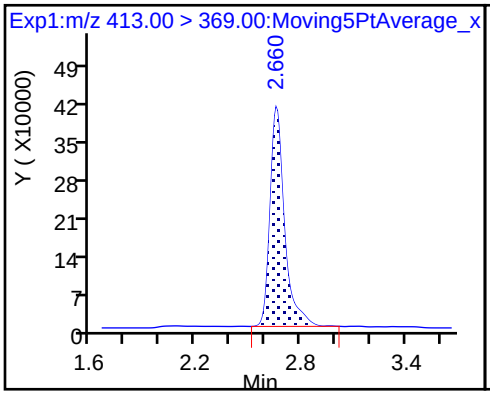
D 14 13C4 PFOA



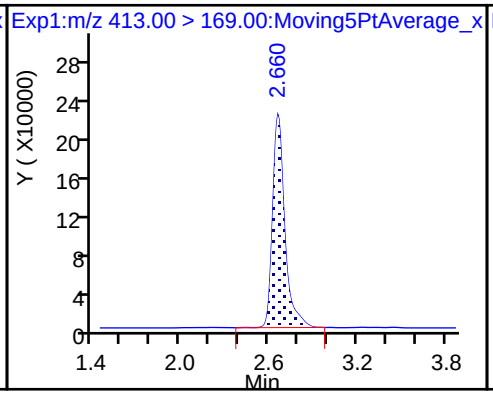
* 62 13C2-PFOA



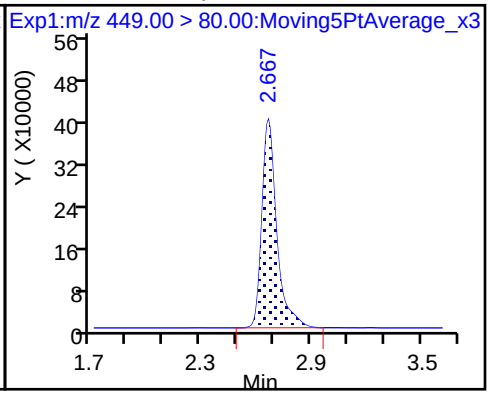
15 Perfluorooctanoic acid



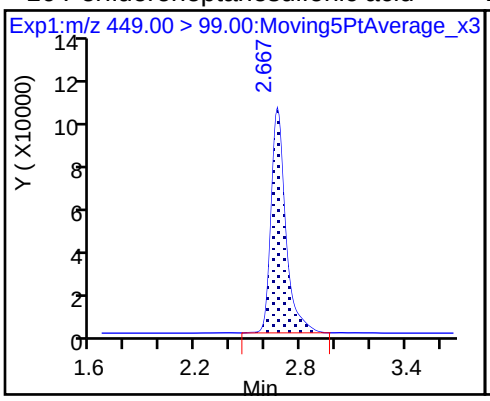
15 Perfluorooctanoic acid



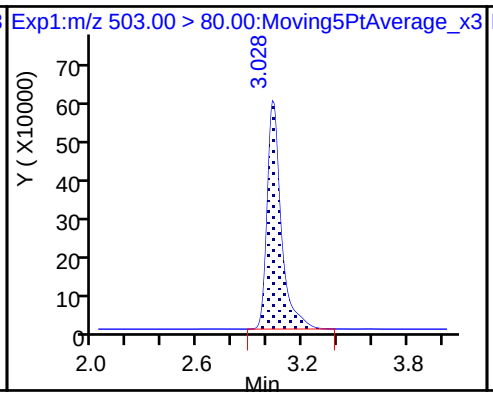
16 Perfluoroheptanesulfonic acid



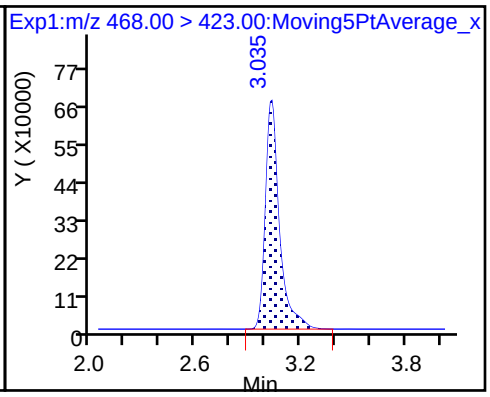
16 Perfluoroheptanesulfonic acid



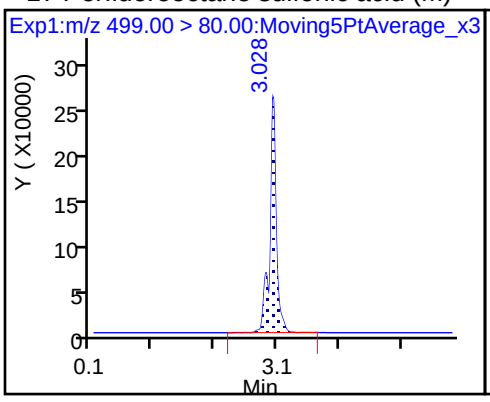
D 18 13C4 PFOS



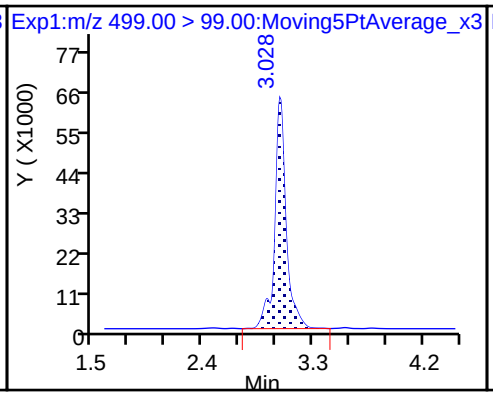
D 19 13C5 PFNA



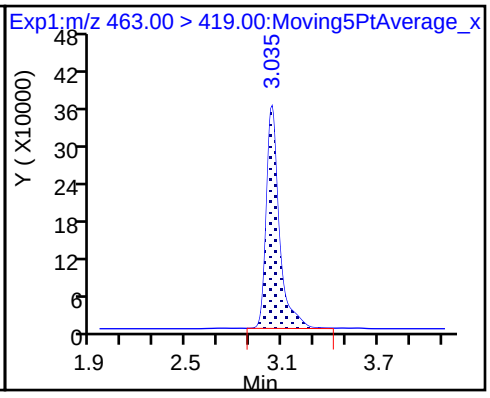
17 Perfluorooctane sulfonic acid (M)



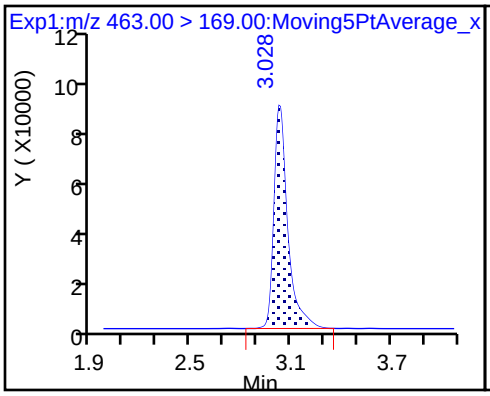
17 Perfluorooctane sulfonic acid



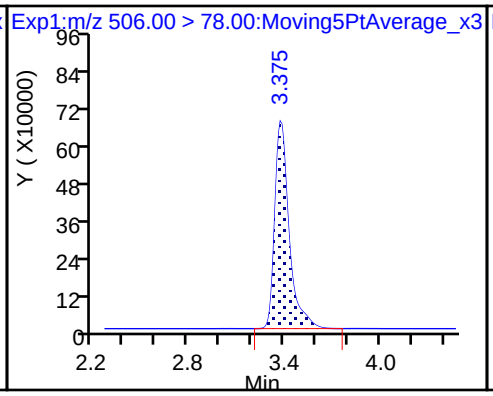
20 Perfluorononanoic acid



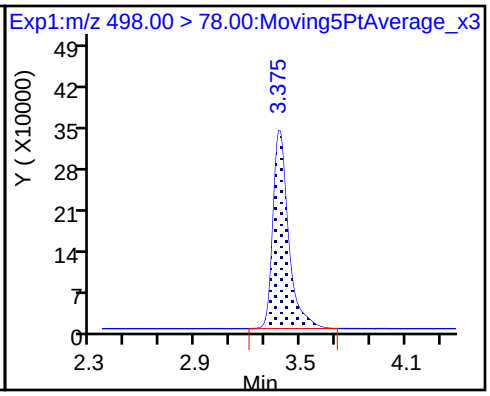
20 Perfluorononanoic acid



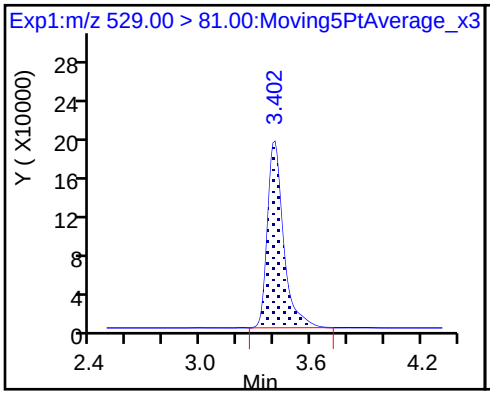
D 21 13C8 FOSA



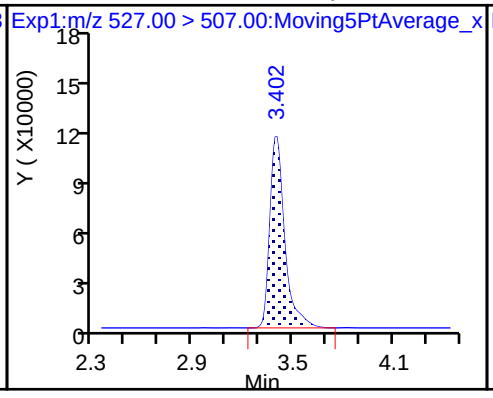
22 Perfluorooctane Sulfonamide



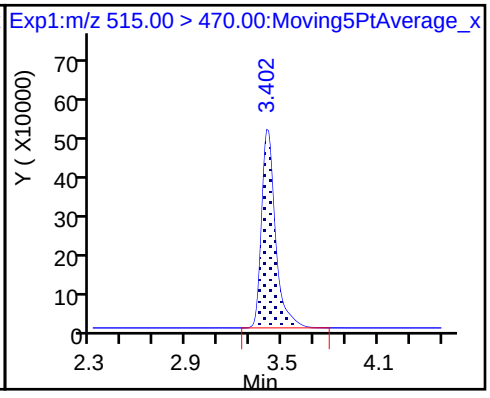
D 26 M2-8:2FTS



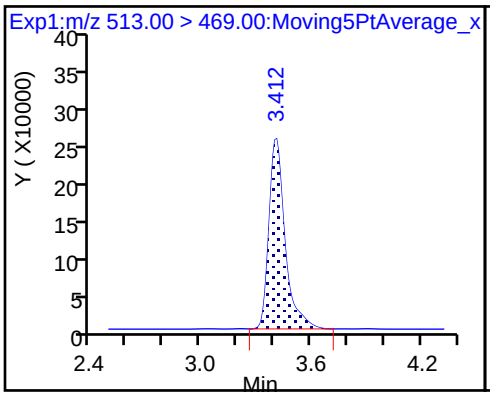
25 Sodium 1H,1H,2H,2H-perfluorodecane



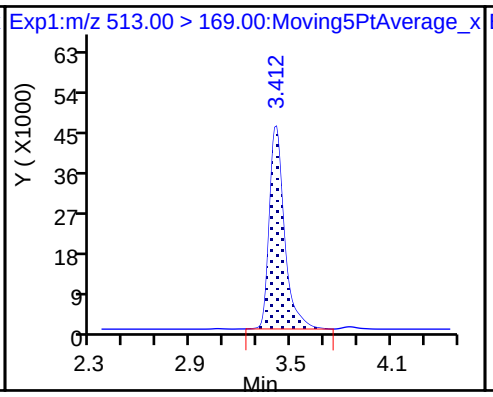
D 23 13C2 PFDA



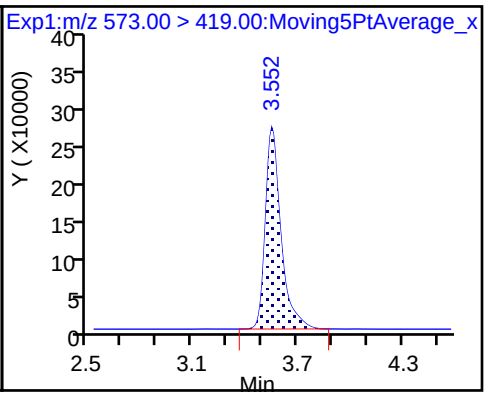
24 Perfluorodecanoic acid



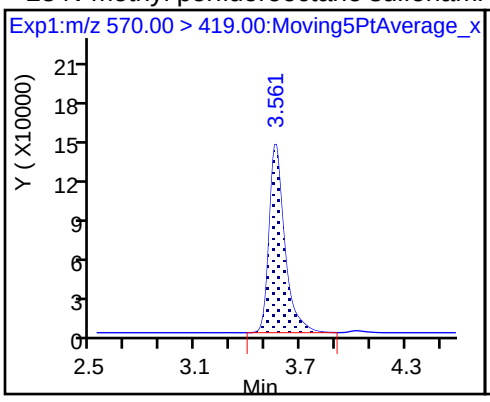
24 Perfluorodecanoic acid



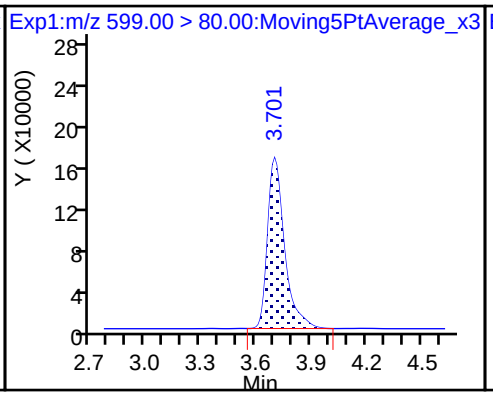
D 27 d3-NMeFOSAA



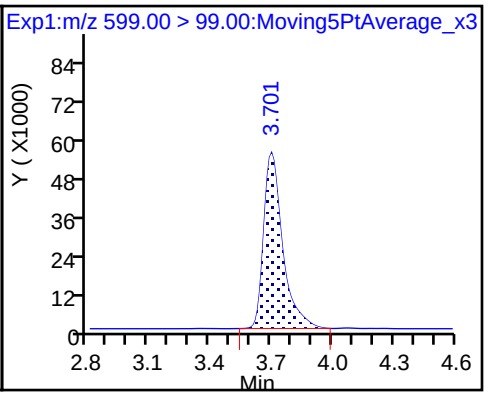
28 N-methyl perfluorooctane sulfonami



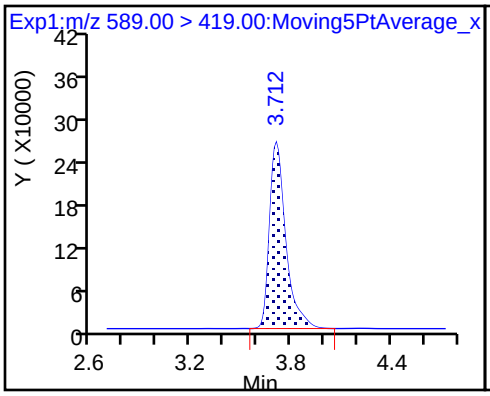
29 Perfluorodecane Sulfonic acid



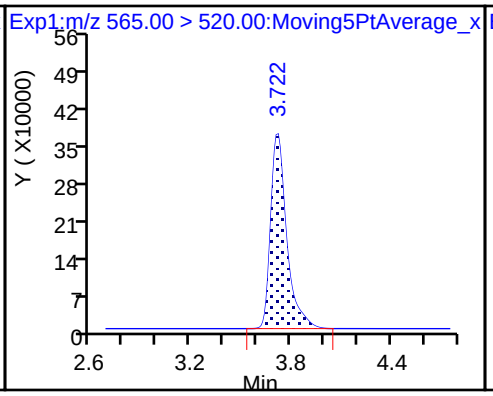
29 Perfluorodecane Sulfonic acid



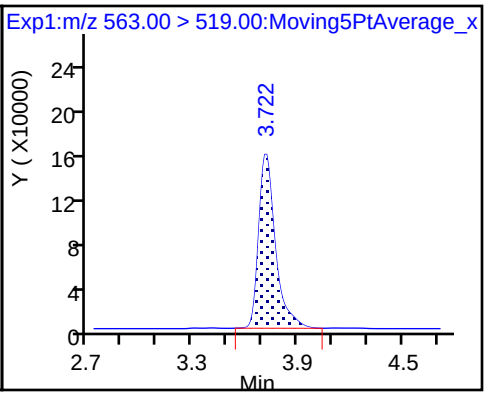
D 32 d5-NEtFOSAA



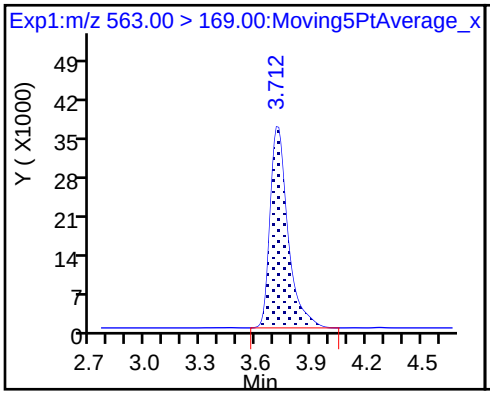
D 30 13C2 PFUnA



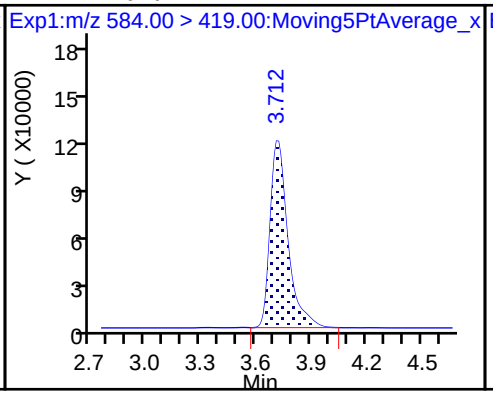
31 Perfluoroundecanoic acid



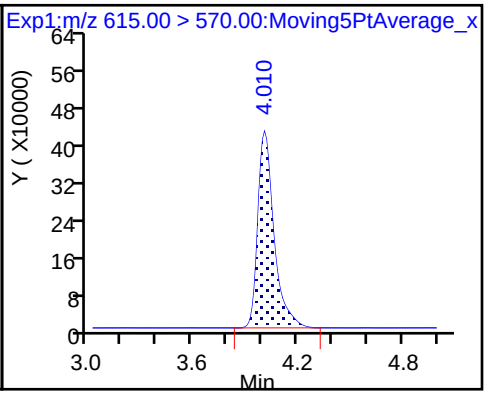
31 Perfluoroundecanoic acid



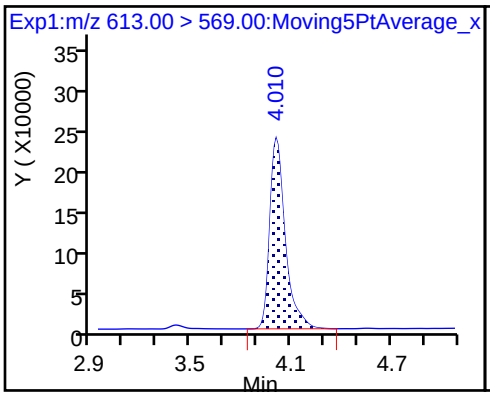
33 N-ethyl perfluorooctane sulfonamid



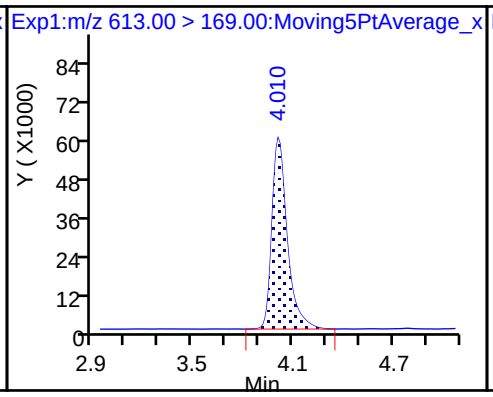
D 36 13C2 PFDoA



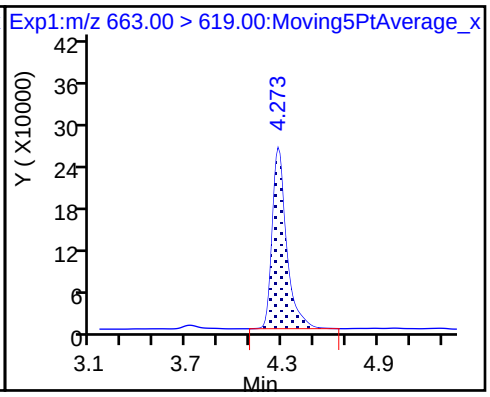
37 Perfluorododecanoic acid



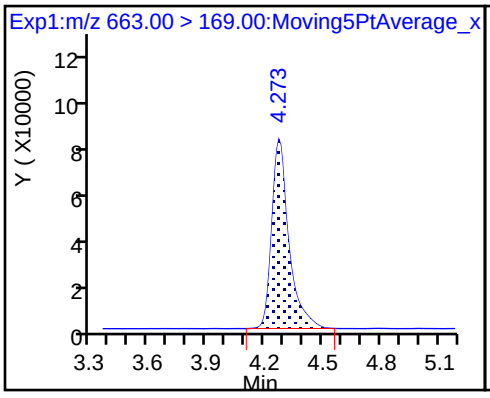
37 Perfluorododecanoic acid



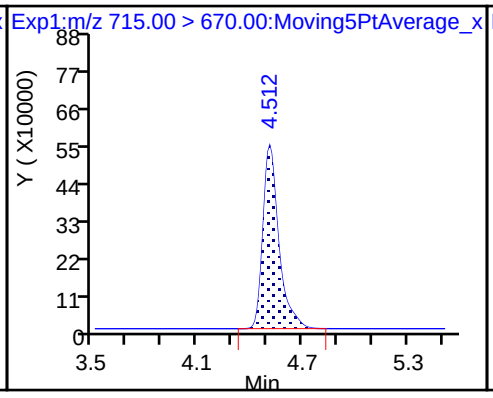
41 Perfluorotridecanoic acid



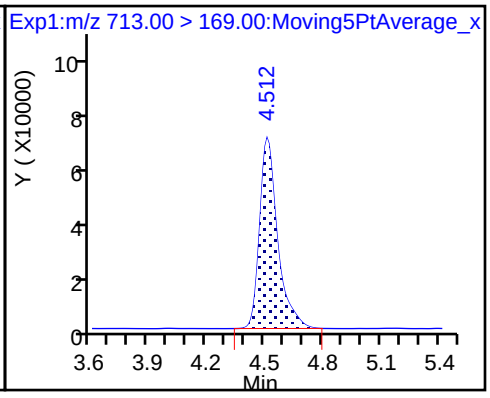
41 Perfluorotridecanoic acid



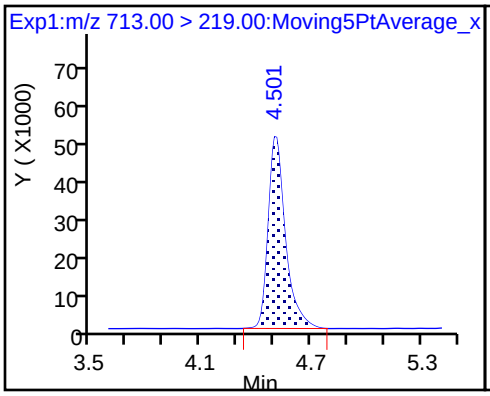
D 43 13C2-PFTeDA



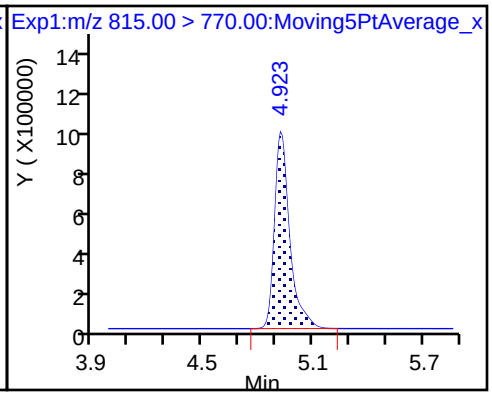
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

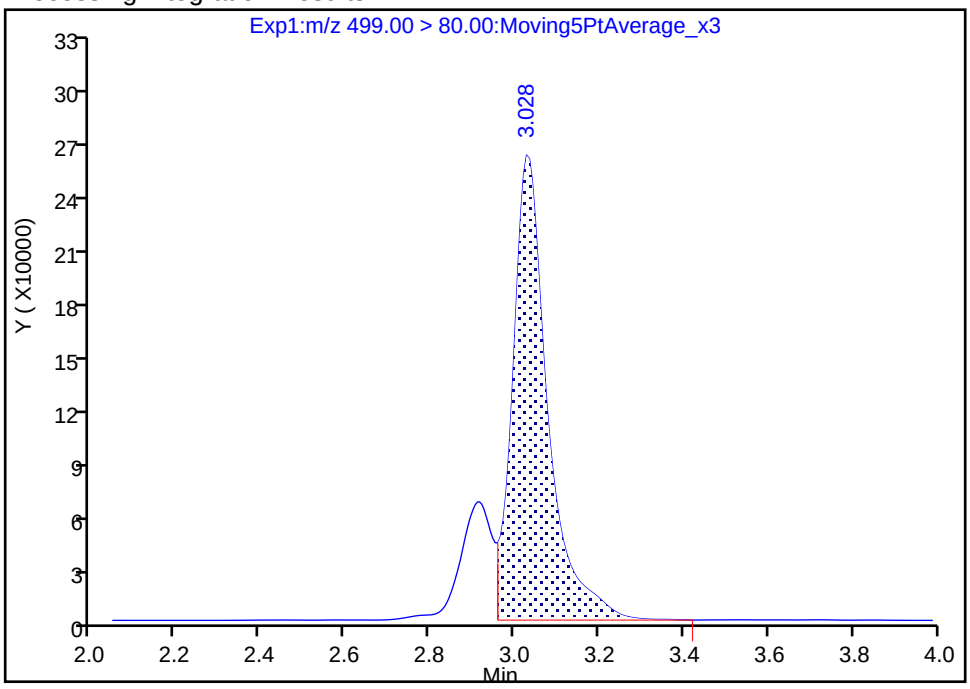
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_008.d
Injection Date: 07-Apr-2018 11:53:26 Instrument ID: A8_N
Lims ID: LCS 320-213404/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

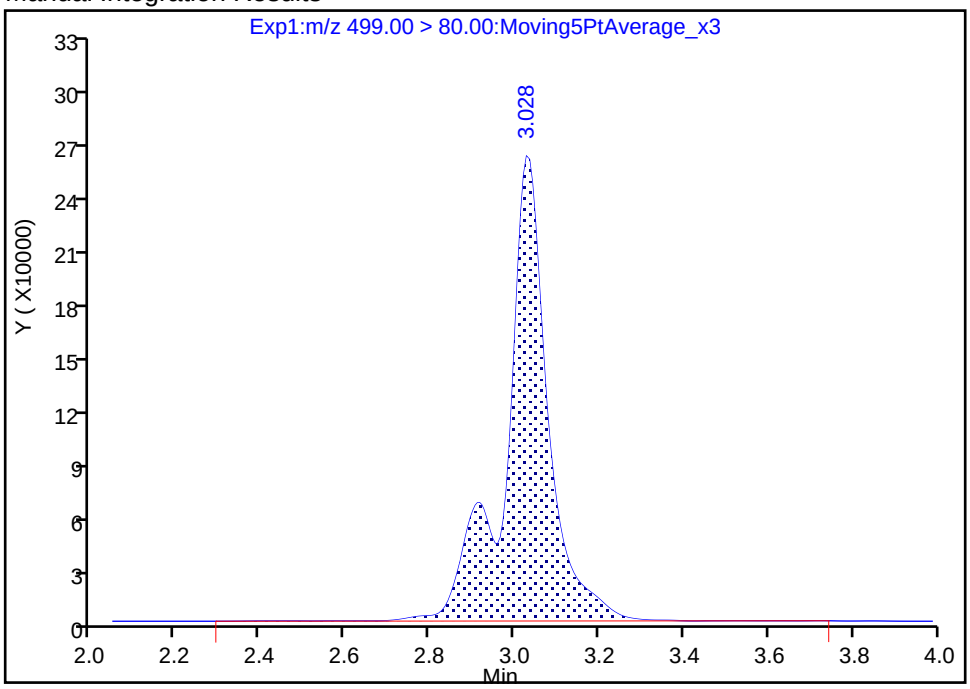
Processing Integration Results

RT: 3.03
Area: 1471755
Amount: 0.941126
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 1820248
Amount: 1.163973
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:28:03
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-214457/2-A

Matrix: Water | Lab File ID: 2018.03.24LLAA_008.d

Analysis Method: EPA 537 (Mod) | Date Collected:

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 250(mL) | Date Analyzed: 03/24/2018 19:34

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	38.1		2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	36.1		2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	36.5		2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33.7		2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32.6		2.0	1.0	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34.1		4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	72		50-150
STL01892	13C4-PFHpA	74		50-150
STL00990	13C4 PFOA	72		50-150
STL00995	13C5 PFNA	75		50-150
STL00994	18O2 PFHxS	73		50-150
STL00991	13C4 PFOS	73		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_008.d
Lims ID: LCS 320-214457/2-A
Client ID:
Sample Type: LCS
Inject. Date: 24-Mar-2018 19:34:34 ALS Bottle#: 2 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-214457/2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:46:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.452	1.459	-0.007	0.537	5680454	1.82		72.9	86424	
2 Perfluorobutyric acid										
212.90 > 169.00	1.452	1.462	-0.010	1.000	2049407	0.9573		95.7	737	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.718	1.723	-0.005	1.000	1583890	0.9367		93.7	693	
D 3 13C5-PFPeA										
267.90 > 223.00	1.718	1.727	-0.009	0.635	3749253	1.81		72.5	119029	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.762	-0.009	0.648	79101	1.67		72.0	552	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.753	1.767	-0.014	1.000	2228854	0.8431		95.4	8451	
298.90 > 99.00	1.753	1.767	-0.014	1.000	911305		2.45(1.25-3.74)		4273	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.976	1.981	-0.005	1.000	534895	0.9733		104	24335	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.008	2.014	-0.006	1.000	1479804	0.8837		88.4	1646	
313.00 > 119.00	2.008	2.014	-0.006	1.000	149645		9.89(5.03-15.10)		1676	
D 7 13C2 PFHxA										
315.00 > 270.00	2.008	2.019	-0.011	0.742	4094711	1.79		71.6	124664	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.341	2.348	-0.007	1.000	1653788	0.9513		95.1	1273	
363.00 > 169.00	2.341	2.348	-0.007	1.000	653770		2.53(1.13-3.40)		1876	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.354	2.361	-0.007	1.000	1856639	0.8153		89.6	4591	
399.00 > 99.00	2.354	2.361	-0.007	1.000	644900		2.88(1.50-4.49)		1323	
D 9 13C4-PFHpA										
367.00 > 322.00	2.341	2.368	-0.027	0.865	4201447	1.86		74.4	103489	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.354	2.380	-0.026	0.870	4838541	1.74		73.5	104810	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.682	2.691	-0.009	1.000	1281199	1.77		187	2011	
D 12 M2-6:2FTS										
429.00 > 81.00	2.682	2.704	-0.022	0.991	985480	2.11		88.7	25954	
* 62 13C2-PFOA										
415.00 > 370.00	2.706	2.714	-0.008		6159195	2.50			111241	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.706	2.714	-0.008	1.000	1695832	0.9022		90.2	496	
413.00 > 169.00	2.706	2.714	-0.008	1.000	941574		1.80(0.84-2.52)		3239	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.714	2.722	-0.008	1.000	1717948	0.9076		95.3	29342	
449.00 > 99.00	2.714	2.722	-0.008	1.000	460529		3.73(1.94-5.82)		5516	
D 14 13C4 PFOA										
417.00 > 372.00	2.706	2.728	-0.022	1.000	4159755	1.80		72.0	82245	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.082	3.090	-0.008	1.000	1402385	0.8521		91.8	6270	
499.00 > 99.00	3.082	3.090	-0.008	1.000	314690		4.46(2.31-6.93)		3550	
20 Perfluorononanoic acid										
463.00 > 419.00	3.082	3.090	-0.008	1.000	1384055	0.9130		91.3	1391	
463.00 > 169.00	3.082	3.090	-0.008	1.000	338155		4.09(1.90-5.69)		7456	
D 19 13C5 PFNA										
468.00 > 423.00	3.082	3.112	-0.030	1.139	3799392	1.87		74.6	84558	
D 18 13C4 PFOS										
503.00 > 80.00	3.082	3.112	-0.030	1.139	3530976	1.74		72.9	54654	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.410	3.411	-0.001	1.000	1710014	0.9165		91.7	32438	
D 21 13C8 FOSA										
506.00 > 78.00	3.410	3.418	-0.008	1.260	4731616	1.73		69.3	56893	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.437	3.447	-0.010	1.000	572674	0.9273		96.8	5661	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.446	3.456	-0.010	1.000	1202060	0.9678		96.8	6368	
513.00 > 169.00	3.446	3.456	-0.010	1.000	205597		5.85(2.36-7.09)		6607	
D 26 M2-8:2FTS										
529.00 > 81.00	3.437	3.464	-0.027	1.270	1158884	1.83		76.6	29100	
D 23 13C2 PFDA										
515.00 > 470.00	3.446	3.473	-0.027	1.273	3142675	1.76		70.4	50713	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.604	3.615	-0.011	1.000	582643	0.9420		94.2	5395	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.604	3.633	-0.029	1.332	1545053	1.64		65.8	32998	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.762	3.774	-0.012	1.000	872338	0.8683		90.1	16845	
599.00 > 99.00	3.762	3.774	-0.012	1.000	295051		2.96(1.39-4.16)		5662	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.772	3.784	-0.012	1.000	579752	0.9343		93.4	19457	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.783	3.784	-0.001	1.000	701869	0.8262		82.6	4199	
563.00 > 169.00	3.783	3.784	-0.001	1.000	177116		3.96(2.12-6.36)		13978	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.772	3.804	-0.032	1.394	1660511	1.55		62.0	5798	
D 30 13C2 PFUnA										
565.00 > 520.00	3.783	3.815	-0.032	1.398	2463320	1.54		61.7	63921	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.071	4.084	-0.013	1.000	1048591	0.9445		94.4	922	
613.00 > 169.00	4.071	4.084	-0.013	1.000	251779		4.16(2.13-6.40)		4707	
D 36 13C2 PFDoA										
615.00 > 570.00	4.071	4.105	-0.034	1.504	2652586	1.46		58.6	19583	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.342	4.347	-0.004	1.000	1124500	0.9628		96.3	598	
663.00 > 169.00	4.342	4.347	-0.004	1.000	355085		3.17(1.25-3.76)		4320	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.577	4.592	-0.015	1.000	340914	1.01		101	5097	
713.00 > 219.00	4.577	4.592	-0.015	1.000	230670		1.48(0.71-2.13)		4890	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.577	4.613	-0.036	1.691	3416256	1.54		61.7	19298	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.000	5.013	-0.013	1.000	1738369	NC			506	
813.00 > 169.00	5.000	5.013	-0.013	1.000	301497		5.77(2.86-8.58)		2753	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.000	5.049	-0.049	1.848	4997017	1.38		55.1	12681	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.372	5.380	-0.008	1.000	1550288	NC			421	
913.00 > 169.00	5.366	5.380	-0.014	0.999	201666		7.69(3.83-11.48)		2475	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 25-Mar-2018 10:51:09 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_008.d

Injection Date: 24-Mar-2018 19:34:34 Instrument ID: A8_N

Lims ID: LCS 320-214457/2-A

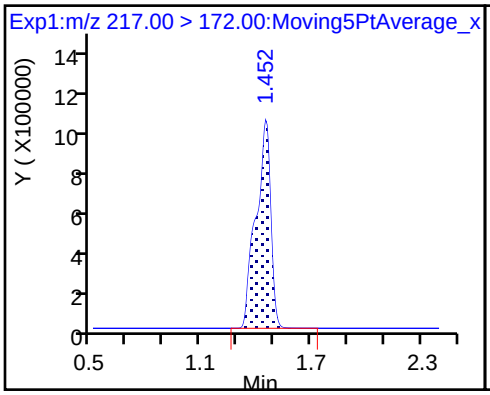
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 6

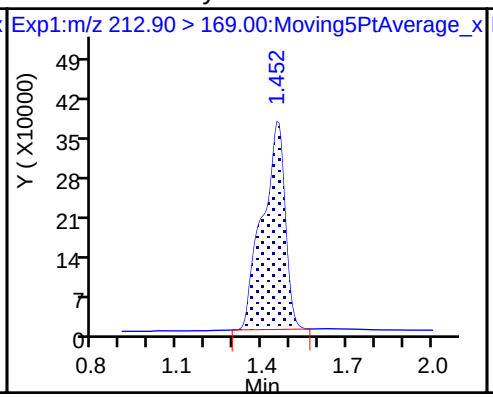
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

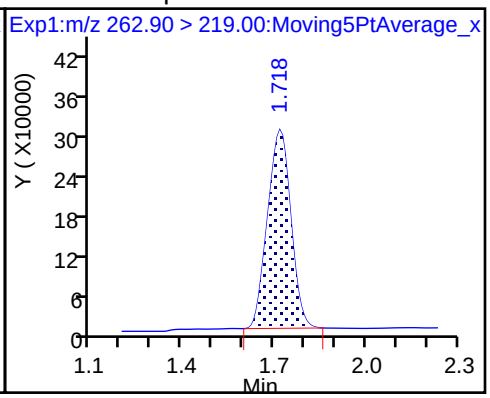
D 1 13C4 PFBA



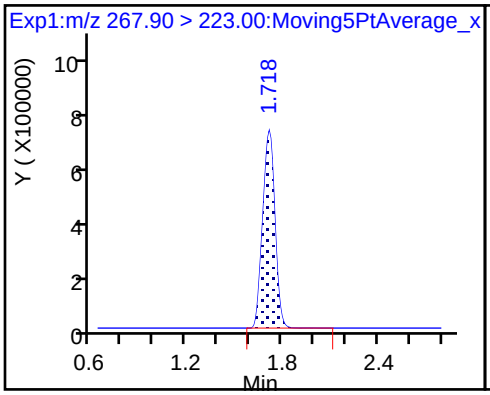
2 Perfluorobutyric acid



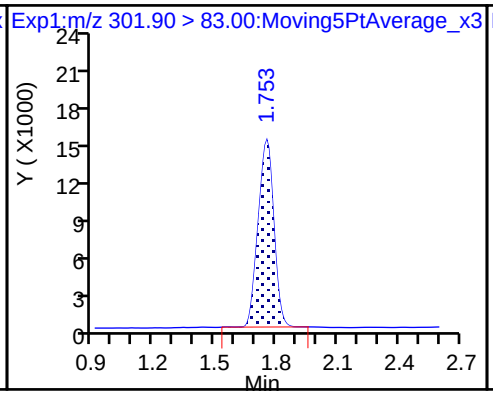
4 Perfluoropentanoic acid



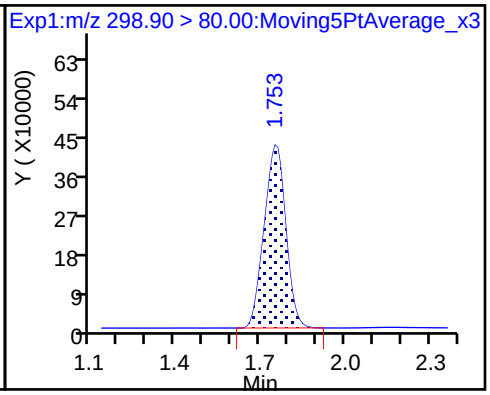
D 3 13C5-PFPeA



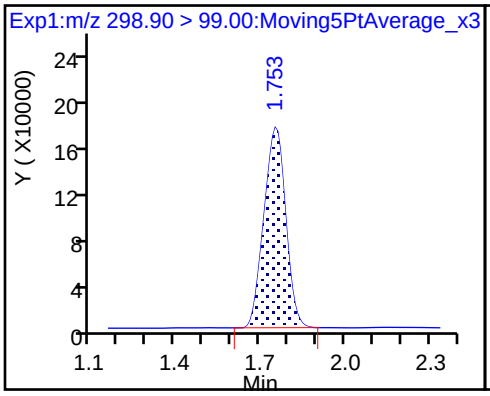
D 47 13C3-PFBS



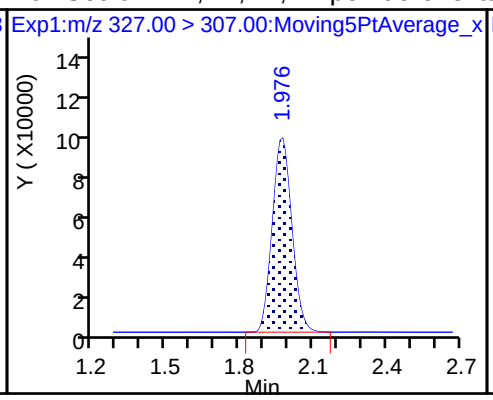
5 Perfluorobutanesulfonic acid



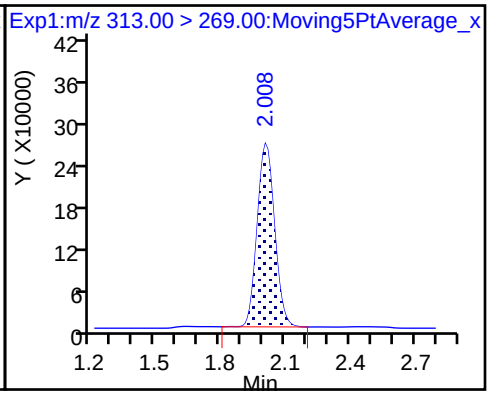
5 Perfluorobutanesulfonic acid



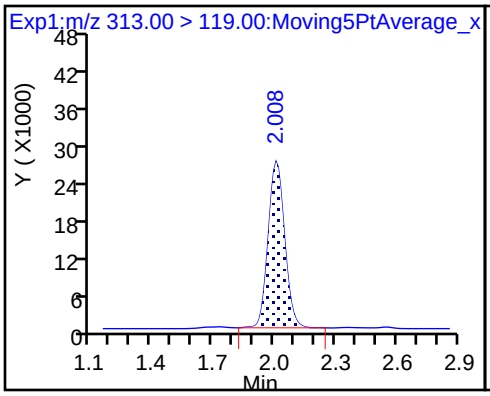
61 Sodium 1H,1H,2H,2H-perfluorohexane



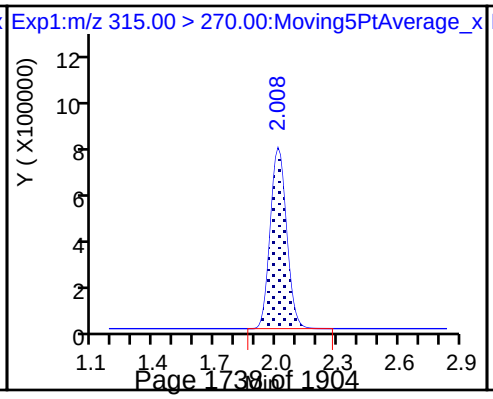
6 Perfluorohexanoic acid



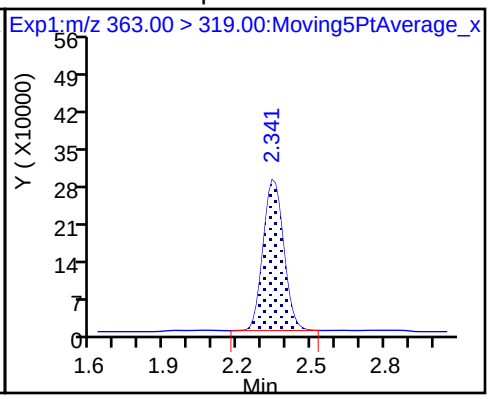
6 Perfluorohexanoic acid



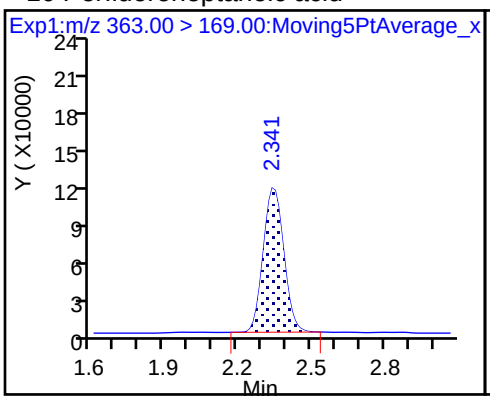
D 7 13C2 PFHxA



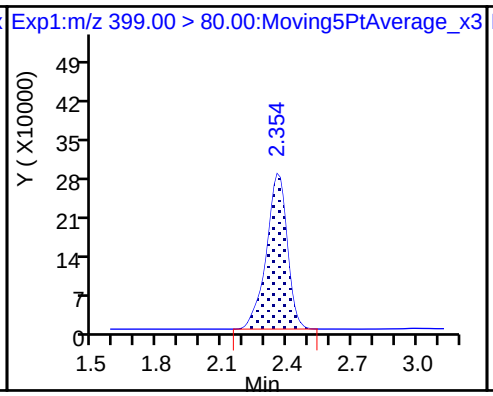
10 Perfluoroheptanoic acid



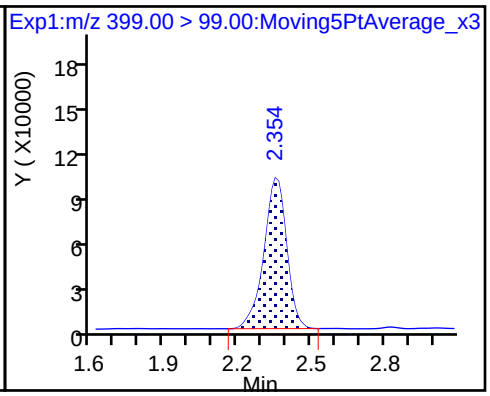
10 Perfluoroheptanoic acid



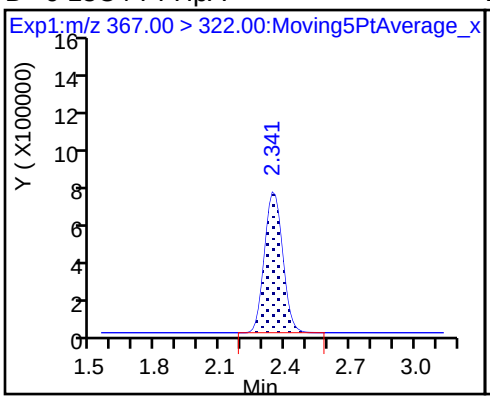
8 Perfluorohexanesulfonic acid



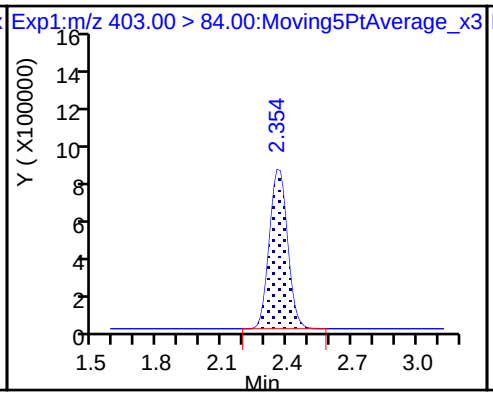
8 Perfluorohexanesulfonic acid



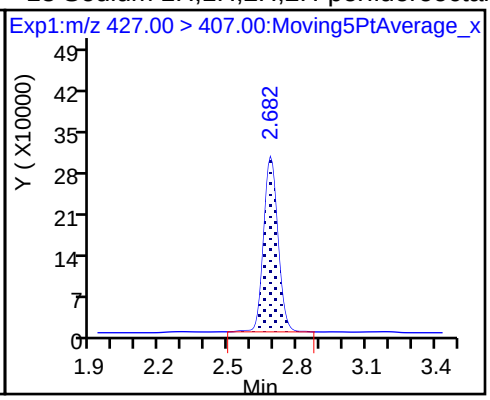
D 9 13C4-PFHpA



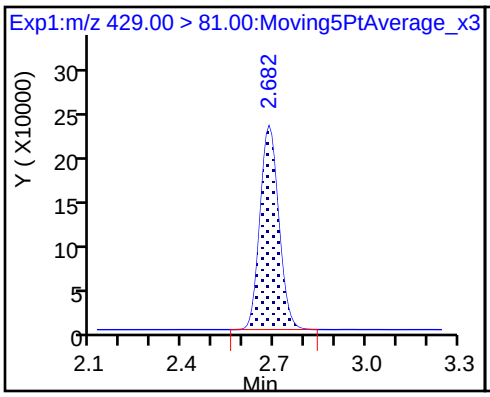
D 11 18O2 PFHxS



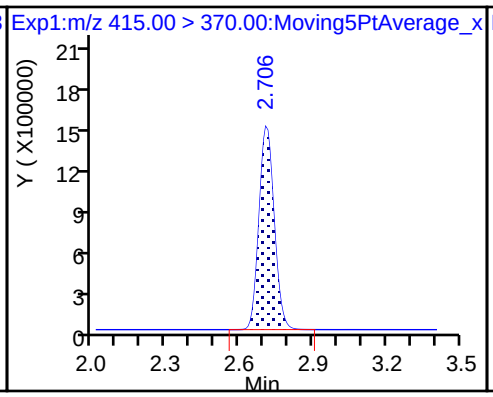
13 Sodium 1H,1H,2H,2H-perfluorooctane



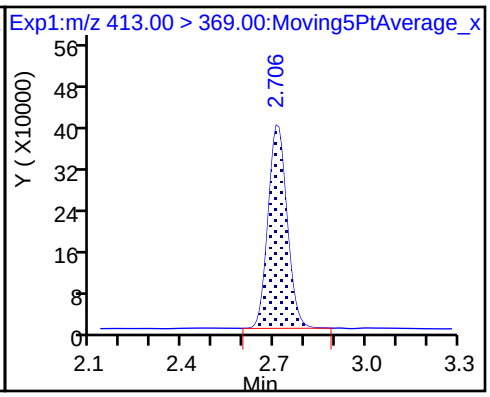
D 12 M2-6:2FTS



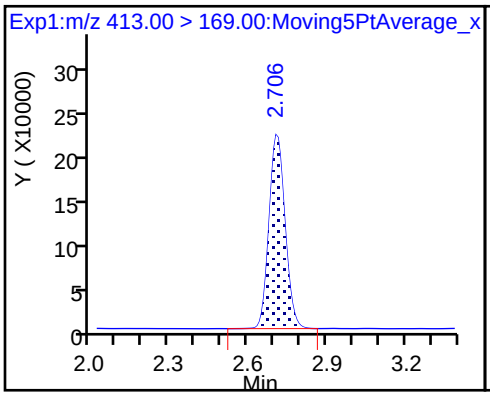
* 62 13C2-PFOA



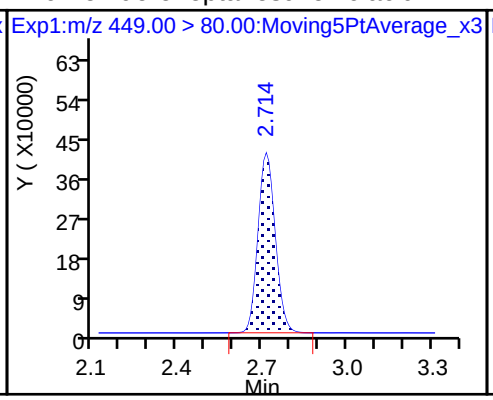
15 Perfluorooctanoic acid



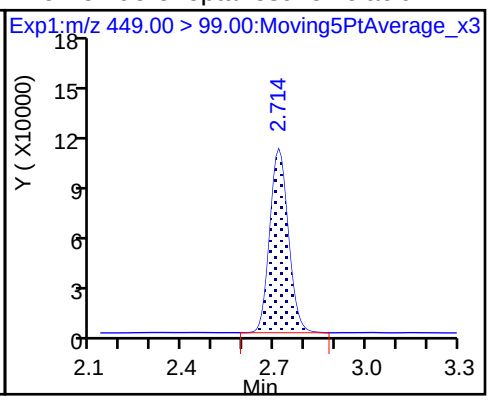
15 Perfluorooctanoic acid



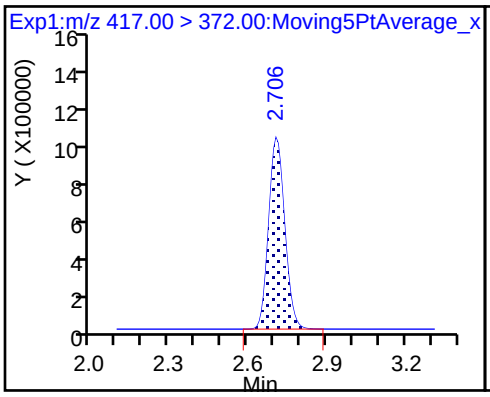
16 Perfluoroheptanesulfonic acid



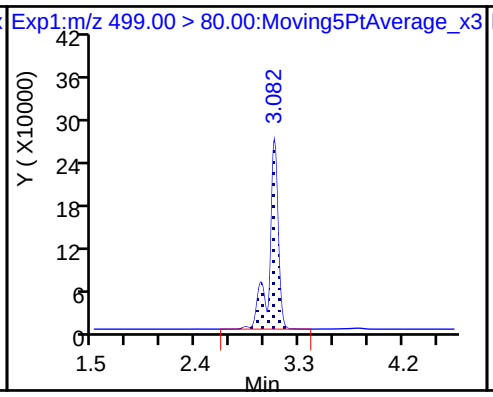
16 Perfluoroheptanesulfonic acid



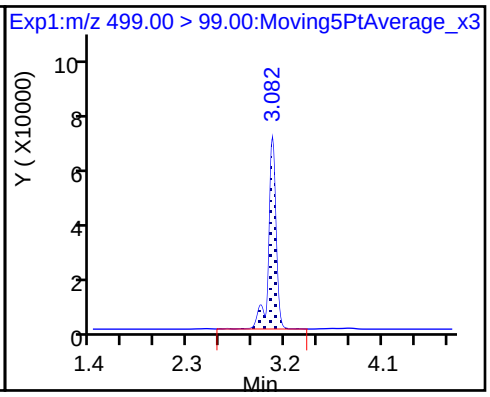
D 14 13C4 PFOA



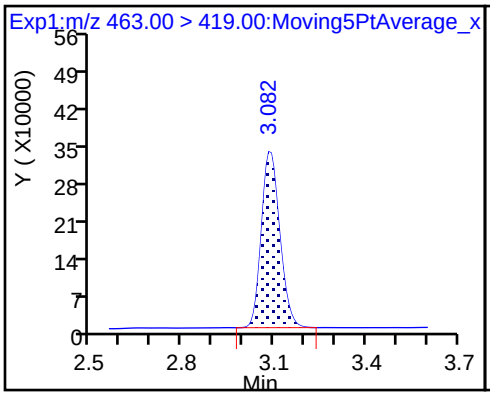
17 Perfluorooctane sulfonic acid



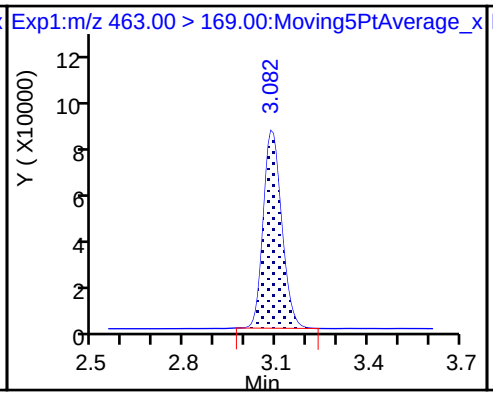
17 Perfluorooctane sulfonic acid



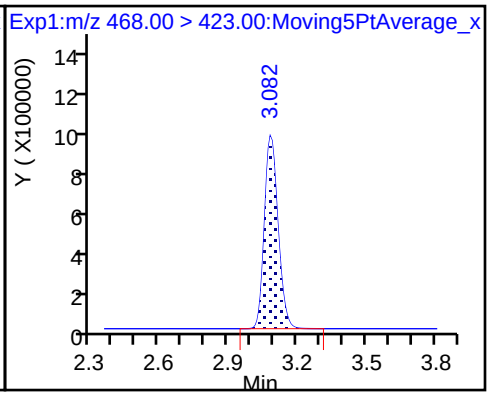
20 Perfluorononanoic acid



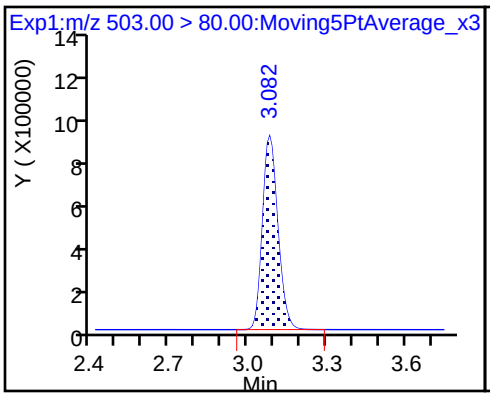
20 Perfluorononanoic acid



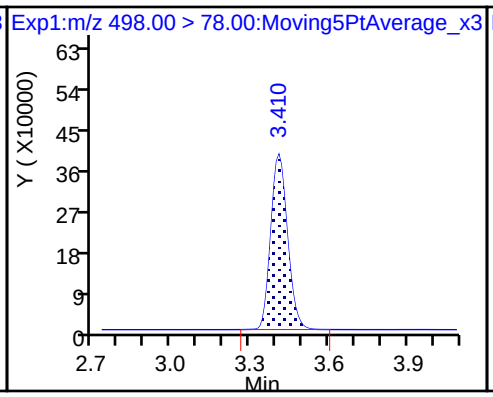
D 19 13C5 PFNA



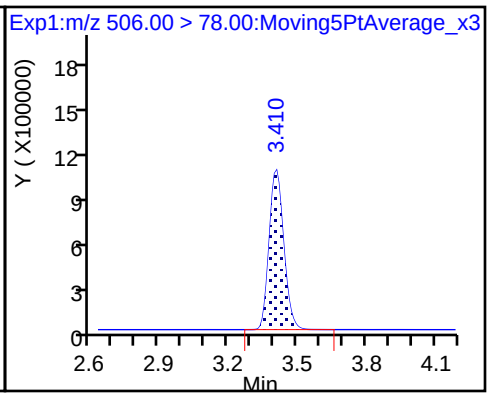
D 18 13C4 PFOS



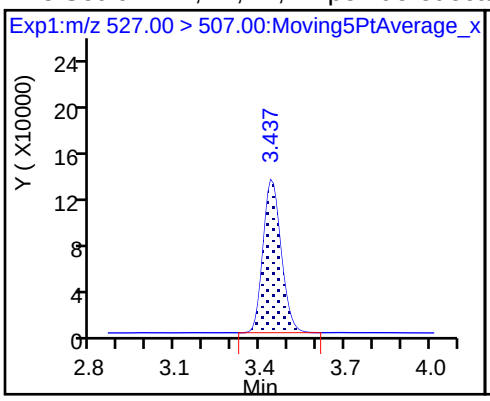
22 Perfluorooctane Sulfonamide



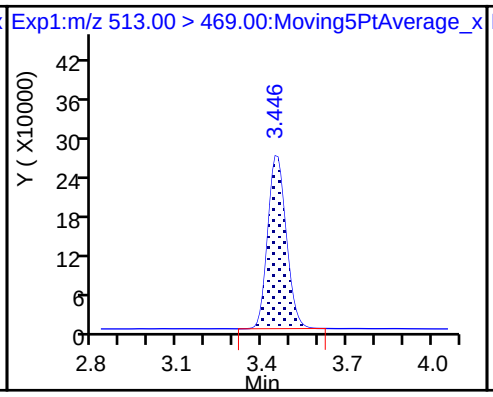
D 21 13C8 FOSA



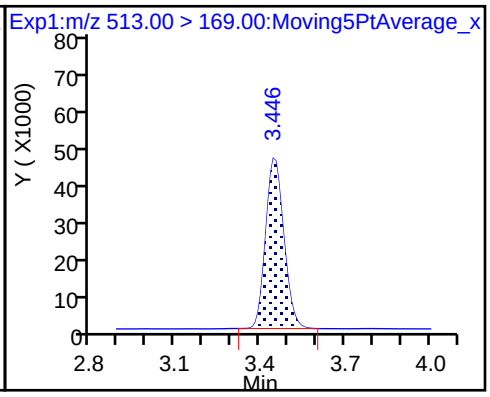
25 Sodium 1H,1H,2H,2H-perfluorodecane



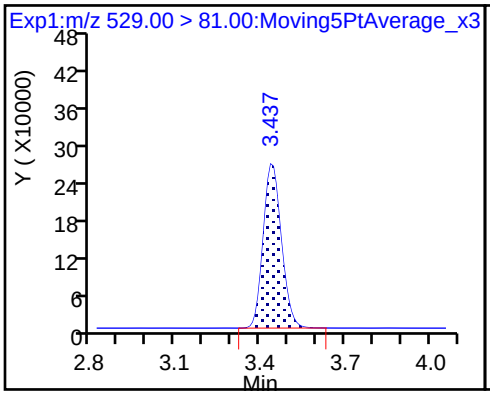
24 Perfluorodecanoic acid



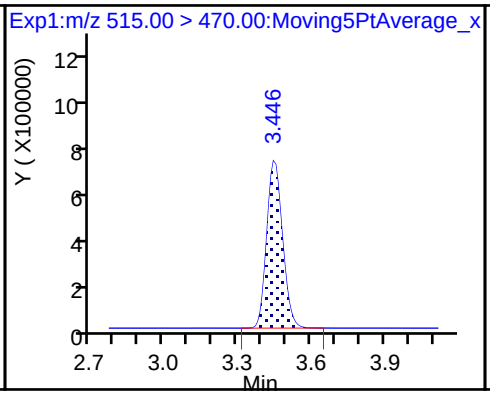
24 Perfluorodecanoic acid



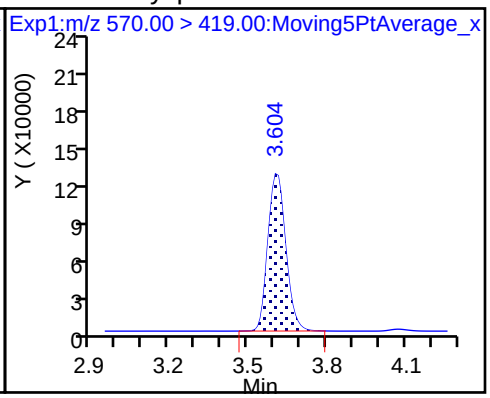
D 26 M2-8:2FTS



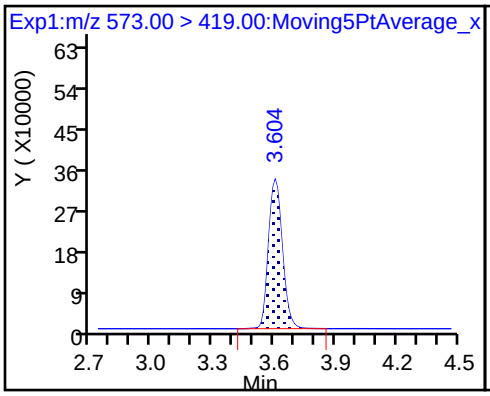
D 23 13C2 PFDA



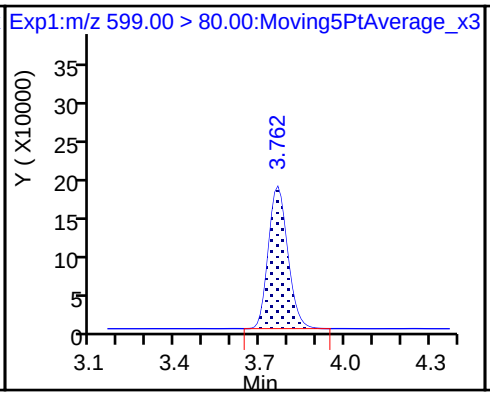
28 N-methyl perfluorooctane sulfonami



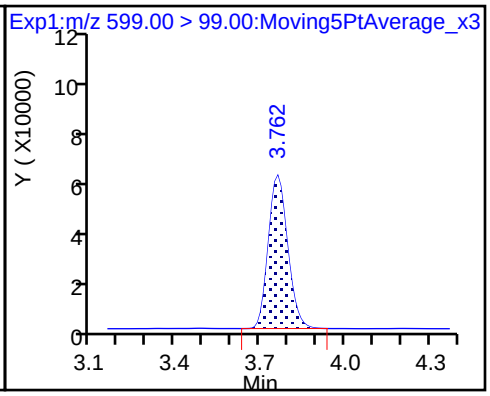
D 27 d3-NMeFOSAA



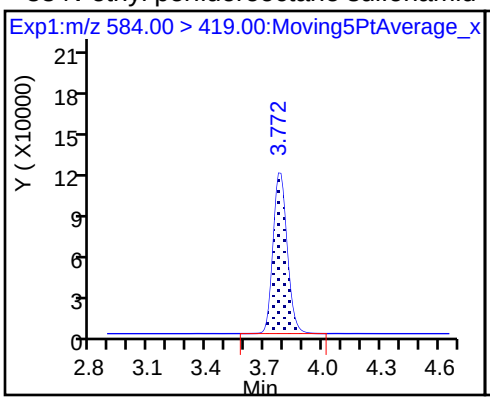
29 Perfluorodecane Sulfonic acid



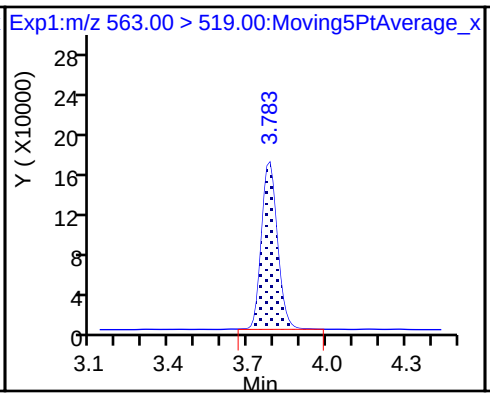
29 Perfluorodecane Sulfonic acid



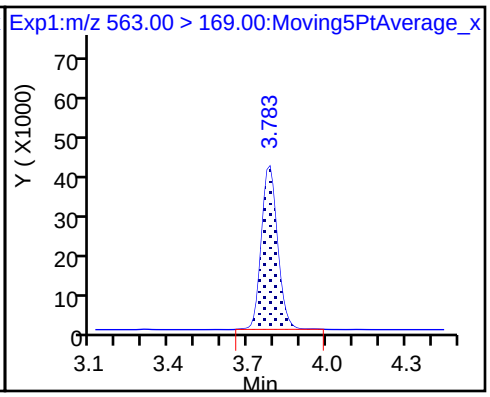
33 N-ethyl perfluorooctane sulfonamid



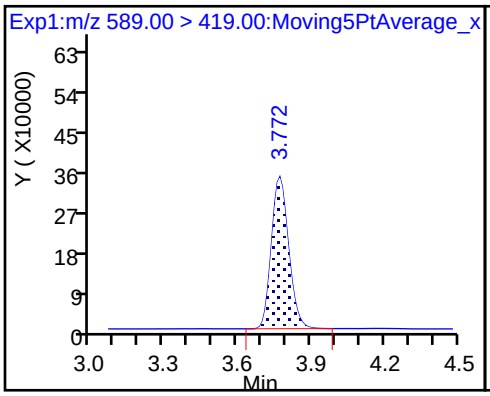
31 Perfluoroundecanoic acid



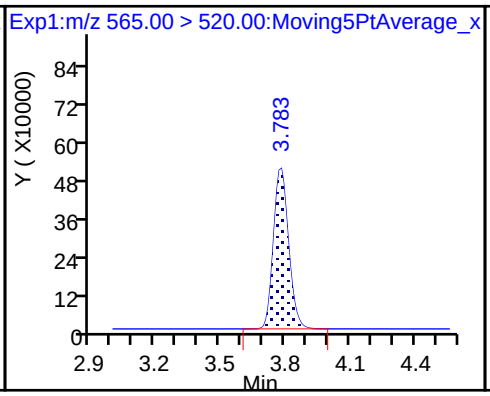
31 Perfluoroundecanoic acid



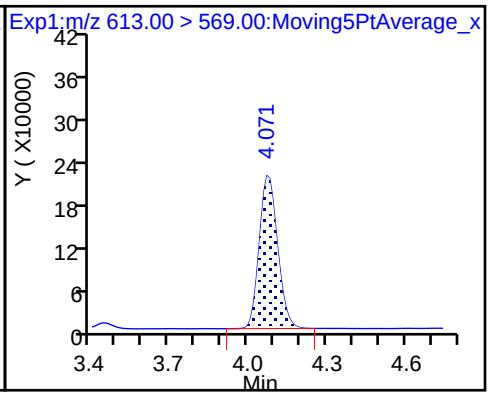
D 32 d5-NEtFOSAA



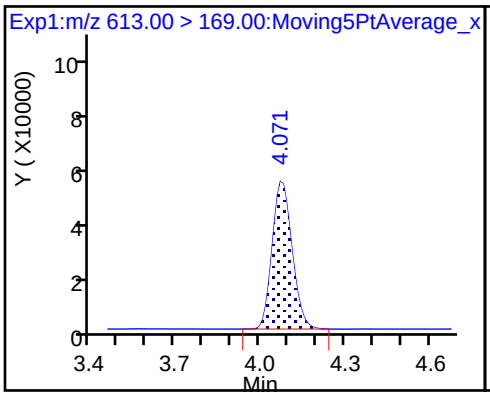
D 30 13C2 PFUnA



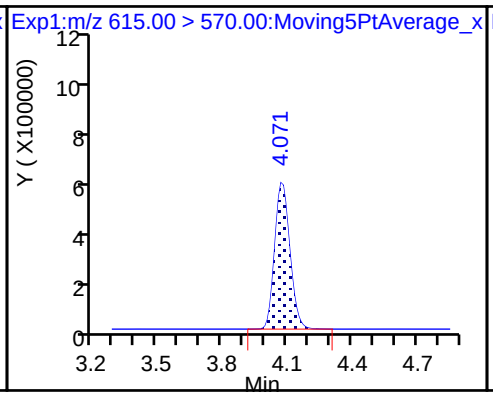
37 Perfluorododecanoic acid



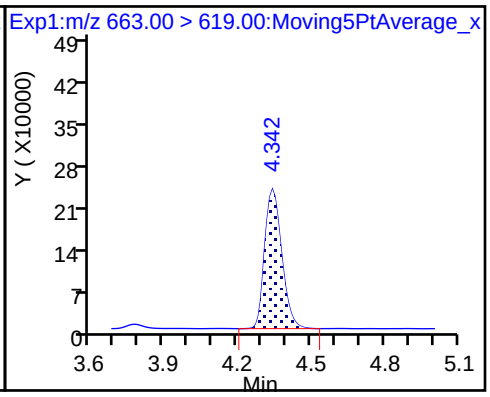
37 Perfluorododecanoic acid



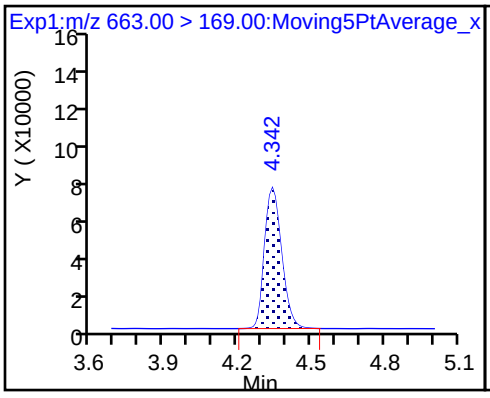
D 36 13C2 PFDoA



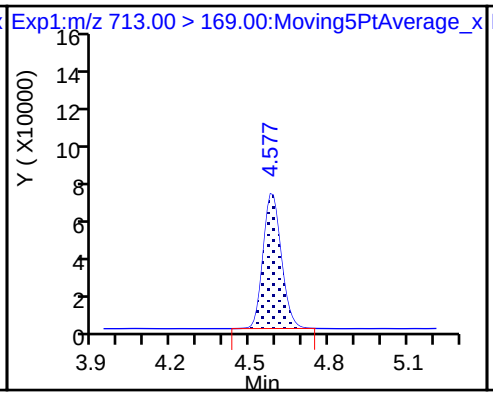
41 Perfluorotridecanoic acid



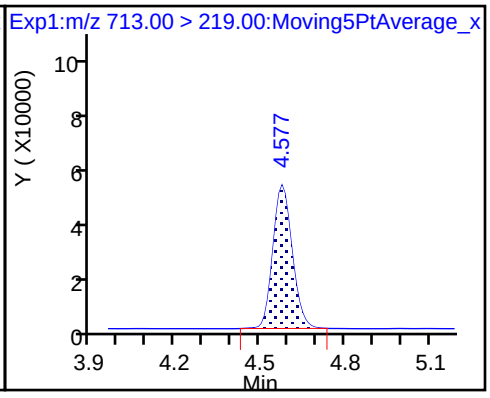
41 Perfluorotridecanoic acid



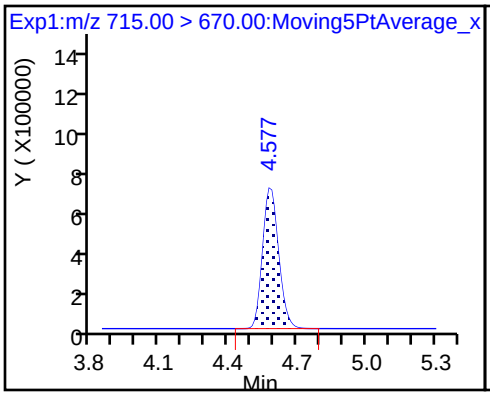
42 Perfluorotetradecanoic acid



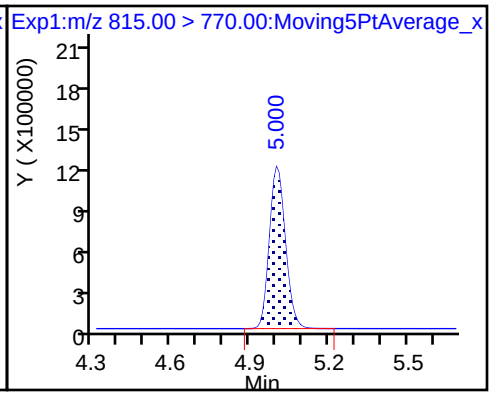
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA01-SB1-01 MS | Lab Sample ID: 320-36960-4 MS

Matrix: Solid | Lab File ID: 2018.04.07LLA_010.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 14:15

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.99(g) | Date Analyzed: 04/07/2018 09:48

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 19.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.83		0.37	0.25	0.097
335-67-1	Perfluorooctanoic acid (PFOA)	2.84		0.37	0.25	0.12
375-95-1	Perfluorononanoic acid (PFNA)	2.63		0.37	0.25	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	3.42		0.50	0.22	0.074
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.22		0.37	0.25	0.077
1763-23-1	*Perfluorooctanesulfonic acid (PFOS)*	*29.7*	*E 4*	*1.2*	0.62	*0.30*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	52		50-150
STL01892	13C4-PFHpA	72		50-150
STL00990	13C4 PFOA	73		50-150
STL00995	13C5 PFNA	77		50-150
STL00994	18O2 PFHxS	53		50-150
STL00991	13C4 PFOS	51		50-150

Report Date: 09-Apr-2018 08:26:50 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_010.d
Lims ID: 320-36960-A-4-B MS
Client ID: BNA01-SB1-01
Sample Type: MS
Inject. Date: 07-Apr-2018 09:48:06 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-4-b ms
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:21:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.425	0.0	1.000	4751430	1.65		66.2	39822	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.425	1.431	-0.006	1.000	2346445	1.34		134	752	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.694	1.694	0.0	0.559	3127969	1.67		66.9	49852	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.694	1.704	-0.010	1.000	1808536	1.21		121	1093	
D 47 13C3-PFBS										
301.90 > 83.00	1.730	1.730	0.0	1.000	51366	1.20		51.6	295	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.730	1.740	-0.010	1.000	2388295	1.37		155	8746	
298.90 > 99.00	1.730	1.740	-0.010	1.000	1020758		2.34(1.25-3.74)		5887	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.939	1.951	-0.012	1.000	424412	1.11		119	13720	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.982	0.0	1.000	3521259	1.71		68.3	91948	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.982	1.983	-0.001	1.000	2428590	1.68		168	5830	
313.00 > 119.00	1.982	1.983	-0.001	1.000	197525		12.30(5.03-15.10)		3389	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.004	2.005	-0.001	1.000	664828	0.4226		0.0	4680	
349.00 > 99.00	2.004	2.005	-0.001	1.000	248884		2.67(1.36-4.07)		2454	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.072	2.073	-0.001	1.000	162984	NC			2836	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.308	0.0	1.000	3585583	1.81		72.4	86507	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.310	-0.002	1.000	1761857	1.13		113	1887	
363.00 > 169.00	2.308	2.310	-0.002	1.000	682083		2.58(1.13-3.40)		3588	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.321	0.0	1.000	3098666	1.25		53.0	89275	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.323	-0.002	1.000	4812661	3.29		361	11388	
399.00 > 99.00	2.321	2.323	-0.002	1.000	1538440		3.13(1.50-4.49)		3550	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.637	-0.001	1.000	534274	1.17		49.1	6158	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.636	2.637	-0.001	1.000	420362	1.00		106	2161	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.660	0.0	1.000	3546333	1.82		72.8	81259	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.661	-0.001		5196161	2.50			104590	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.669	-0.009	1.000	1912774	1.14		114	868	
413.00 > 169.00	2.660	2.669	-0.009	1.000	1060342		1.80(0.84-2.52)		3096	
16 Perfluoroheptanesulfonic acid										M
449.00 > 80.00	2.668	2.669	-0.001	1.000	1537644	1.32		138	2231	M
449.00 > 99.00	2.668	2.669	-0.001	1.000	412630		3.73(1.94-5.82)		2726	M
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.023	0.006	1.000	2093025	1.22		51.0	13849	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.030	-0.001	1.000	3163059	1.92		76.8	115510	
20 Perfluorononanoic acid										
463.00 > 419.00	3.036	3.032	0.004	1.002	1370218	1.05		105	3690	
463.00 > 169.00	3.036	3.032	0.004	1.002	348355		3.93(1.90-5.69)		12372	
17 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.029	3.032	-0.003	1.000	11910426	11.9		1283	35897	E
499.00 > 99.00	3.029	3.032	-0.003	1.000	2528680		4.71(2.31-6.93)		16346	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.360	0.016	1.000	3168178	1.31		52.3	59301	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.376	3.371	0.005	1.000	1377084	1.10		110	32621	
D 26 M2-8:2FTS										
529.00 > 81.00	3.395	3.378	0.017	1.000	611967	1.15		48.0	6103	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.395	3.380	0.015	1.000	351531	1.02		106	9659	
D 23 13C2 PFDA										
515.00 > 470.00	3.404	3.387	0.017	1.000	2579573	1.85		74.1	74289	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.404	3.399	0.005	1.000	1096596	1.07		107	4438	
513.00 > 169.00	3.404	3.399	0.005	1.000	208993		5.25(2.36-7.09)		2565	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.553	3.537	0.016	1.000	1281532	1.72		68.8	16024	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.553	3.548	0.005	1.000	587685	1.09		109	5229	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.716	3.707	0.009	1.000	1354130	1.73		69.3	10802	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.705	3.709	-0.004	1.000	552210	0.9088		94.3	3811	
599.00 > 99.00	3.705	3.709	-0.004	1.000	182197		3.03(1.39-4.16)		1055	
D 30 13C2 PFUnA										
565.00 > 520.00	3.716	3.718	-0.002	1.000	2014100	1.77		70.9	51970	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.716	3.720	-0.004	1.000	556825	1.12		112	8445	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.716	3.720	-0.004	1.000	698300	1.08		108	2866	
563.00 > 169.00	3.716	3.720	-0.004	1.000	173589		4.02(2.12-6.36)		3059	
35 MeFOSA										
512.00 > 169.00	3.873	3.875	-0.002		170426	NC			1393	
D 36 13C2 PFDoA										
615.00 > 570.00	4.006	4.008	-0.002	1.000	1991213	1.57		63.0	22385	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.016	4.020	-0.004	1.003	916682	1.06		106	831	
613.00 > 169.00	4.016	4.020	-0.004	1.003	221946		4.13(2.13-6.40)		2613	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.279	4.282	-0.003	1.000	1044781	1.13		113	733	
663.00 > 169.00	4.269	4.282	-0.013	0.998	328797		3.18(1.25-3.76)		3174	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.510	4.511	-0.001	1.000	2760502	1.72		68.7	17684	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.510	4.522	-0.012	1.000	302336	1.10		110	3649	
713.00 > 219.00	4.510	4.522	-0.012	1.000	227733		1.33(0.71-2.13)		3332	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.921	4.922	-0.001	1.000	4116303	1.66		66.4	10328	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.930	4.932	-0.002	1.002	1743410	NC			500	
813.00 > 169.00	4.930	4.932	-0.002	1.002	288314		6.05(2.86-8.58)		1579	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.286	5.285	0.001	1.000	2146121	NC			464	
913.00 > 169.00	5.278	5.285	-0.007	0.999	263390		8.15(3.83-11.48)		1914	

QC Flag Legend

Processing Flags

NC - Not Calibrated

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 09-Apr-2018 08:26:50 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_010.d

Injection Date: 07-Apr-2018 09:48:06 Instrument ID: A8_N

Lims ID: 320-36960-A-4-B MS

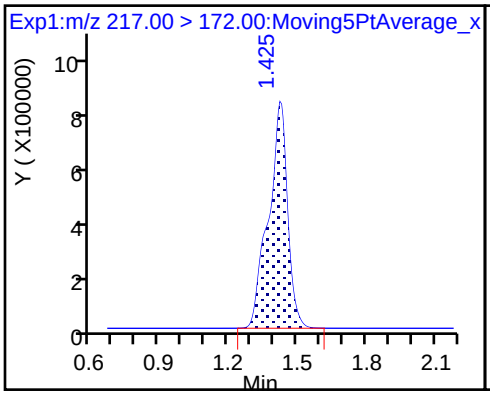
Client ID: BNA01-SB1-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7

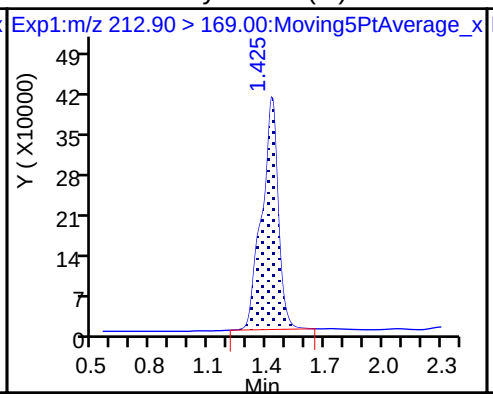
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

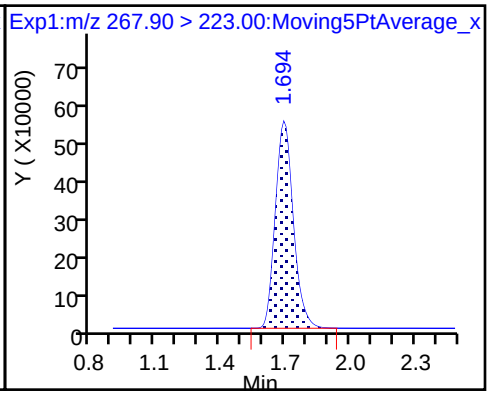
D 1 13C4 PFBA



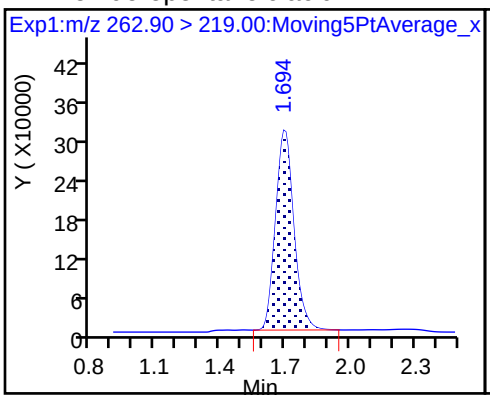
2 Perfluorobutyric acid (M)



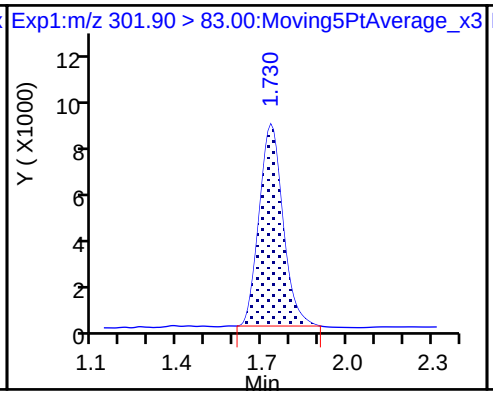
D 3 13C5-PFPeA



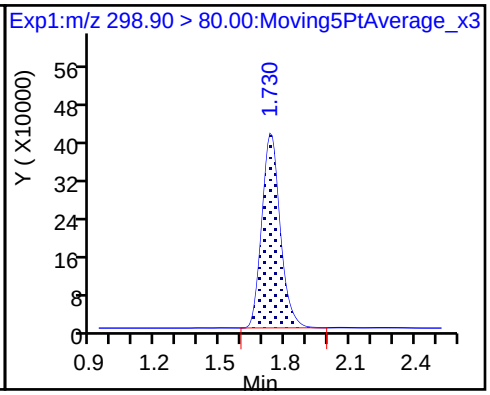
4 Perfluoropentanoic acid



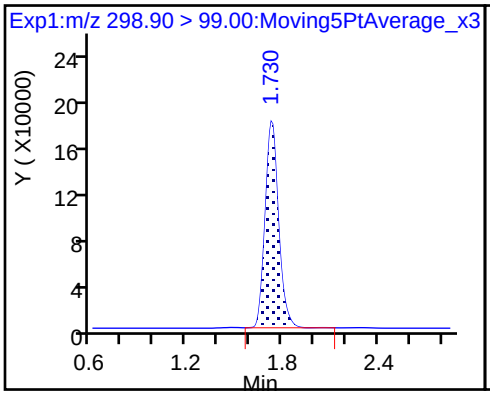
D 47 13C3-PFBS



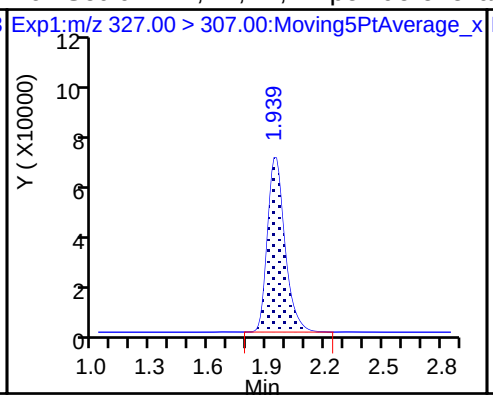
5 Perfluorobutanesulfonic acid



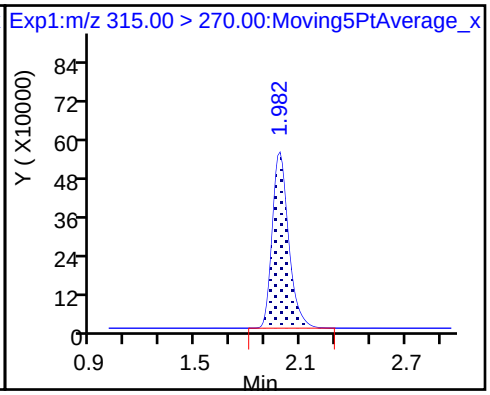
5 Perfluorobutanesulfonic acid



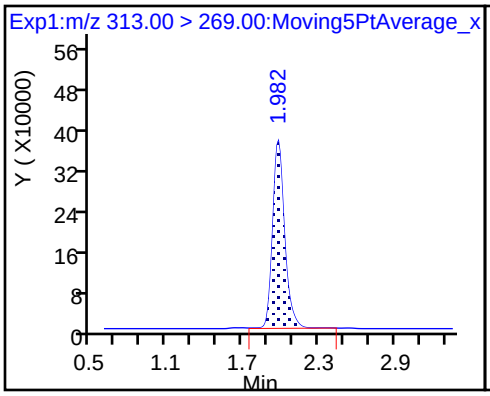
61 Sodium 1H,1H,2H,2H-perfluorohexa



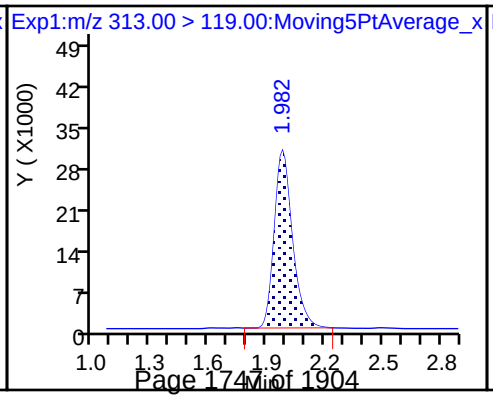
De 7 13C2 PFHxA



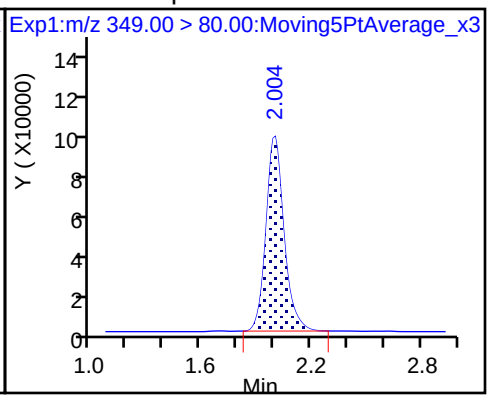
6 Perfluorohexanoic acid



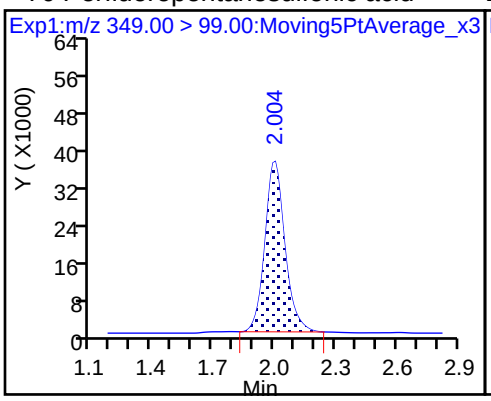
6 Perfluorohexanoic acid



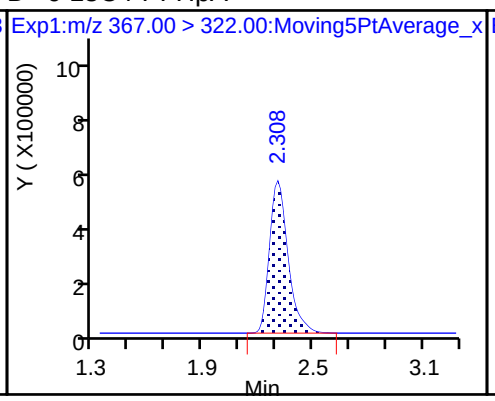
70 Perfluoropentanesulfonic acid



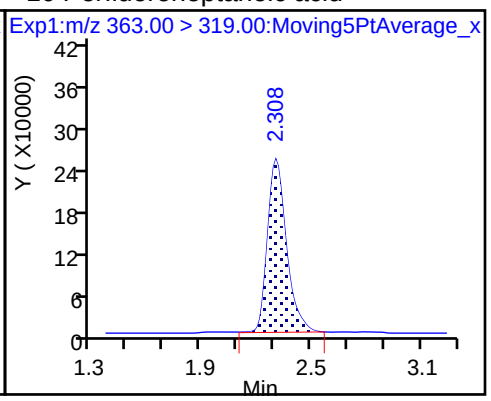
70 Perfluoropentanesulfonic acid



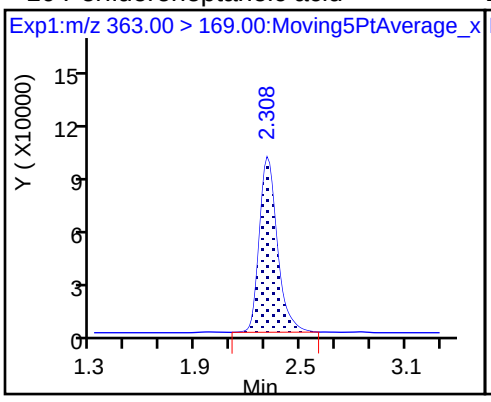
D 9 13C4-PFHpA



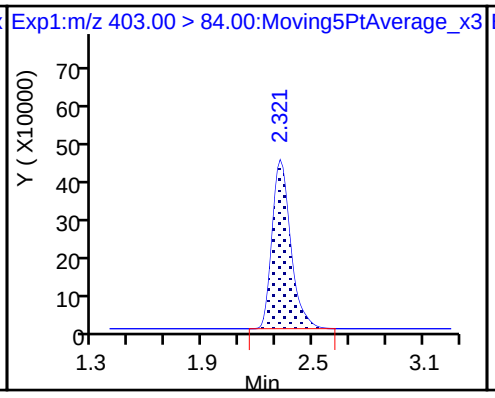
10 Perfluoroheptanoic acid



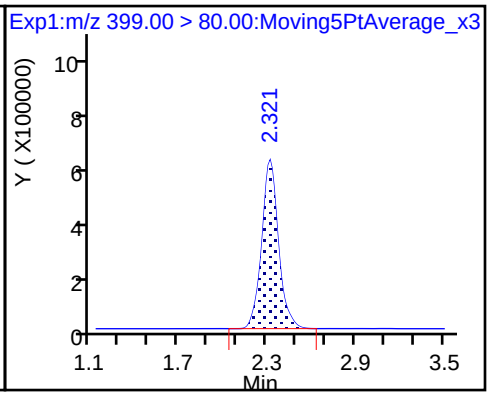
10 Perfluoroheptanoic acid



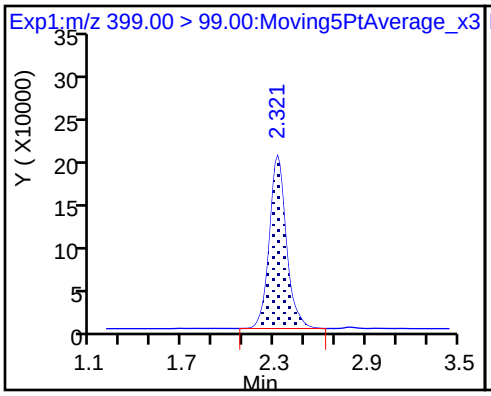
D 11 18O2 PFHxS



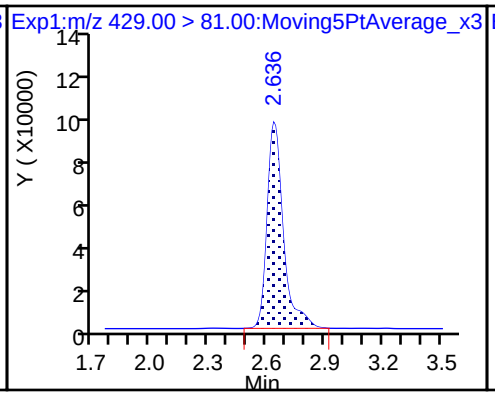
8 Perfluorohexanesulfonic acid



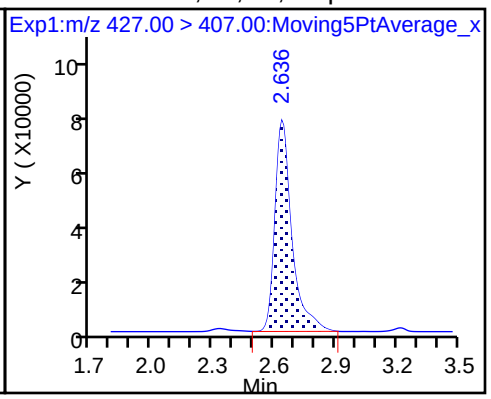
8 Perfluorohexanesulfonic acid



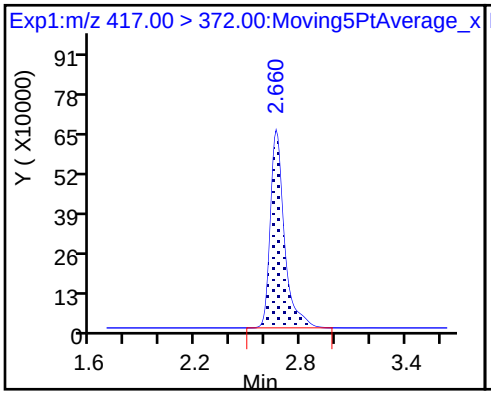
D 12 M2-6:2FTS



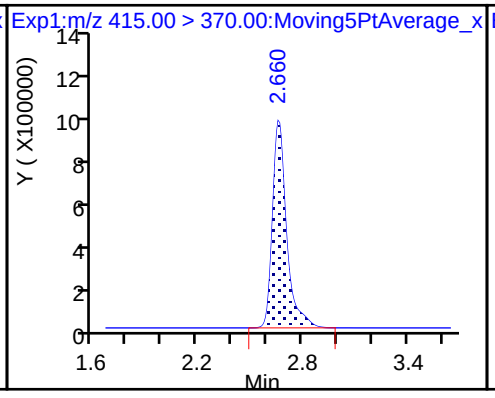
13 Sodium 1H,1H,2H,2H-perfluorooctane



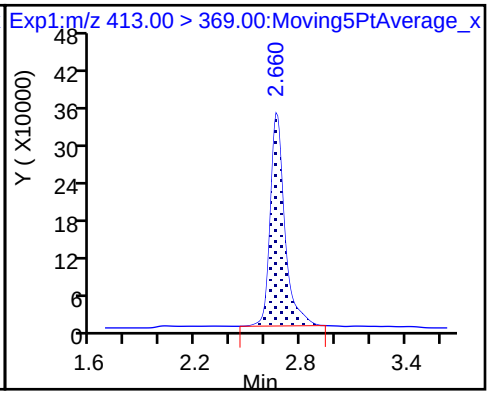
D 14 13C4 PFOA



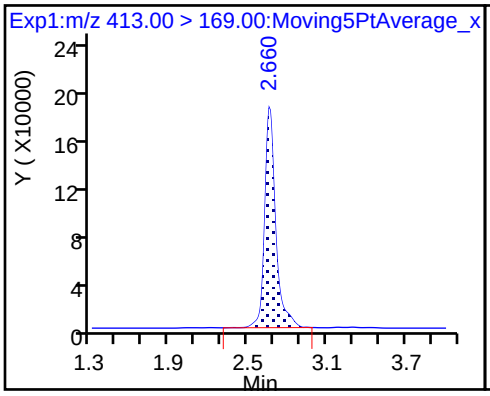
* 62 13C2-PFOA



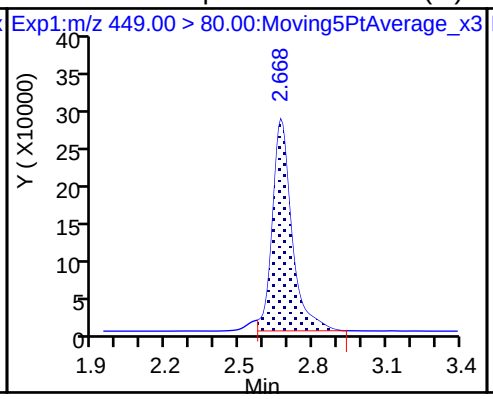
15 Perfluorooctanoic acid



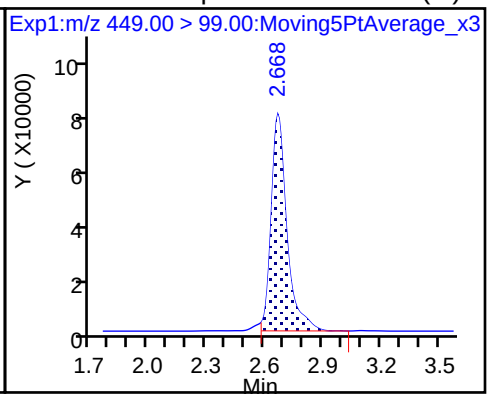
15 Perfluorooctanoic acid



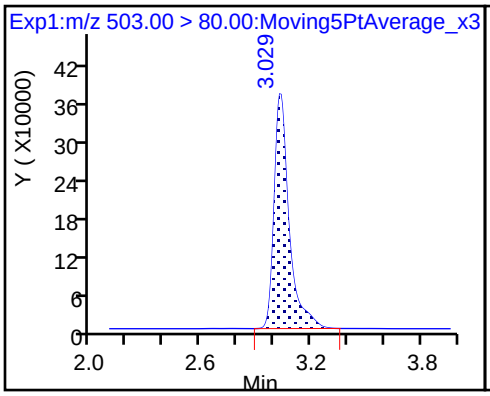
16 Perfluoroheptanesulfonic acid (M)



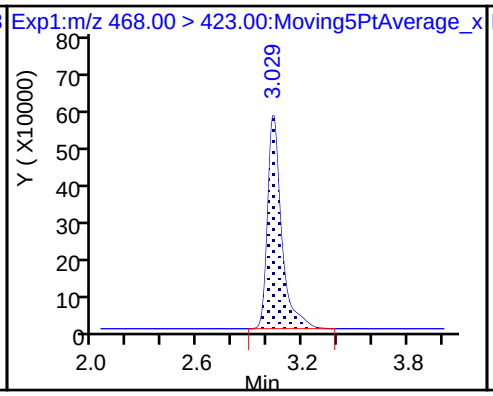
16 Perfluoroheptanesulfonic acid (M)



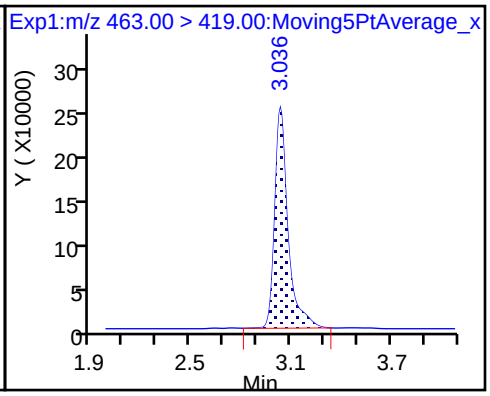
D 18 13C4 PFOS



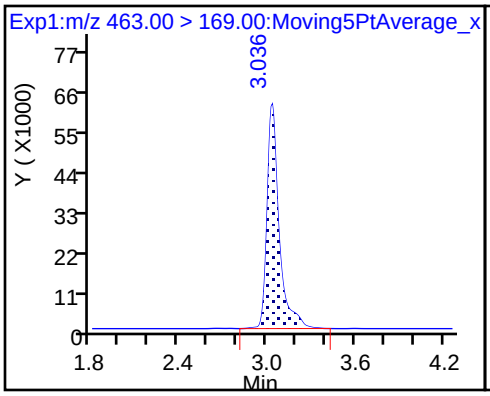
D 19 13C5 PFNA



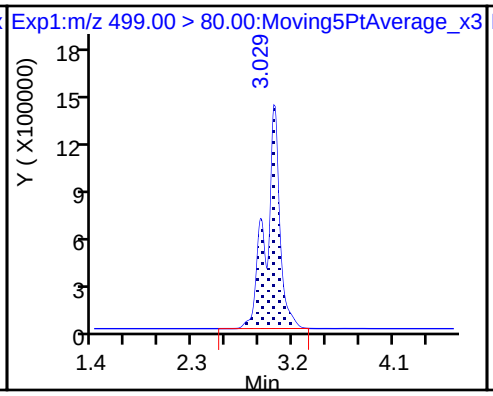
20 Perfluorononanoic acid



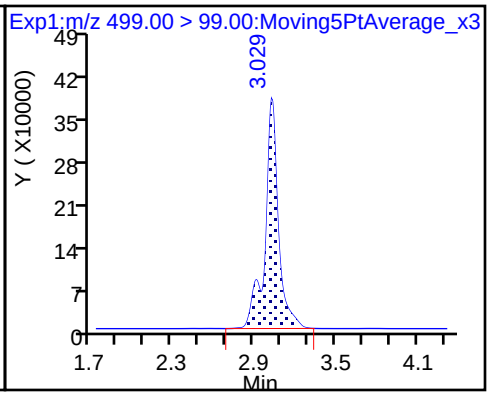
20 Perfluorononanoic acid



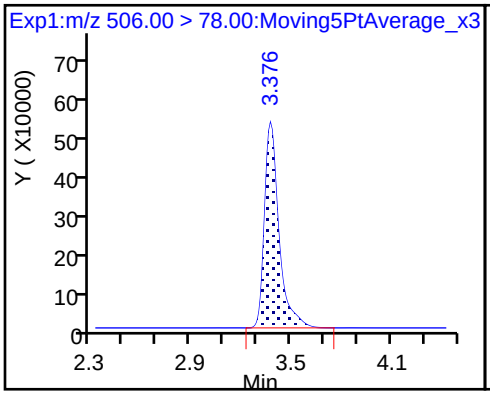
17 Perfluorooctane sulfonic acid



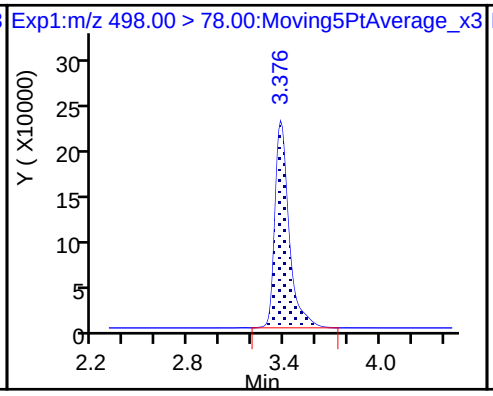
17 Perfluorooctane sulfonic acid



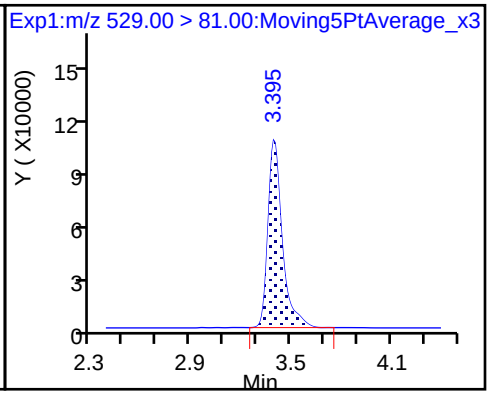
D 21 13C8 FOSA



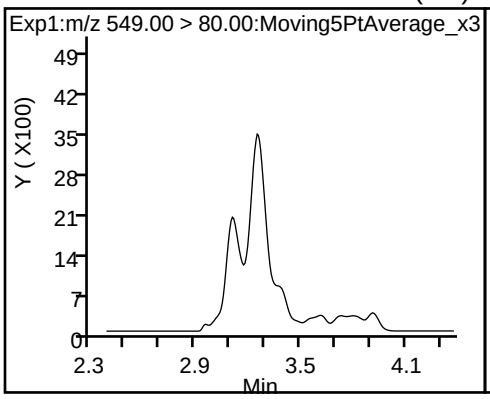
22 Perfluorooctane Sulfonamide



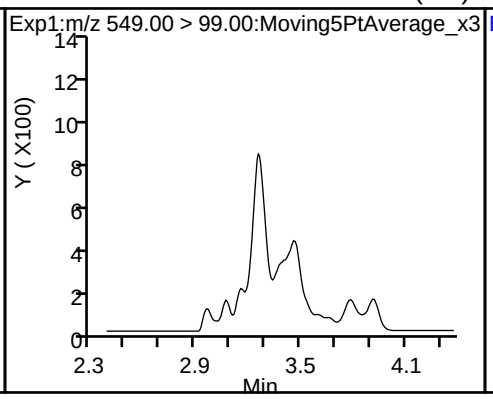
D 26 M2-8:2FTS



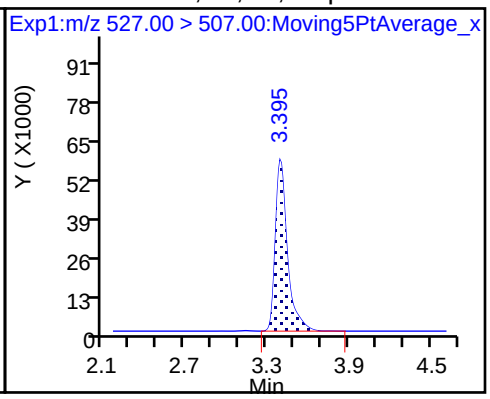
68 Perfluorononanesulfonic acid (ND)



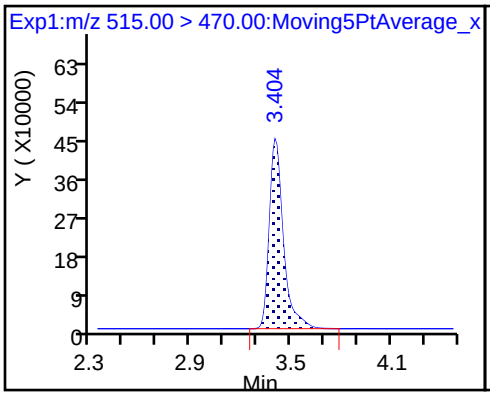
68 Perfluorononanesulfonic acid (ND)



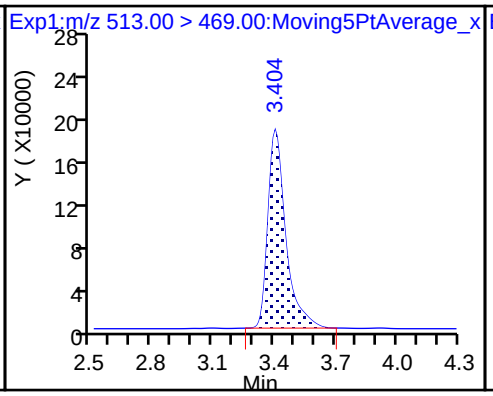
25 Sodium 1H,1H,2H,2H-perfluorodecane



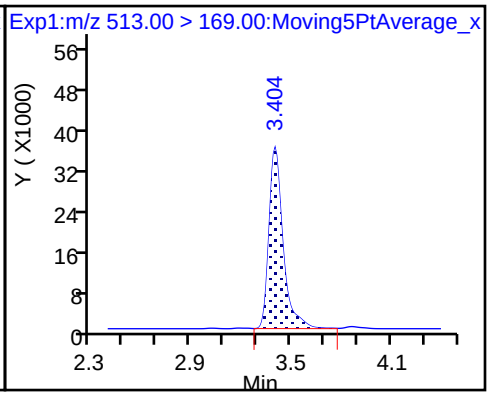
D 23 13C2 PFDA



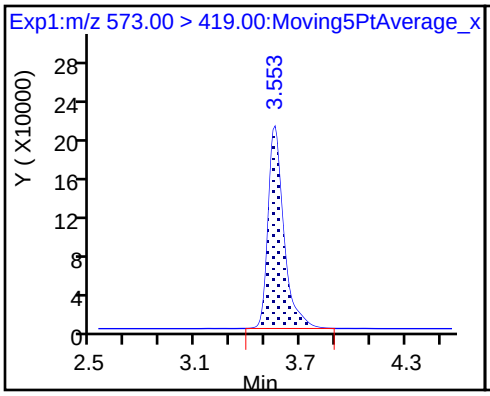
24 Perfluorodecanoic acid



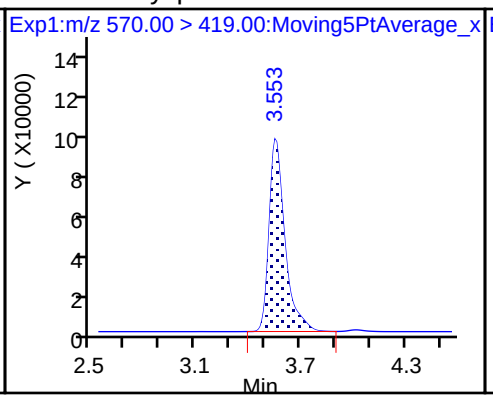
24 Perfluorodecanoic acid



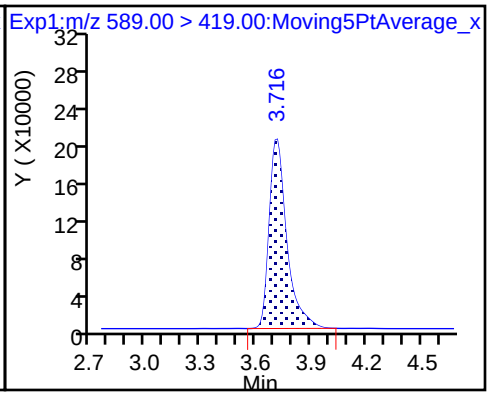
D 27 d3-NMeFOSAA



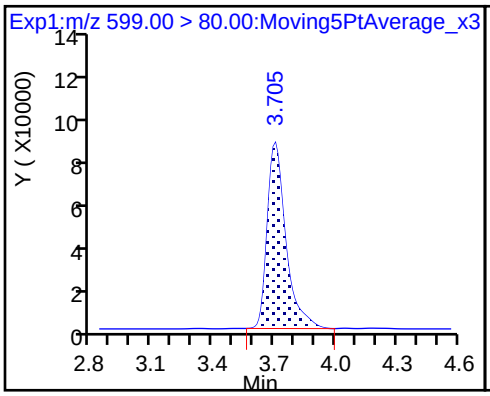
28 N-methyl perfluorooctane sulfonami



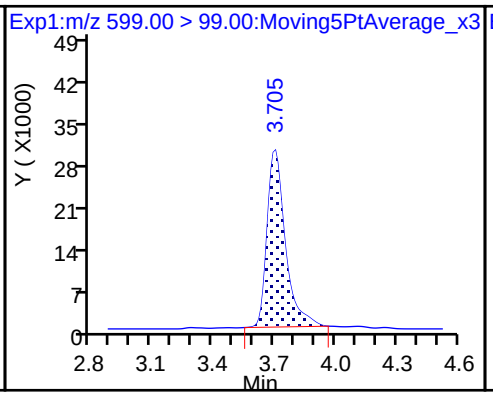
D 32 d5-NEtFOSAA



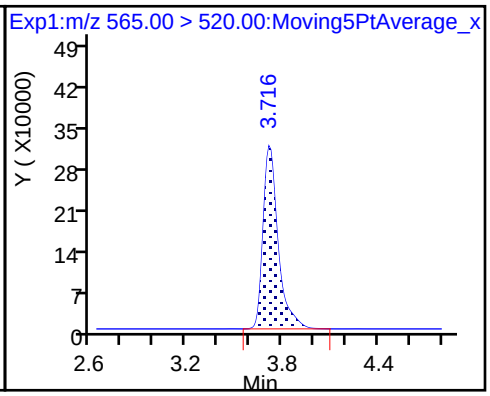
29 Perfluorodecane Sulfonic acid



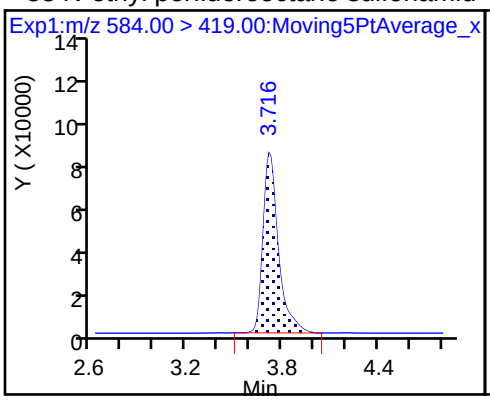
29 Perfluorodecane Sulfonic acid



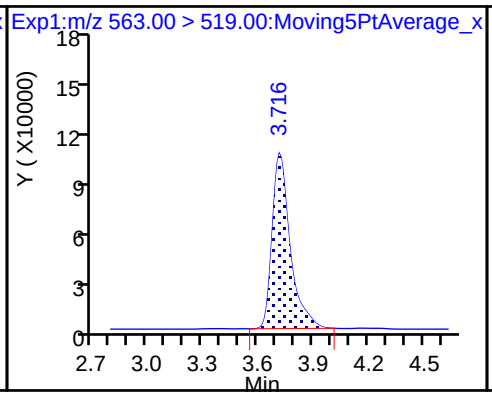
D 30 13C2 PFUnA



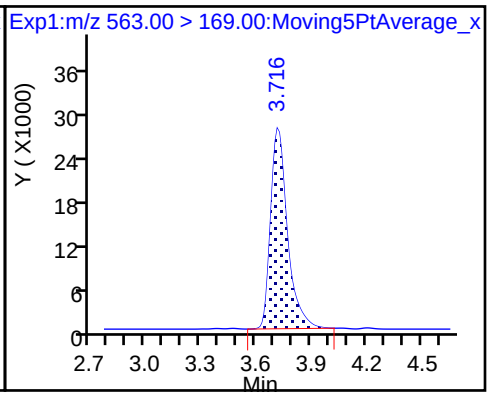
33 N-ethyl perfluorooctane sulfonamid



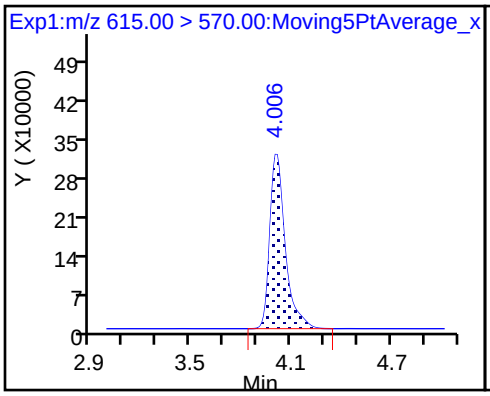
31 Perfluoroundecanoic acid



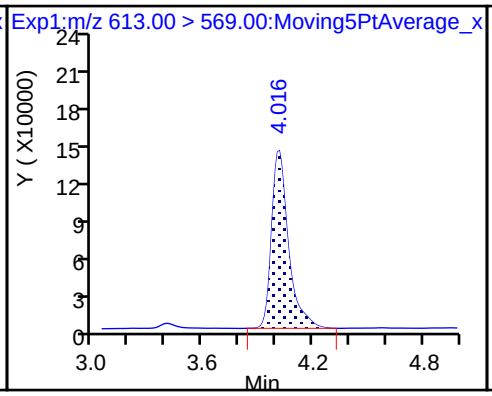
31 Perfluoroundecanoic acid



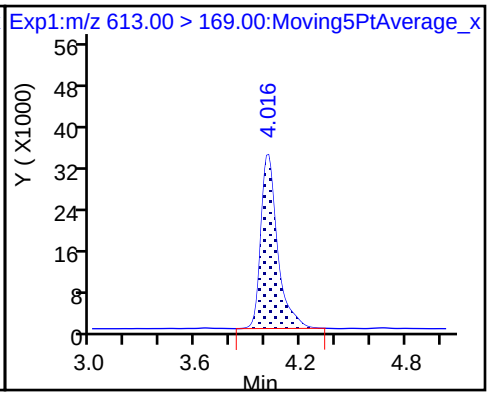
D 36 13C2 PFDoA



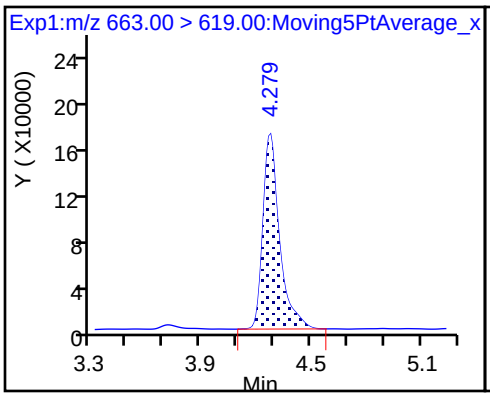
37 Perfluorododecanoic acid



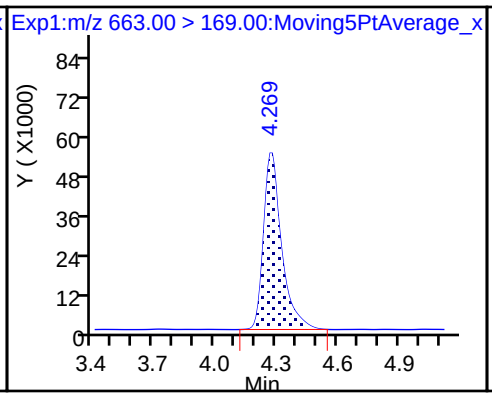
37 Perfluorododecanoic acid



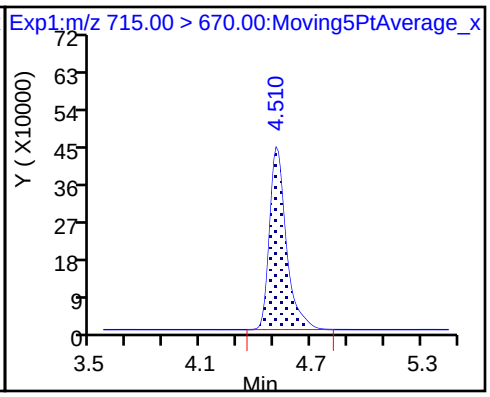
41 Perfluorotridecanoic acid



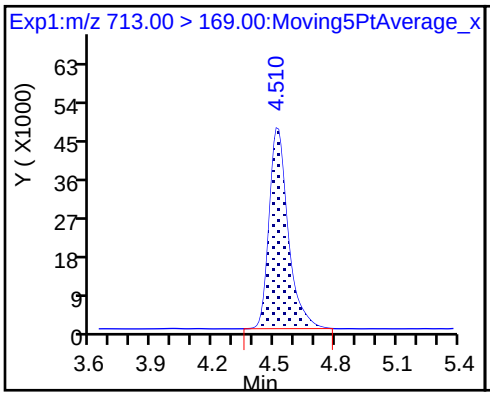
41 Perfluorotridecanoic acid



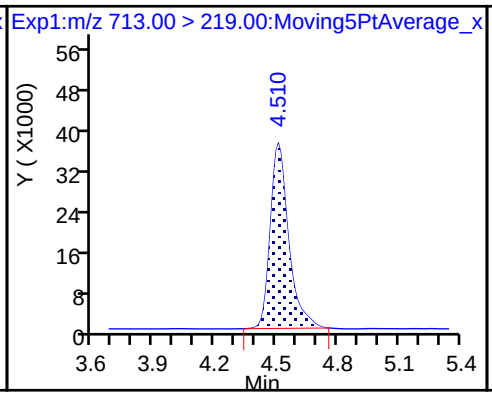
D 43 13C2-PFTeDA



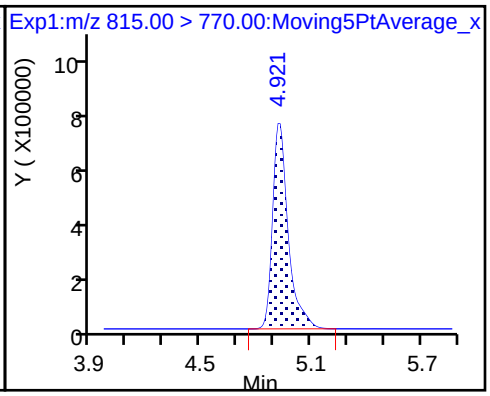
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA01-SB1-01 MS DL | Lab Sample ID: 320-36960-4 MS DL

Matrix: Solid | Lab File ID: 2018.04.07LLA1_027.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 14:15

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.99(g) | Date Analyzed: 04/07/2018 12:09

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 5

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 19.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216849 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	*Perfluoroheptanoic acid (PFHpA)*	*2.98*	*D*	*1.9*	1.2	*0.49*
335-67-1	*Perfluorooctanoic acid (PFOA)*	*3.12*	*D J1*	*1.9*	1.2	*0.62*
375-95-1	*Perfluorononanoic acid (PFNA)*	*2.71*	*D*	*1.9*	1.2	*0.51*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*3.75*	*D*	*2.5*	1.1	*0.37*
355-46-4	*Perfluorohexanesulfonic acid (PFHxS)*	*8.09*	*D J1*	*1.9*	1.2	*0.39*
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	29.0	D 4	6.2	3.1	1.5

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	51		50-150
STL01892	13C4-PFHpA	71		50-150
STL00990	13C4 PFOA	76		50-150
STL00995	13C5 PFNA	79		50-150
STL00994	18O2 PFHxS	57		50-150
STL00991	13C4 PFOS	55		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_027.d
Lims ID: 320-36960-A-4-B MS
Client ID: BNA01-SB1-01
Sample Type: MS
Inject. Date: 07-Apr-2018 12:09:05 ALS Bottle#: 19 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 5.0000
Sample Info: 320-36960-a-4-b ms 5X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:30:34 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:29:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.429	1.424	0.005	1.000	898758	0.3462		69.2	10685	
2 Perfluorobutyric acid										
212.90 > 169.00	1.429	1.424	0.005	1.000	451865	0.2720		136	169	
D 3 13C5-PFPeA										
267.90 > 223.00	1.692	1.693	-0.001	0.559	584314	0.3458		69.2	14657	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.692	1.693	-0.001	1.000	347556	0.2485		124	218	
D 47 13C3-PFBS										
301.90 > 83.00	1.728	1.729	-0.001	1.000	9250	0.2390		51.4	211	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.737	1.729	0.008	1.005	471239	0.3003		170	1652	
298.90 > 99.00	1.737	1.729	0.008	1.005	197239		2.39(1.25-3.74)		1091	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.948	1.938	0.010	1.000	70628	0.2058		110	2882	
D 7 13C2 PFHxA										
315.00 > 270.00	1.980	1.970	0.010	1.000	643797	0.3456		69.1	14549	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.980	1.970	0.010	1.000	457534	0.3473		174	769	
313.00 > 119.00	1.980	1.970	0.010	1.000	41925		10.91(5.03-15.10)		634	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.002	1.992	0.010	1.000	126219	0.0891		0.0	825	
349.00 > 99.00	2.002	1.992	0.010	1.000	48962		2.58(1.36-4.07)		498	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.082	2.071	0.011	1.000	34987	NC			708	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.307	-0.001	1.000	640232	0.3575		71.5	18049	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.307	-0.001	1.000	331485	0.2383		119	342	
363.00 > 169.00	2.306	2.307	-0.001	1.000	134715		2.46(1.13-3.40)		562	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.307	0.012	1.000	923631	0.6471		356	2454	
399.00 > 99.00	2.319	2.307	0.012	1.000	297818		3.10(1.50-4.49)		1064	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.320	-0.001	1.000	604434	0.2707		57.2	21714	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.629	0.006	1.000	88441	0.2137		45.0	1108	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.644	2.629	0.015	1.003	75670	0.2176		115	807	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.653	0.006	1.000	671342	0.3813		76.3	15120	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.653	0.014		939322	0.5000			23660	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.660	-0.001	1.000	397521	0.2497		125	173	
413.00 > 169.00	2.667	2.660	0.007	1.003	199970		1.99(0.84-2.52)		683	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.660	0.007	1.000	300716	0.2657		140	2263	
449.00 > 99.00	2.667	2.660	0.007	1.000	80717		3.73(1.94-5.82)		1269	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.023	0.005	1.000	405929	0.2617		54.7	1993	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.023	0.005	1.000	588210	0.3949		79.0	27141	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.028	3.023	0.005	1.000	2254228	2.32		1252	8041	
499.00 > 99.00	3.028	3.023	0.005	1.000	489708		4.60(2.31-6.93)		6233	
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.023	0.005	1.000	263056	0.2173		109	485	
463.00 > 169.00	3.028	3.023	0.005	1.000	61486		4.28(1.90-5.69)		2267	
D 21 13C8 FOSA										
506.00 > 78.00	3.362	3.359	0.003	1.000	613675	0.2801		56.0	11147	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.372	3.359	0.013	1.003	273459	0.2256		113	5726	
D 26 M2-8:2FTS										
529.00 > 81.00	3.381	3.369	0.012	1.000	110189	0.2290		47.8	793	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.381	3.378	0.003	1.000	62897	0.2027		106	2150	
D 23 13C2 PFDA										
515.00 > 470.00	3.390	3.387	0.003	1.000	454330	0.3611		72.2	10502	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.390	3.387	0.003	1.000	212727	0.2367		118	675	
513.00 > 169.00	3.390	3.387	0.003	1.000	38097		5.58(2.36-7.09)		747	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.540	3.537	0.003	1.000	233044	0.3462		69.2	5366	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.549	3.546	0.003	1.003	106072	0.2159		108	2091	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.710	3.696	0.014	1.000	109594	0.1860		96.5	1139	
599.00 > 99.00	3.699	3.696	0.003	0.997	35899		3.05(1.39-4.16)		453	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.710	3.707	0.003	1.000	258618	0.3661		73.2	2137	
D 30 13C2 PFUnA										
565.00 > 520.00	3.721	3.718	0.003	1.000	361190	0.3516		70.3	9274	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.721	3.718	0.003	1.000	119809	0.2067		103	529	
563.00 > 169.00	3.721	3.718	0.003	1.000	32524		3.68(2.12-6.36)		645	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.721	3.718	0.003	1.003	112092	0.2363		118	1268	
35 MeFOSA										
512.00 > 169.00	3.867	3.875	-0.008		30498	NC			482	
D 36 13C2 PFDoA										
615.00 > 570.00	4.009	4.007	0.002	1.000	371786	0.3251		65.0	3797	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.009	4.007	0.002	1.000	180698	0.2248		112	196	
613.00 > 169.00	4.020	4.007	0.013	1.003	42336		4.27(2.13-6.40)		401	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.282	4.270	0.012	1.000	189734	0.2207		110	139	
663.00 > 169.00	4.282	4.270	0.012	1.000	60051		3.16(1.25-3.76)		647	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.511	0.0	1.000	520311	0.3582		71.6	3715	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.511	4.511	0.0	1.000	55195	0.2124		106	522	
713.00 > 219.00	4.511	4.511	0.0	1.000	35549		1.55(0.71-2.13)		472	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.930	4.922	0.008	1.000	787310	0.3510		70.2	2769	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.930	4.922	0.008	1.000	334903	NC			126	
813.00 > 169.00	4.930	4.922	0.008	1.000	57415		5.83(2.86-8.58)		337	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.284	5.276	0.008	1.000	392587	NC			163	
913.00 > 169.00	5.284	5.276	0.008	1.000	46940		8.36(3.83-11.48)		313	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 09-Apr-2018 08:33:46 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_027.d

Injection Date: 07-Apr-2018 12:09:05 Instrument ID: A8_N

Lims ID: 320-36960-A-4-B MS

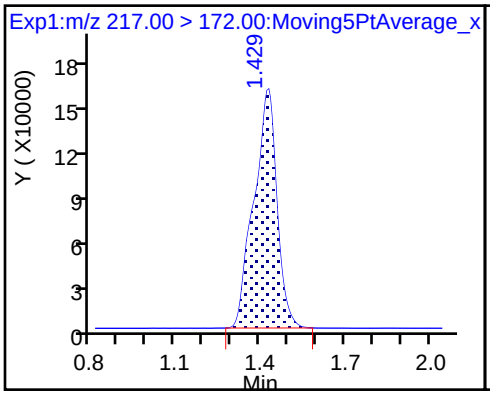
Client ID: BNA01-SB1-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 4

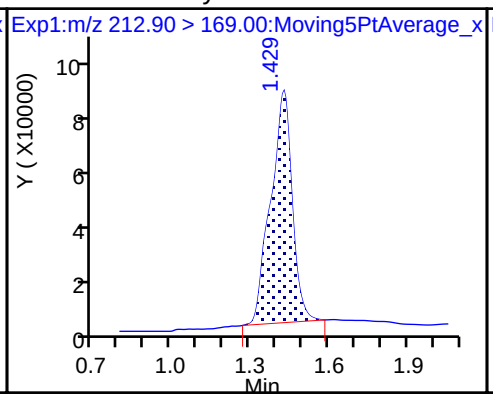
Injection Vol: 2.0 ul Dil. Factor: 5.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

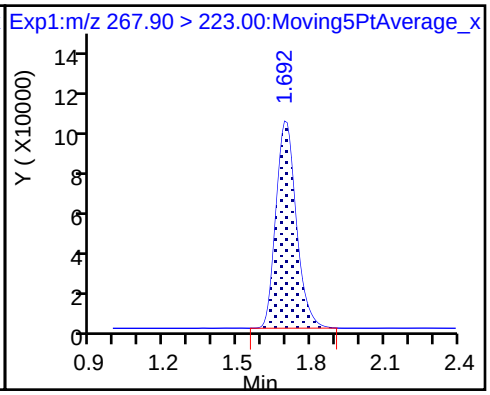
D 1 13C4 PFBA



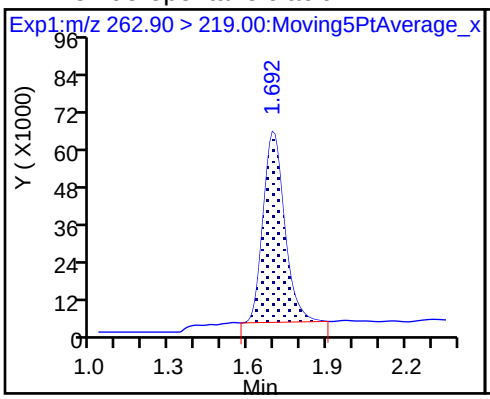
2 Perfluorobutyric acid



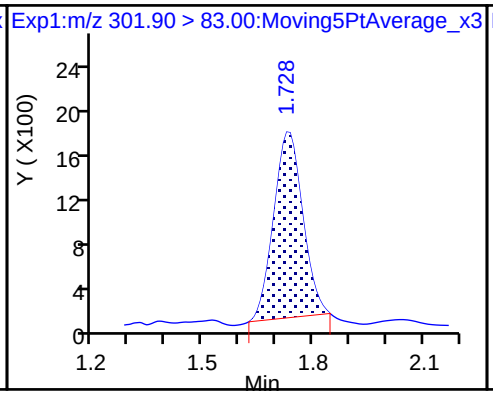
D 3 13C5-PFPeA



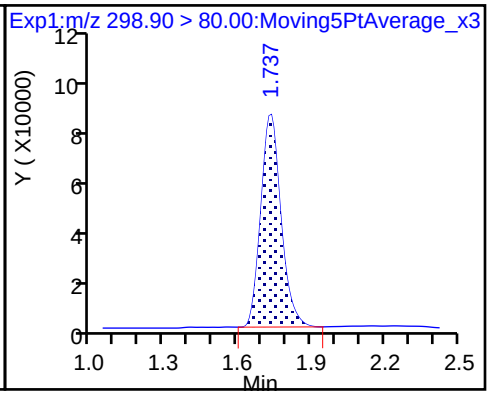
4 Perfluoropentanoic acid



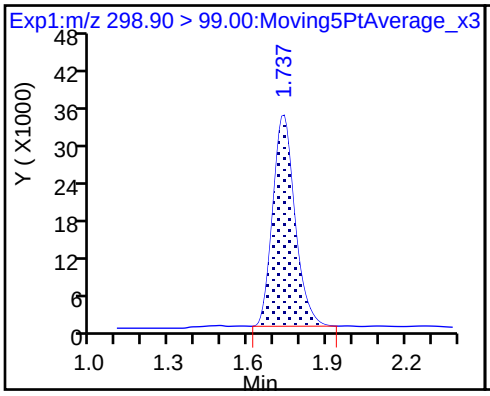
D 47 13C3-PFBS



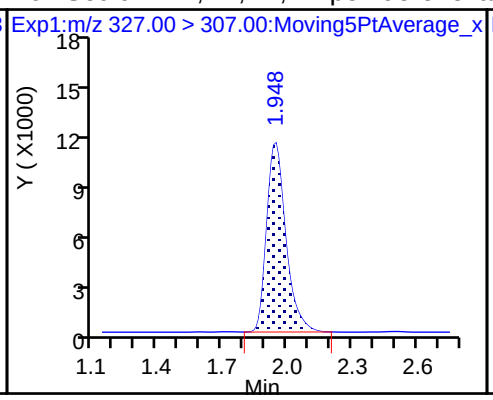
5 Perfluorobutanesulfonic acid



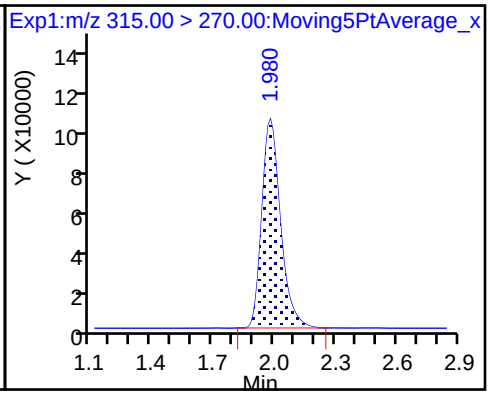
5 Perfluorobutanesulfonic acid



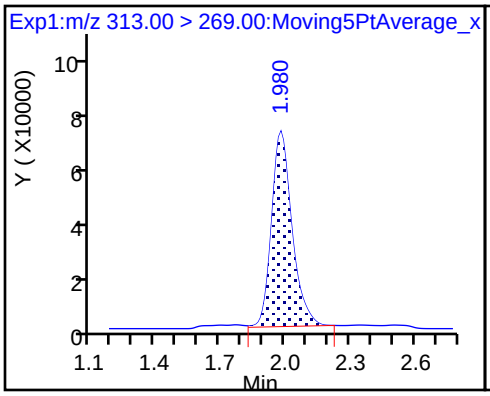
61 Sodium 1H,1H,2H,2H-perfluorohexa



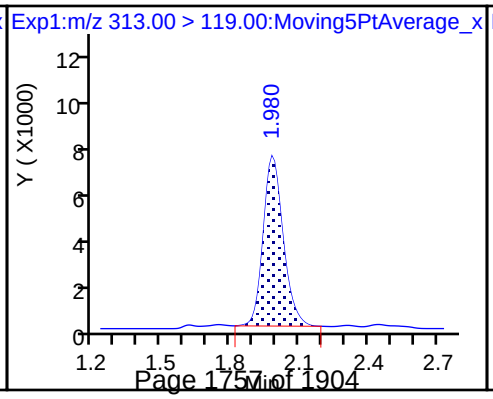
De 7 13C2 PFHxA



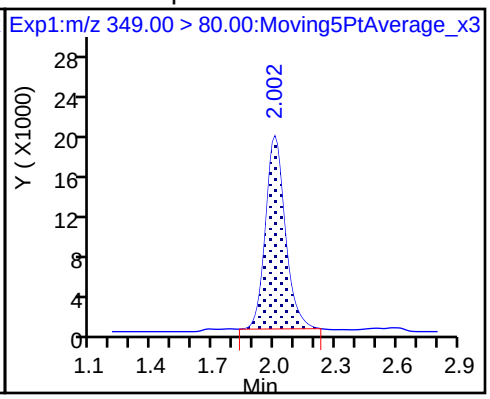
6 Perfluorohexanoic acid



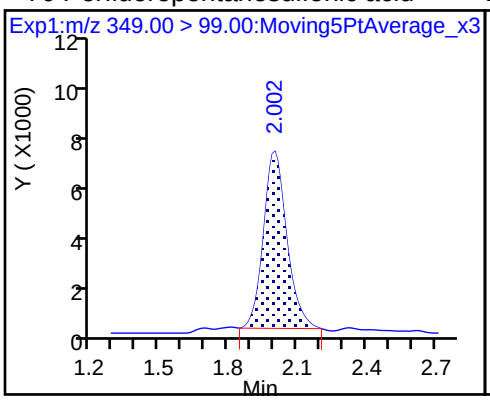
6 Perfluorohexanoic acid



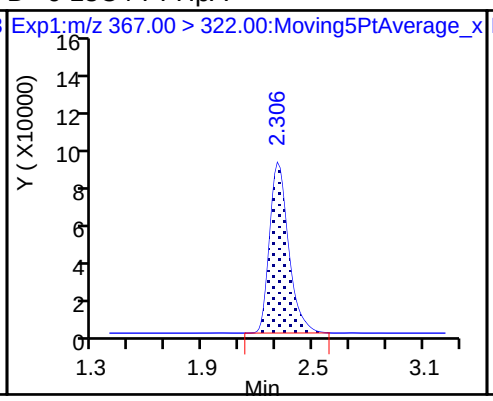
70 Perfluoropentanesulfonic acid



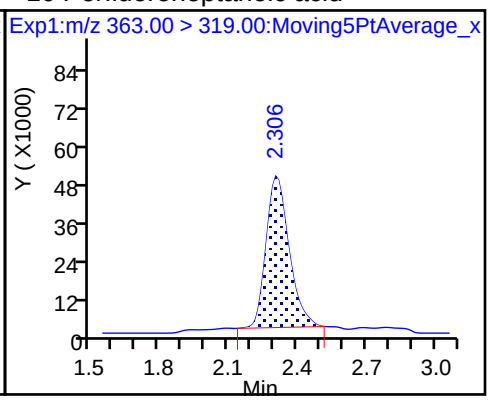
70 Perfluoropentanesulfonic acid



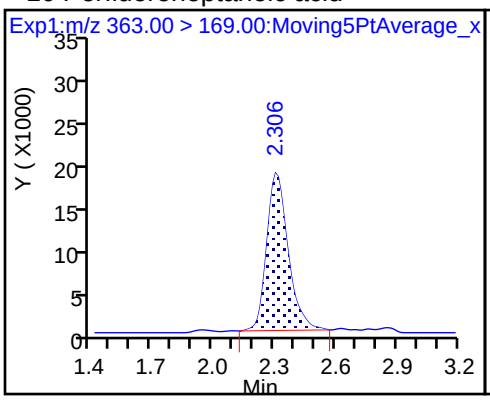
D 9 13C4-PFHpA



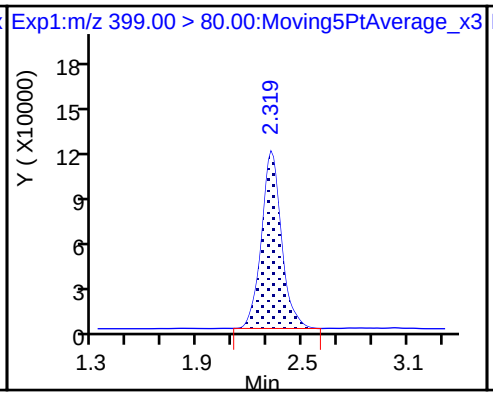
10 Perfluoroheptanoic acid



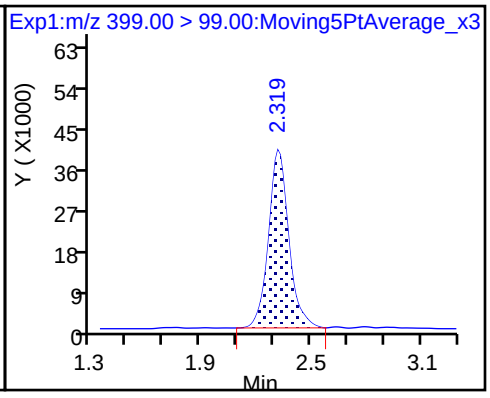
10 Perfluoroheptanoic acid



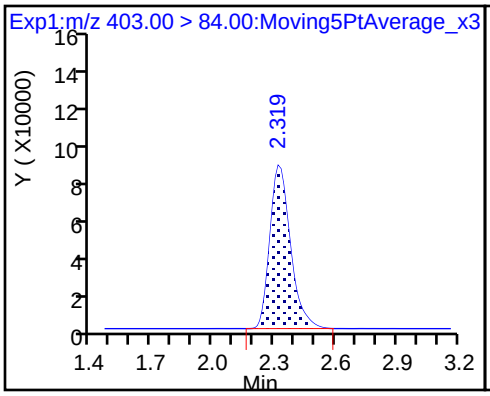
8 Perfluorohexanesulfonic acid



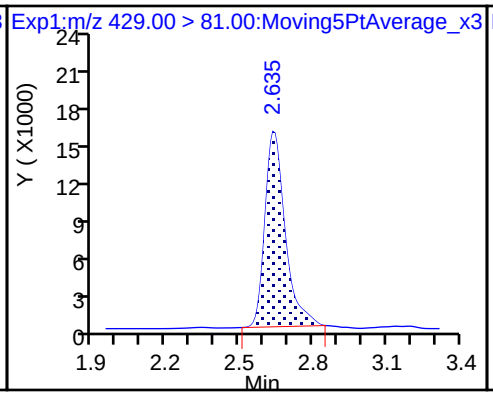
8 Perfluorohexanesulfonic acid



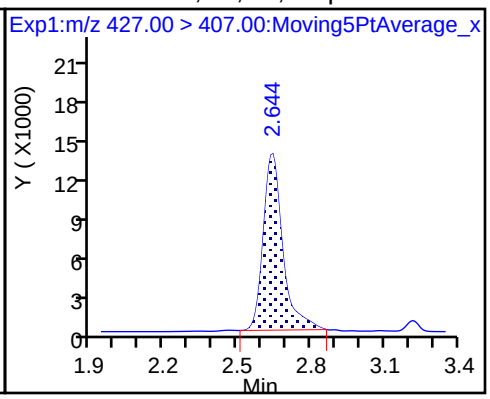
D 11 18O2 PFHxS



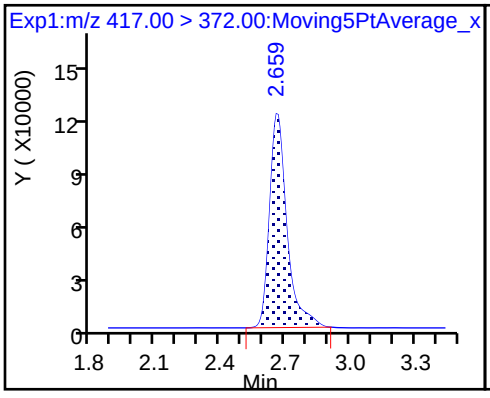
D 12 M2-6:2FTS



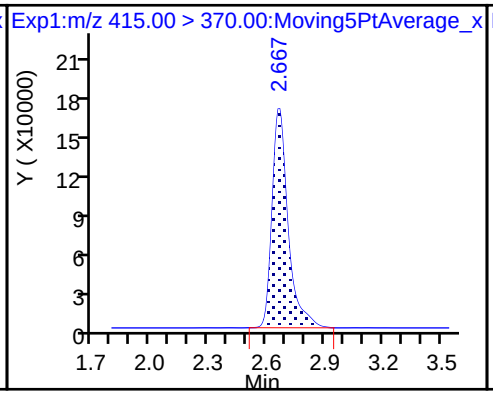
13 Sodium 1H,1H,2H,2H-perfluorooctane



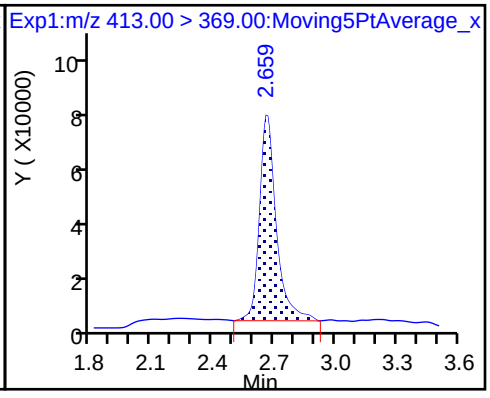
D 14 13C4 PFOA



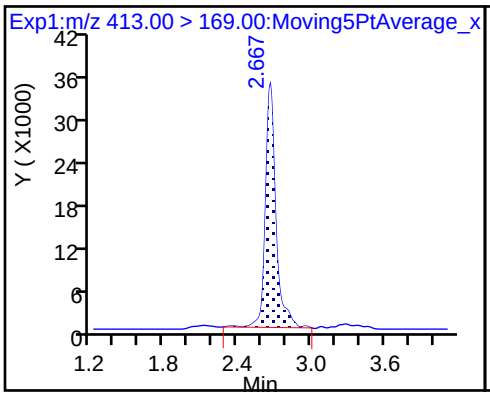
* 62 13C2-PFOA



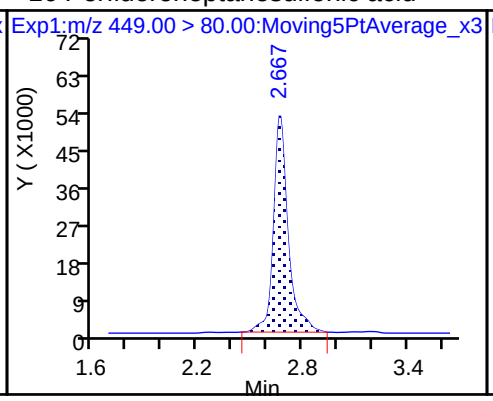
15 Perfluorooctanoic acid



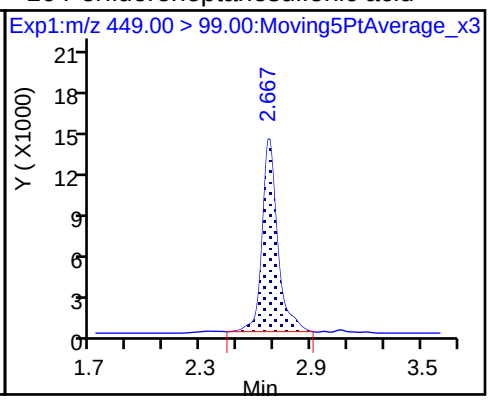
15 Perfluorooctanoic acid



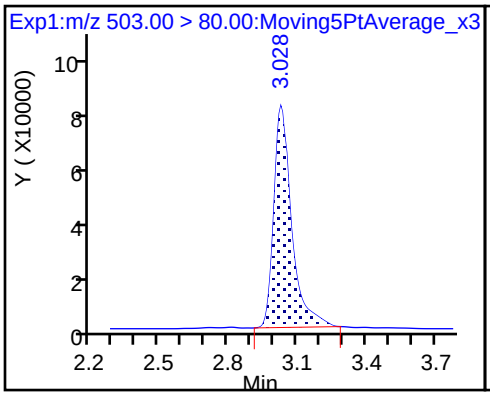
16 Perfluoroheptanesulfonic acid



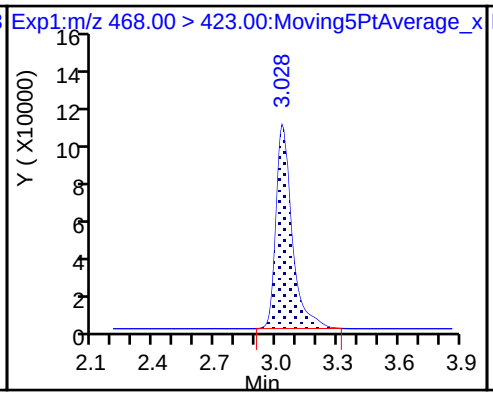
16 Perfluoroheptanesulfonic acid



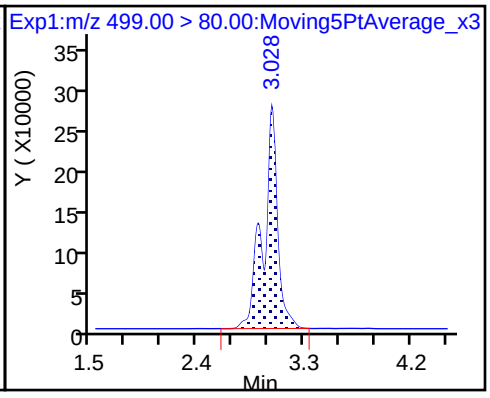
D 18 13C4 PFOS



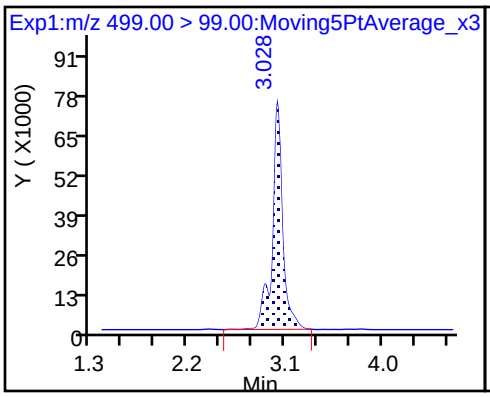
D 19 13C5 PFNA



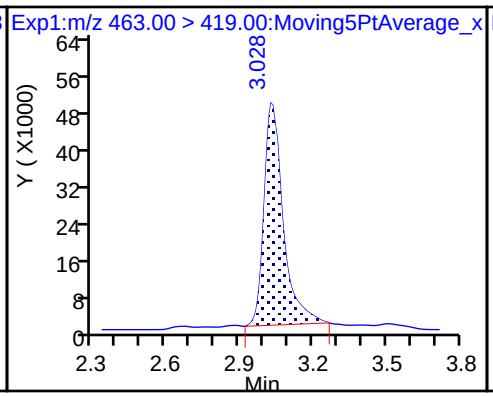
17 Perfluorooctane sulfonic acid



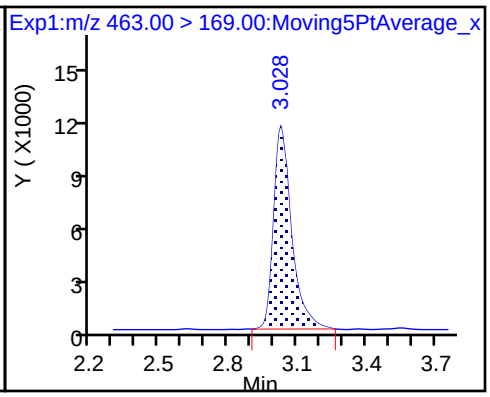
17 Perfluorooctane sulfonic acid



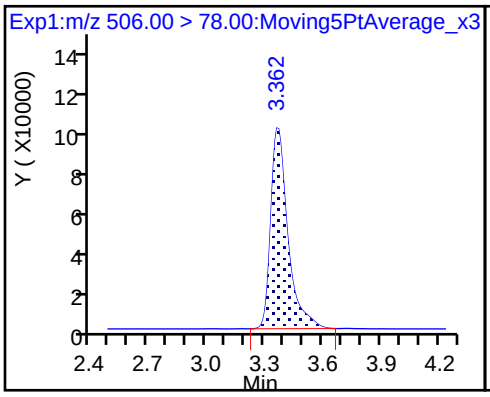
20 Perfluorononanoic acid



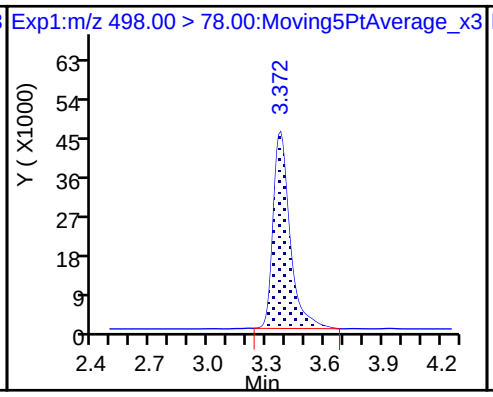
20 Perfluorononanoic acid



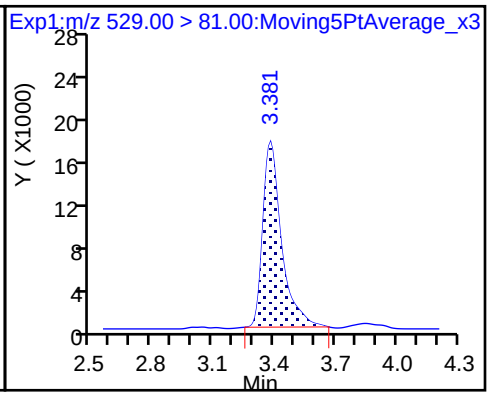
D 21 13C8 FOSA



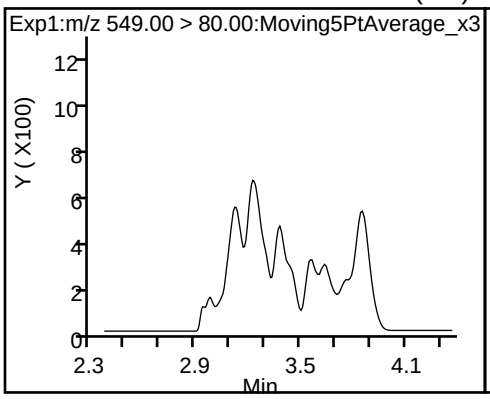
22 Perfluorooctane Sulfonamide



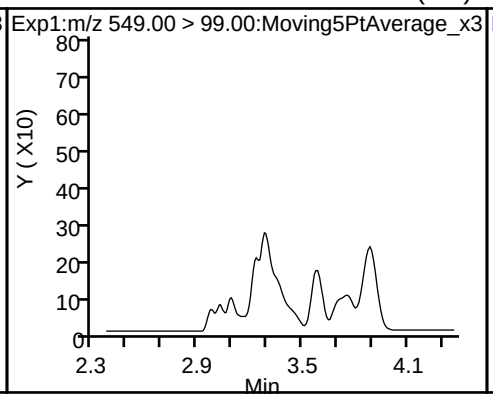
D 26 M2-8:2FTS



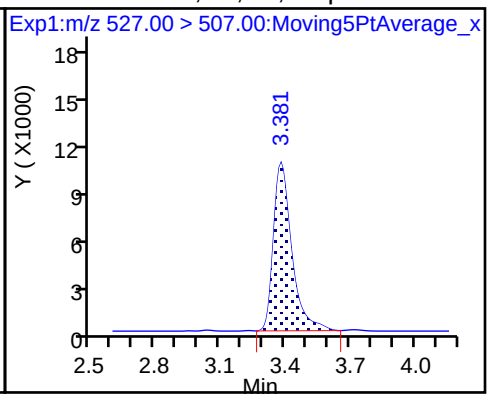
68 Perfluorononanesulfonic acid (ND)



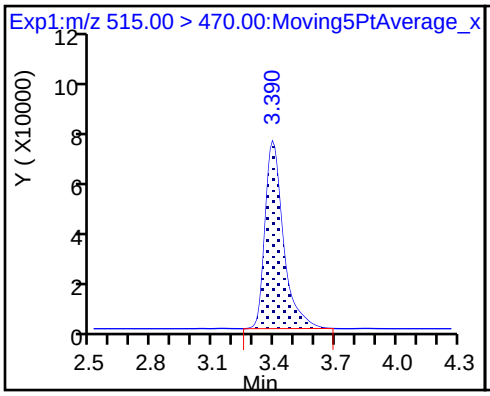
68 Perfluorononanesulfonic acid (ND)



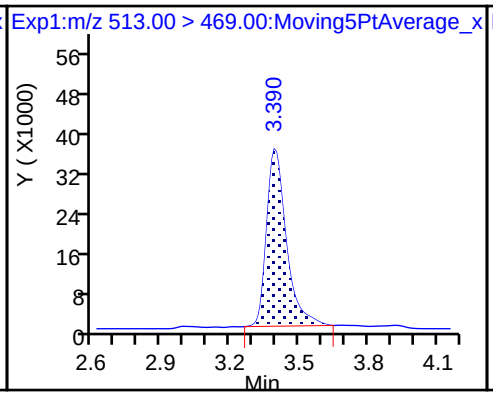
25 Sodium 1H,1H,2H,2H-perfluorodecane



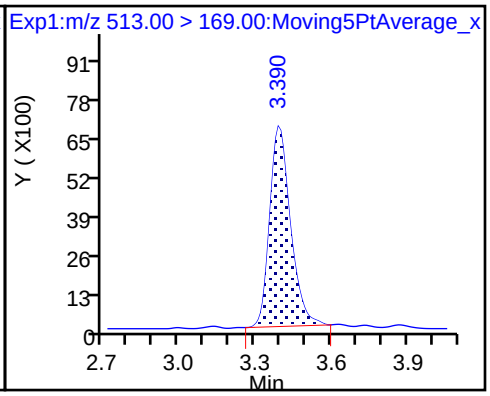
D 23 13C2 PFDA



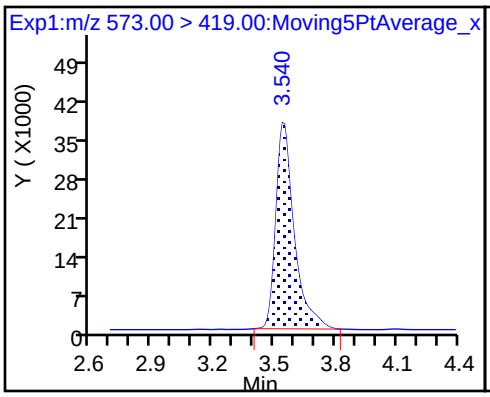
24 Perfluorodecanoic acid



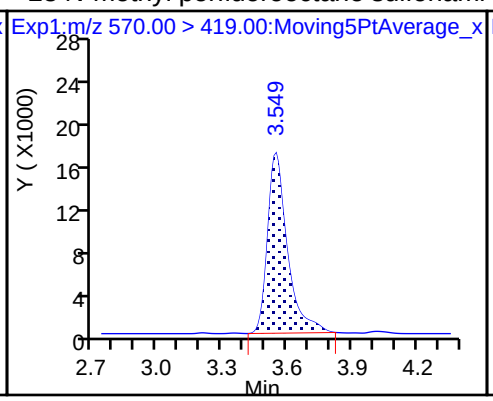
24 Perfluorodecanoic acid



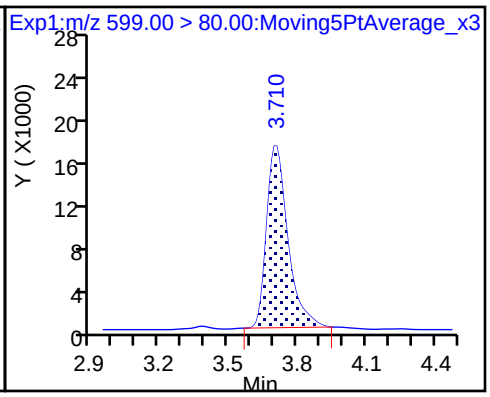
D 27 d3-NMeFOSAA



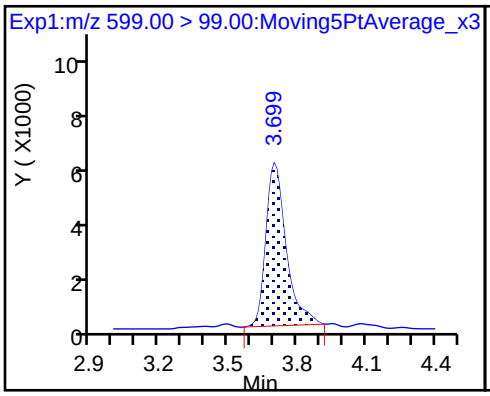
28 N-methyl perfluorooctane sulfonami



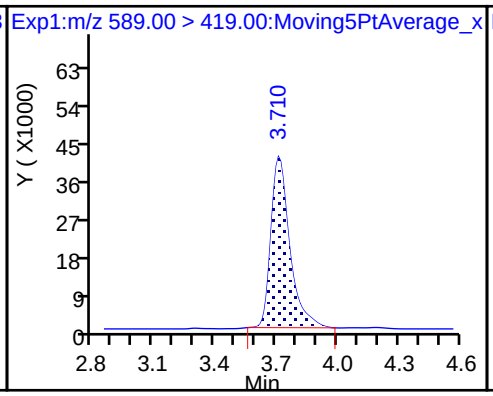
29 Perfluorodecane Sulfonic acid



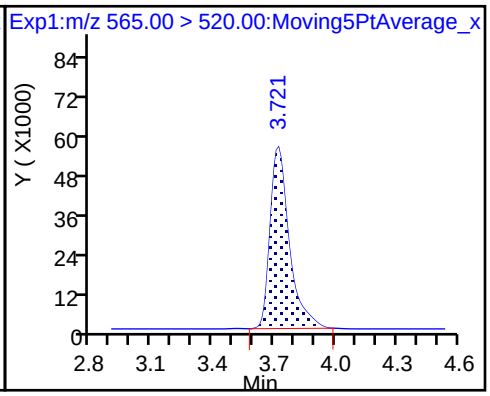
29 Perfluorodecane Sulfonic acid



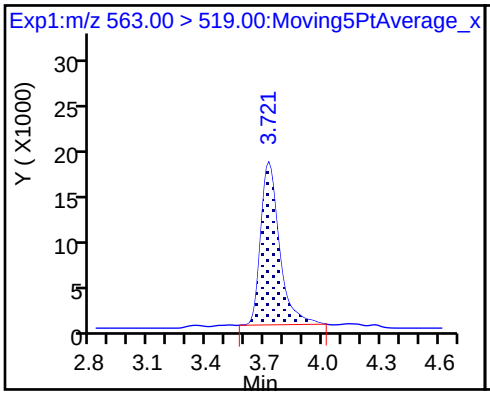
D 32 d5-NEtFOSAA



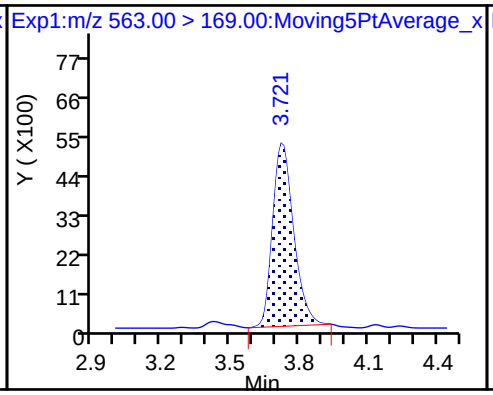
D 30 13C2 PFUnA



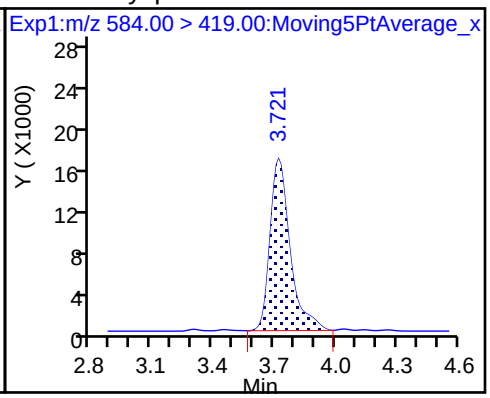
31 Perfluoroundecanoic acid



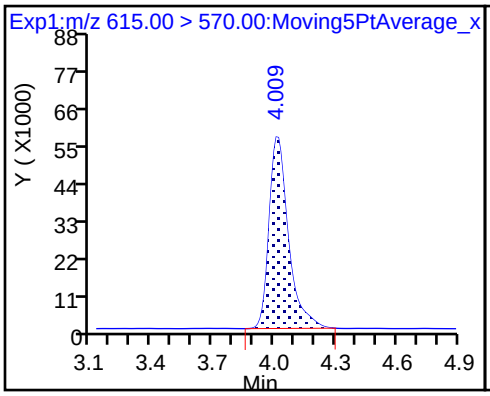
31 Perfluoroundecanoic acid



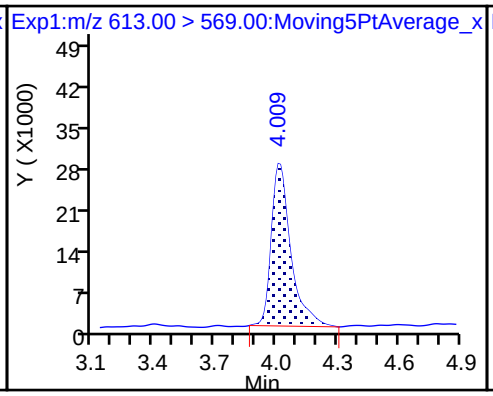
33 N-ethyl perfluorooctane sulfonamid



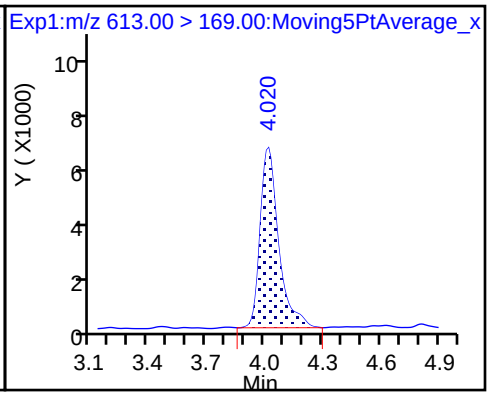
D 36 13C2 PFDoA



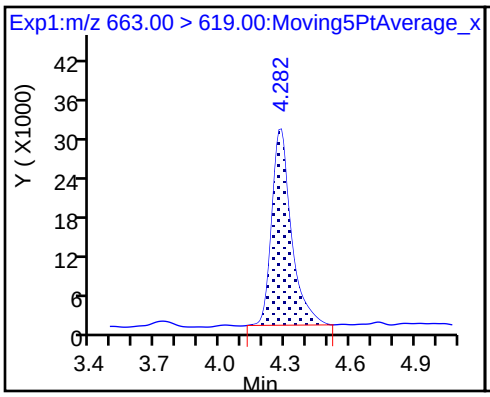
37 Perfluorododecanoic acid



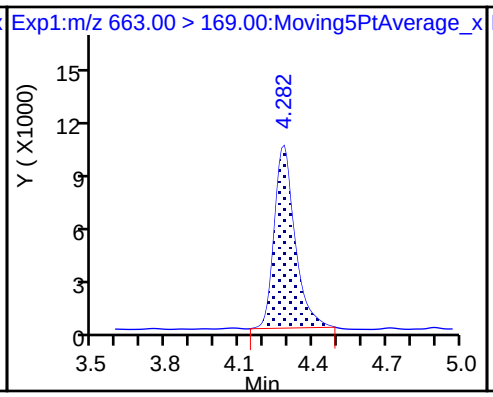
37 Perfluorododecanoic acid



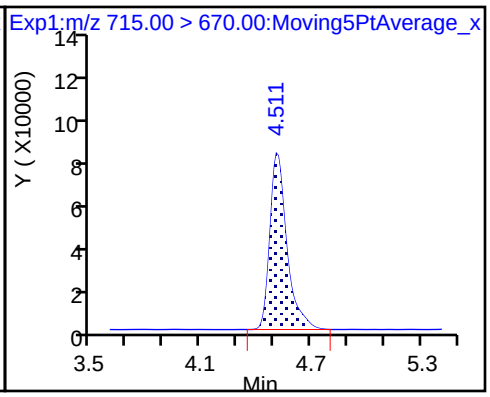
41 Perfluorotridecanoic acid



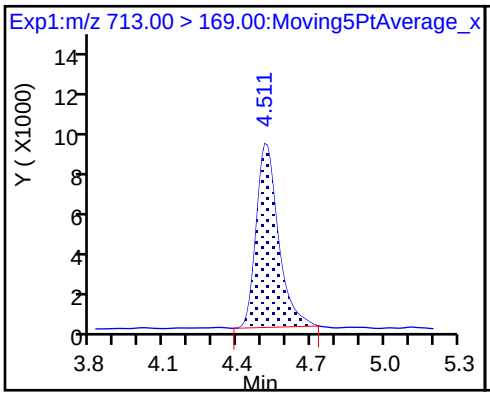
41 Perfluorotridecanoic acid



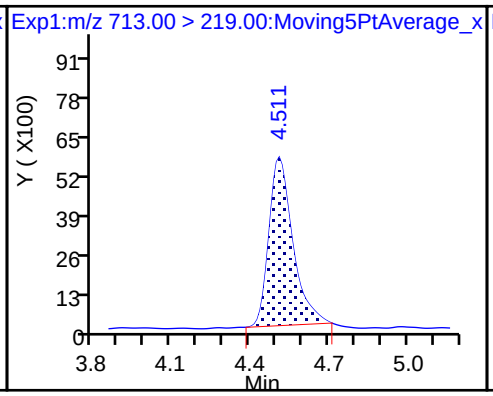
D 43 13C2-PFTeDA



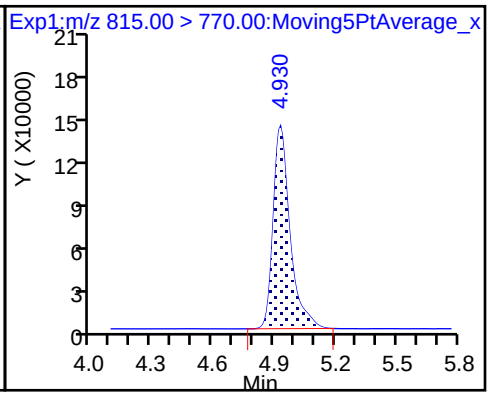
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: MW-BNA05-01-01 MS | Lab Sample ID: 320-36960-22 MS

Matrix: Water | Lab File ID: 2018.03.19LLAX_045.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 09:02

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 251.8(mL) | Date Analyzed: 03/19/2018 20:28

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	47.1		2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	56.4	J1	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	44.3		2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	45.9		2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	114		2.0	0.99	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	109	J1	4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	87		50-150
STL01892	13C4-PFHpA	90		50-150
STL00990	13C4 PFOA	96		50-150
STL00995	13C5 PFNA	94		50-150
STL00994	18O2 PFHxS	95		50-150
STL00991	13C4 PFOS	92		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_045.d
Lims ID: 320-36960-A-22-B MS
Client ID: MW-BNA05-01-01
Sample Type: MS
Inject. Date: 19-Mar-2018 20:28:44 ALS Bottle#: 31 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-22-b ms
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:47:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.444	-0.003	0.536	3591196	1.67		66.8	44622	
2 Perfluorobutyric acid										
212.90 > 169.00	1.447	1.444	0.003	1.004	2184825	1.64		164	730	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.705	-0.005	0.632	3098231	2.04		81.7	28822	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.705	-0.005	1.000	1686150	1.16		116	180	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.740	-0.004	0.646	75721	2.02		87.0	179	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.740	0.004	1.005	2909608	1.15		131	722	
298.90 > 99.00	1.736	1.740	-0.004	1.000	1183058		2.46(1.25-3.74)		650	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.956	1.960	-0.004	1.000	612744	1.17		125	11986	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.986	1.992	-0.006	0.995	1957189	1.38		138	929	
313.00 > 119.00	1.997	1.992	0.005	1.000	168283		11.63(5.03-15.10)		1542	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.992	0.005	0.743	3503972	2.07		82.9	111898	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.335	-0.007	0.866	3717552	2.26		90.4	81988	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.335	-0.007	1.000	1826720	1.19		119	743	
363.00 > 169.00	2.328	2.335	-0.007	1.000	747203		2.44(1.13-3.40)		6886	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.348	-0.007	1.000	6652467	2.87		315	3634	
399.00 > 99.00	2.341	2.348	-0.007	1.000	2089517		3.18(1.50-4.49)		2481	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.871	4920215	2.24		94.8	79478	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.665	2.675	-0.010	1.000	870619	1.07		113	26577	
D 12 M2-6:2FTS										
429.00 > 81.00	2.665	2.675	-0.010	0.991	1164305	2.76		116	5091	
D 14 13C4 PFOA										
417.00 > 372.00	2.689	2.706	-0.017	1.000	3814241	2.40		96.1	102748	
* 62 13C2-PFOA										
415.00 > 370.00	2.689	2.706	-0.017		4208784	2.50			84518	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.696	2.706	-0.010	1.003	2420101	1.42		142	847	
413.00 > 169.00	2.696	2.706	-0.010	1.003	1300460		1.86(0.84-2.52)		4317	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.696	2.706	-0.010	1.000	2062915	1.11		116	2912	
449.00 > 99.00	2.696	2.706	-0.010	1.000	545664		3.78(1.94-5.82)		2433	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.083	-0.018	1.140	3391079	2.21		92.5	18001	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.065	3.083	-0.018	1.000	4215488	2.74		296	6165	
499.00 > 99.00	3.065	3.083	-0.018	1.000	858535		4.91(2.31-6.93)		3518	
20 Perfluorononanoic acid										
463.00 > 419.00	3.065	3.083	-0.018	1.000	1356469	1.11		111	2118	
463.00 > 169.00	3.065	3.083	-0.018	1.000	347128		3.91(1.90-5.69)		4600	
D 19 13C5 PFNA										
468.00 > 423.00	3.065	3.083	-0.018	1.140	2984583	2.35		94.0	75483	
D 21 13C8 FOSA										
506.00 > 78.00	3.398	3.403	-0.005	1.264	4973683	2.24		89.6	54481	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.398	3.412	-0.014	1.000	2146784	1.11		111	30919	
D 26 M2-8:2FTS										
529.00 > 81.00	3.417	3.439	-0.022	1.271	900571	2.28		95.1	9182	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.417	3.439	-0.022	1.000	522676	1.11		115	19377	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.435	3.448	-0.013	1.000	1118436	1.22		122	3724	
513.00 > 169.00	3.435	3.448	-0.013	1.000	203620		5.49(2.36-7.09)		2283	
D 23 13C2 PFDA										
515.00 > 470.00	3.435	3.448	-0.013	1.278	2410172	2.27		90.9	45322	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.581	3.606	-0.025	1.332	584181	1.67		66.7	24762	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.592	3.617	-0.025	1.003	294196	1.21		121	4236	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.740	3.765	-0.025	1.000	875307	0.9662		100	16527	
599.00 > 99.00	3.740	3.765	-0.025	1.000	309710		2.83(1.39-4.16)		3608	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.750	3.775	-0.025	1.395	610595	1.82		72.9	1128	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 30 13C2 PFUnA										
565.00 > 520.00	3.760	3.786	-0.026	1.399	1832007	2.20		88.2	76385	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.760	3.786	-0.026	1.000	555921	0.9052		90.5	1403	
563.00 > 169.00	3.760	3.786	-0.026	1.000	153278		3.63(2.12-6.36)		9247	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.760	3.786	-0.026	1.003	262474	1.10		110	7756	
35 MeFOSA										
512.00 > 169.00	3.905	3.875	0.029		327635	NC			4320	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.090	4.066	0.024		273421	NC			2894	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.059	4.084	-0.025	1.000	759599	1.11		111	160	
613.00 > 169.00	4.059	4.084	-0.025	1.000	199690		3.80(2.13-6.40)		4619	
D 36 13C2 PFDoA										
615.00 > 570.00	4.059	4.084	-0.025	1.510	1674898	2.13		85.0	9472	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.346	-0.028	1.000	670274	0.9725		97.3	155	
663.00 > 169.00	4.318	4.346	-0.028	1.000	238040		2.82(1.25-3.76)		3345	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.565	4.581	-0.016	1.000	200648	1.07		107	2642	
713.00 > 219.00	4.554	4.581	-0.027	0.998	146579		1.37(0.71-2.13)		1724	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.565	4.581	-0.016	1.698	1693383	2.35		94.2	12732	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.973	5.004	-0.031	1.000	824041	NC			70.1	
813.00 > 169.00	4.973	5.004	-0.031	1.000	147232		5.60(2.86-8.58)		2091	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.973	5.004	-0.031	1.850	1834038	1.74		69.7	8396	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.337	5.374	-0.037	1.000	563183	NC			147	
913.00 > 169.00	5.330	5.374	-0.044	0.999	72476		7.77(3.83-11.48)		919	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 22-Mar-2018 10:49:38 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_045.d

Injection Date: 19-Mar-2018 20:28:44 Instrument ID: A8_N

Lims ID: 320-36960-A-22-B MS

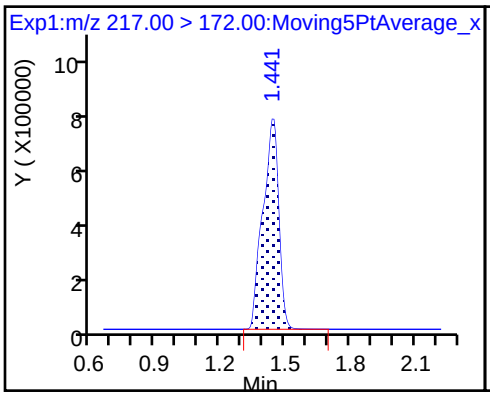
Client ID: MW-BNA05-01-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 10

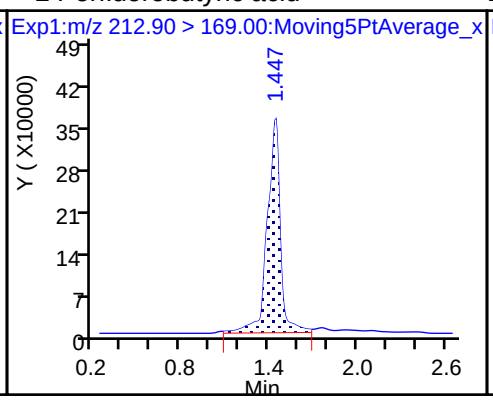
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

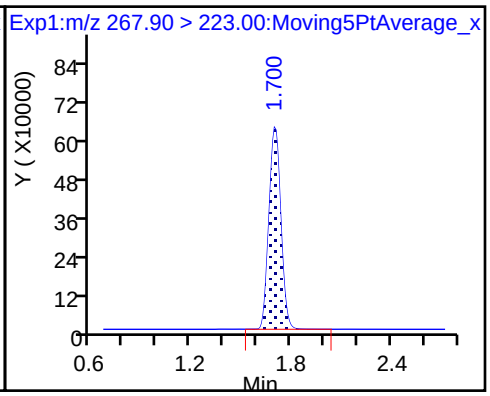
D 1 13C4 PFBA



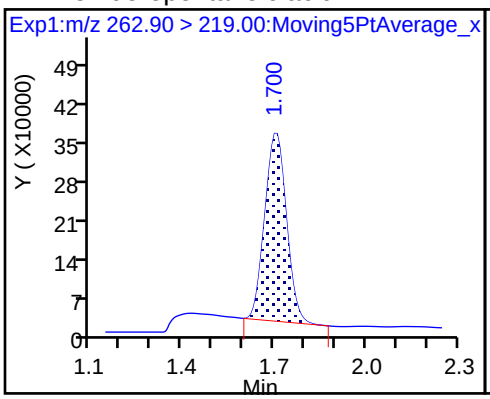
2 Perfluorobutyric acid



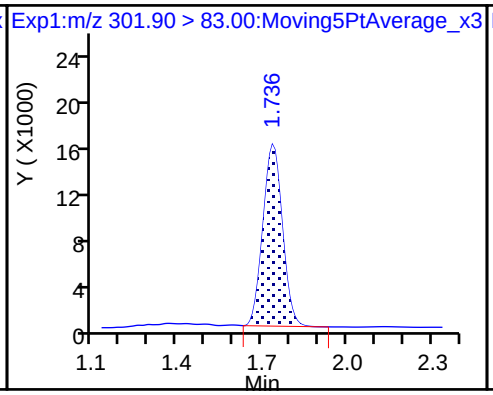
D 3 13C5-PFPeA



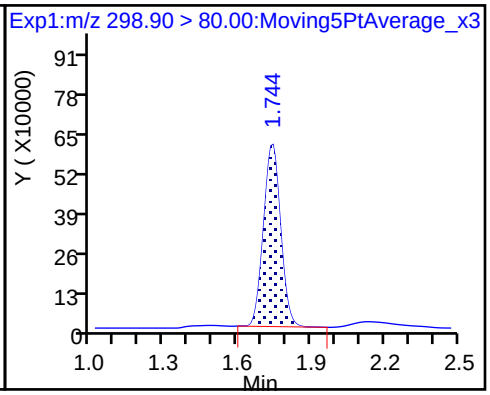
4 Perfluoropentanoic acid



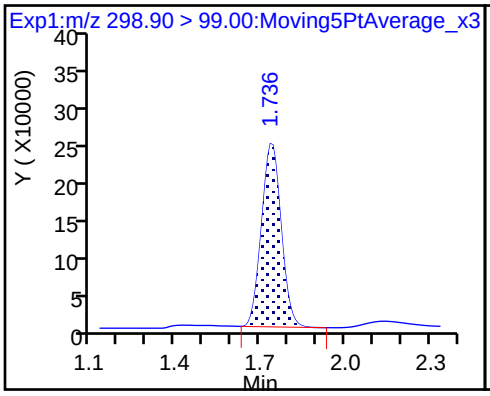
D 47 13C3-PFBS



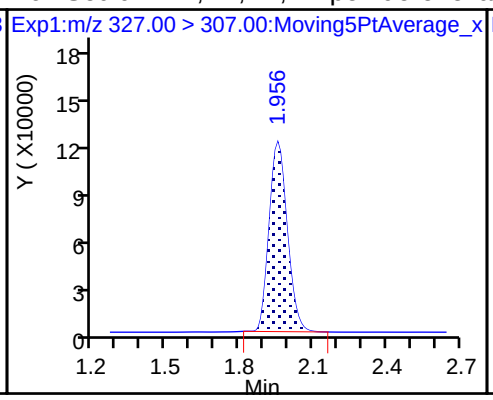
5 Perfluorobutanesulfonic acid



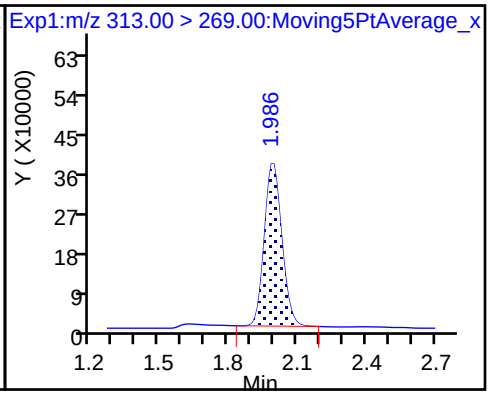
5 Perfluorobutanesulfonic acid



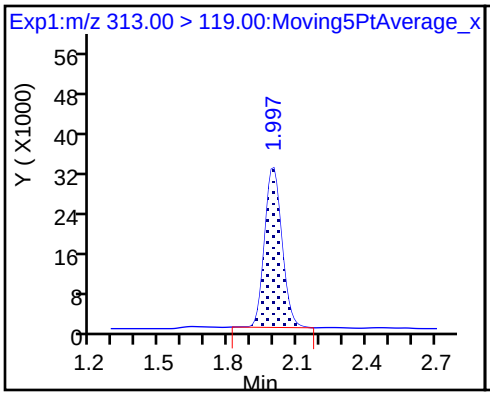
61 Sodium 1H,1H,2H,2H-perfluorohexane



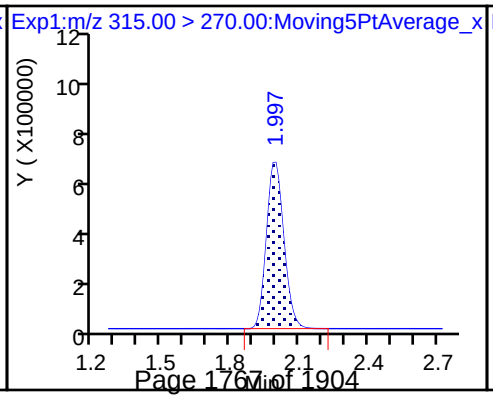
6 Perfluorohexanoic acid



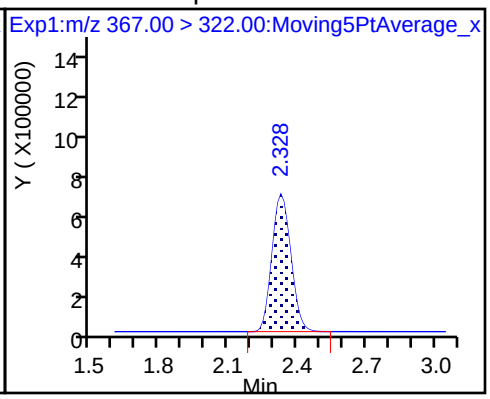
6 Perfluorohexanoic acid



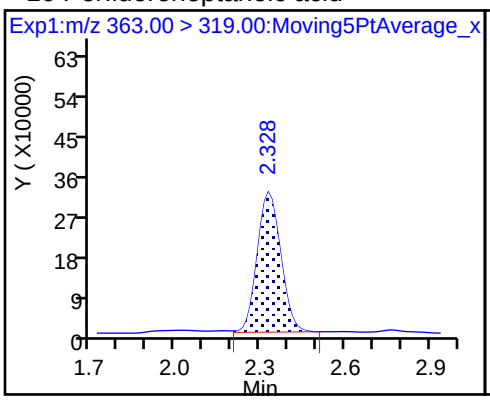
D 7 13C2 PFHxA



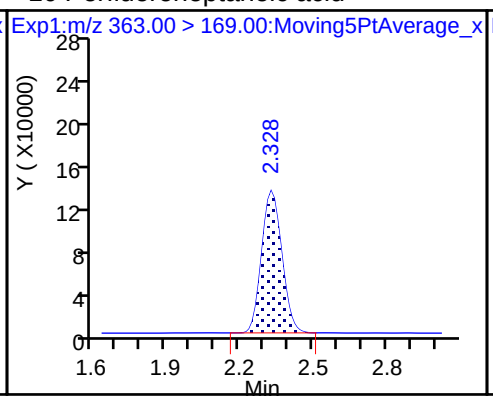
D 9 13C4-PFHpA



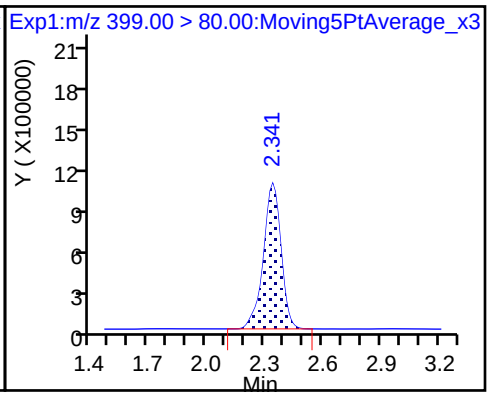
10 Perfluoroheptanoic acid



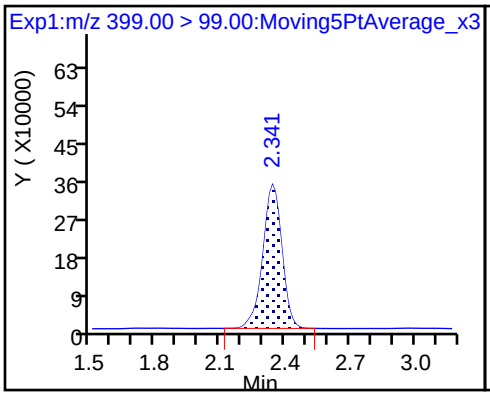
10 Perfluoroheptanoic acid



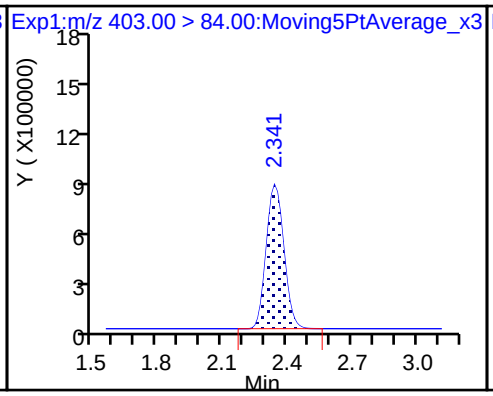
8 Perfluorohexanesulfonic acid



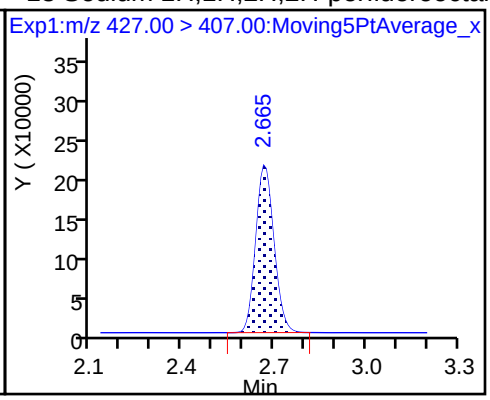
8 Perfluorohexanesulfonic acid



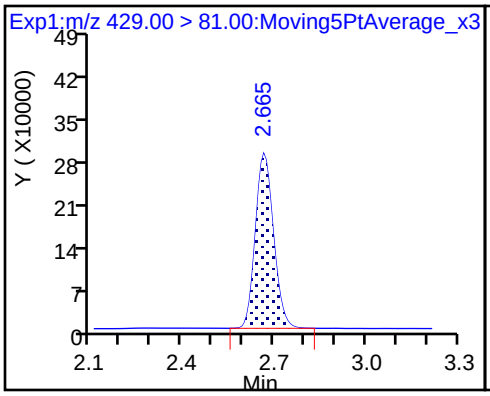
D 11 18O2 PFHxS



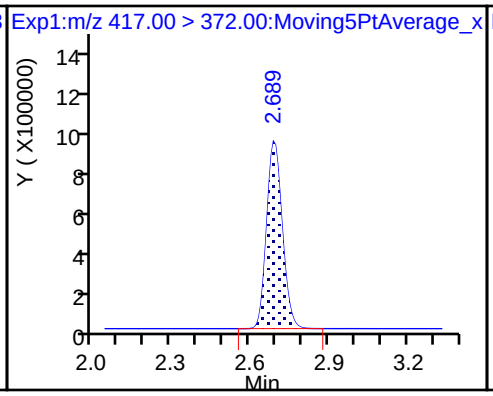
13 Sodium 1H,1H,2H,2H-perfluorooctane



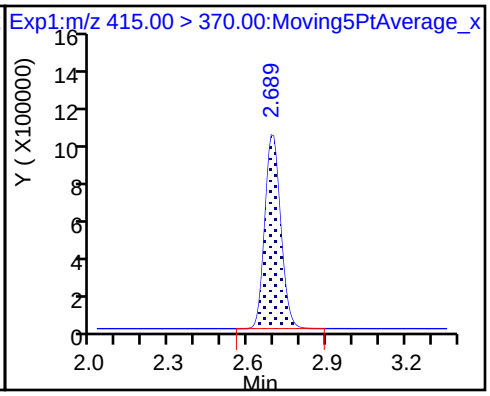
D 12 M2-6:2FTS



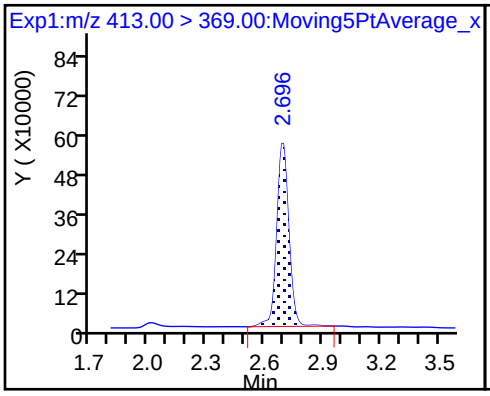
D 14 13C4 PFOA



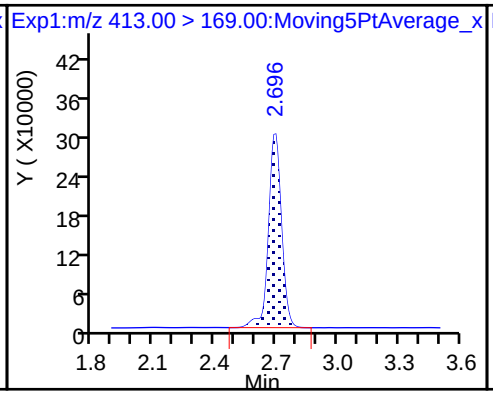
* 62 13C2-PFOA



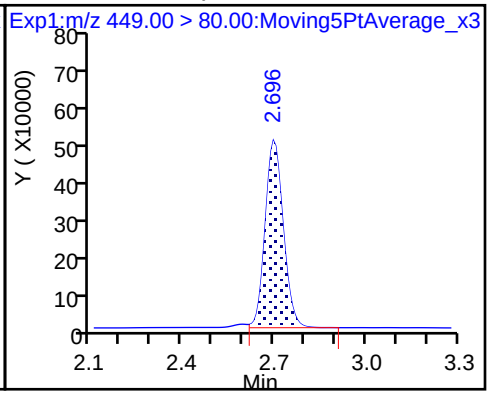
15 Perfluorooctanoic acid



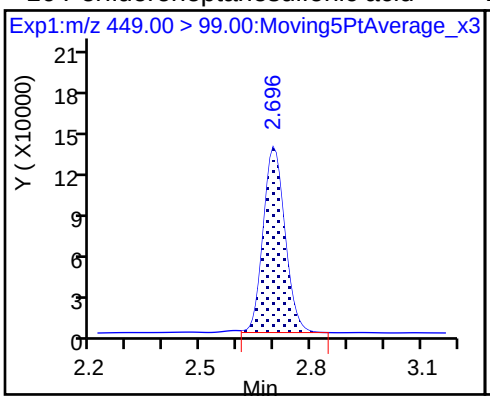
15 Perfluorooctanoic acid



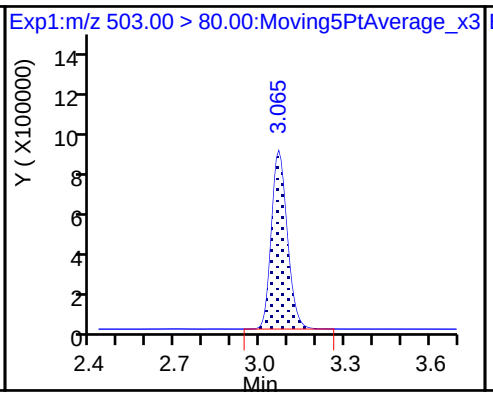
16 Perfluoroheptanesulfonic acid



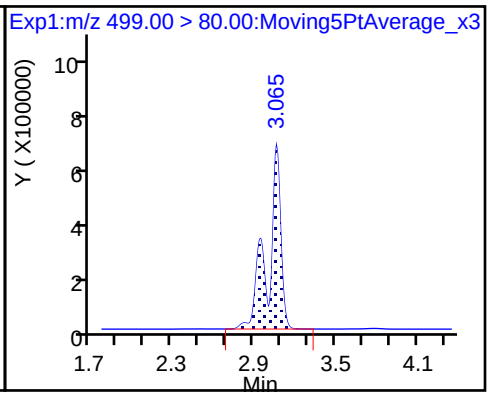
16 Perfluoroheptanesulfonic acid



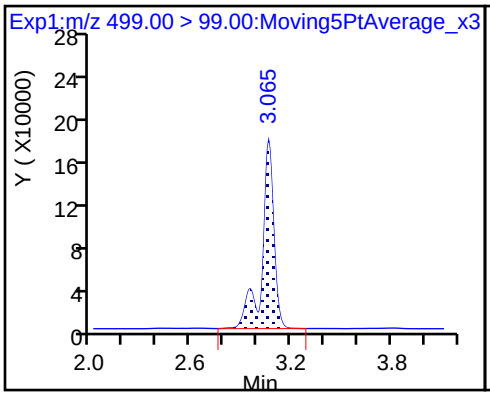
D 18 13C4 PFOS



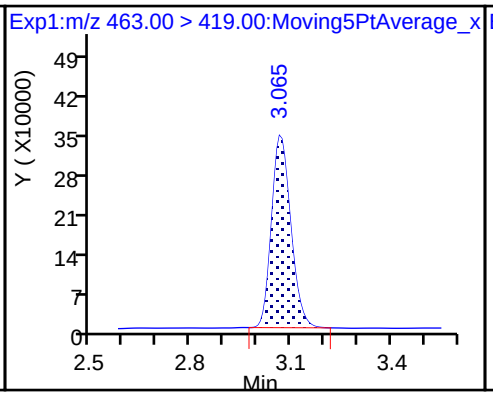
17 Perfluorooctane sulfonic acid



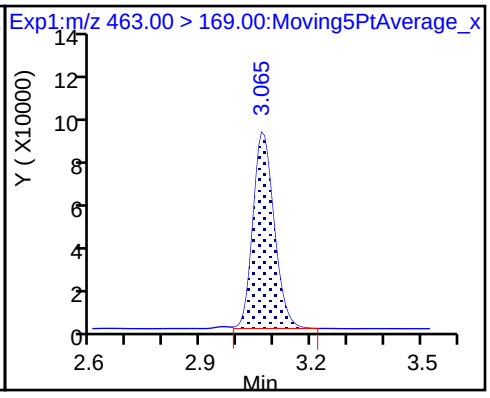
17 Perfluorooctane sulfonic acid



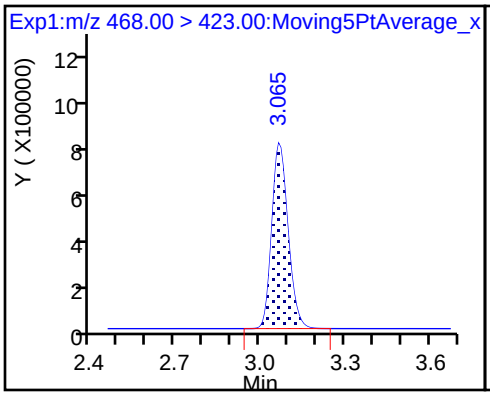
20 Perfluorononanoic acid



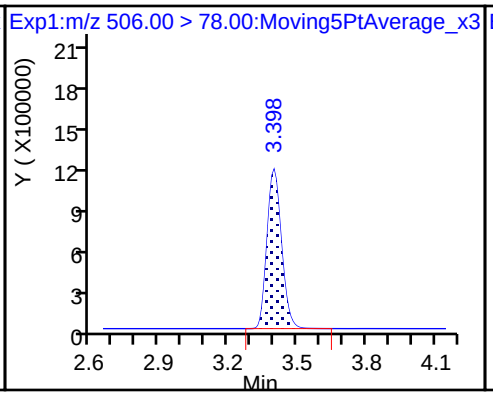
20 Perfluorononanoic acid



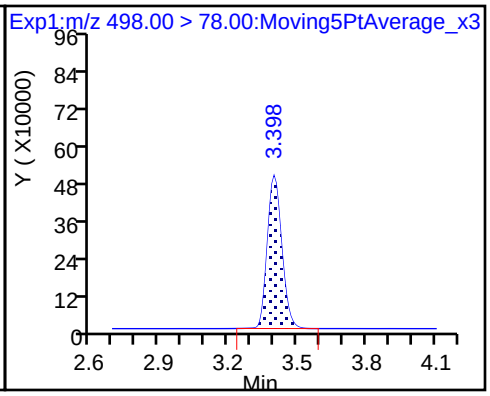
D 19 13C5 PFNA



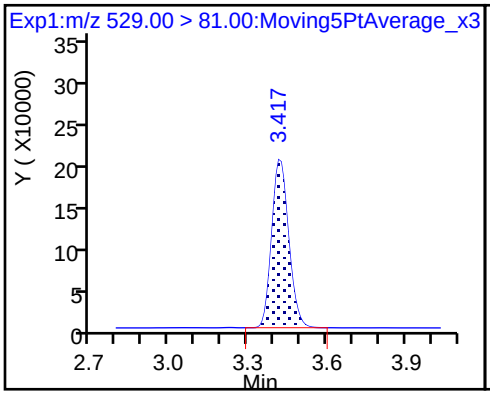
D 21 13C8 FOSA



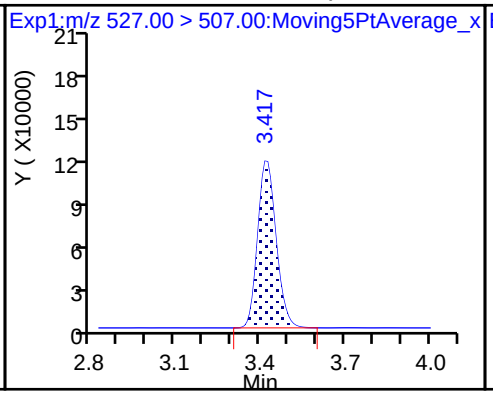
22 Perfluorooctane Sulfonamide



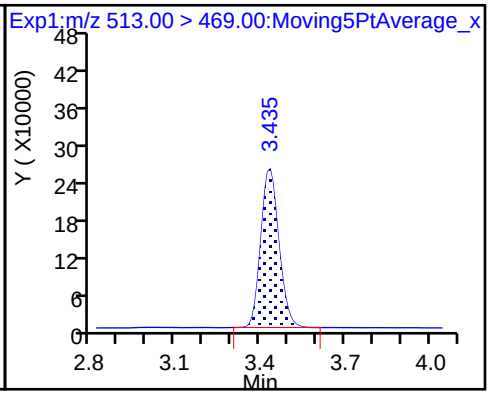
D 26 M2-8:2FTS



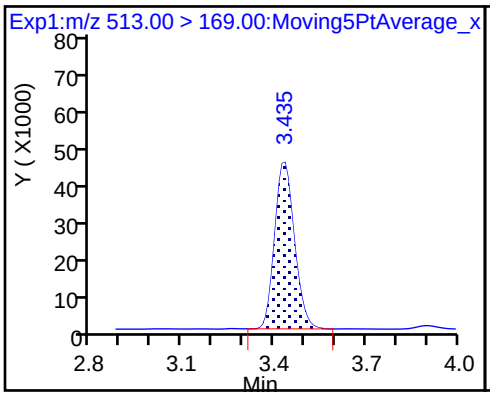
25 Sodium 1H,1H,2H,2H-perfluorodecan



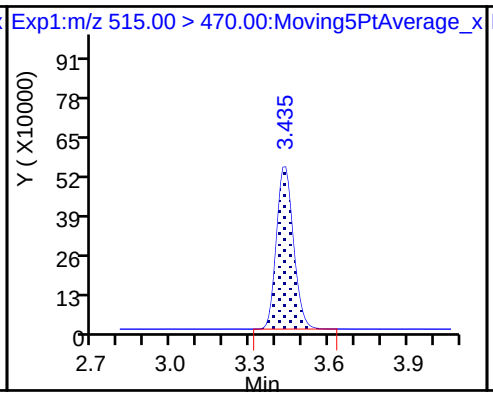
24 Perfluorodecanoic acid



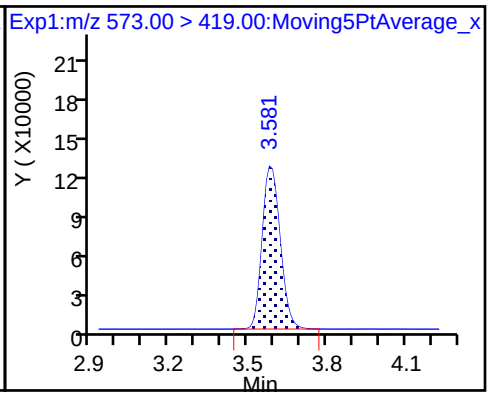
24 Perfluorodecanoic acid



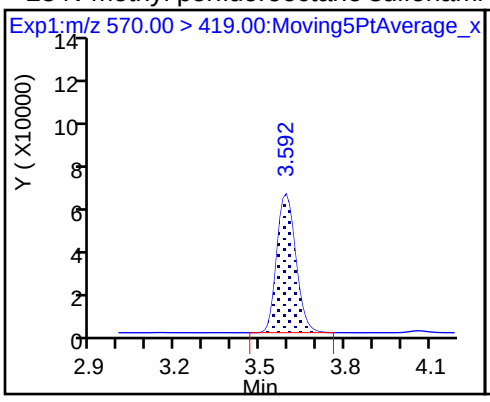
D 23 13C2 PFDA



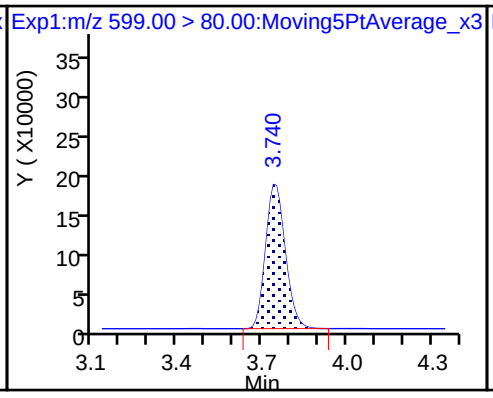
D 27 d3-NMeFOSAA



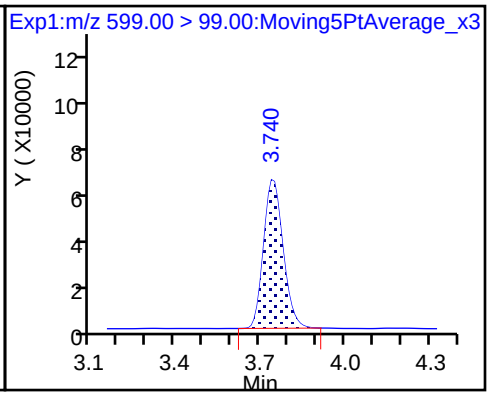
28 N-methyl perfluorooctane sulfonami



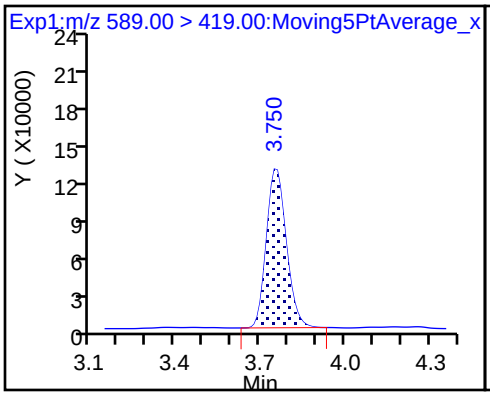
29 Perfluorodecane Sulfonic acid



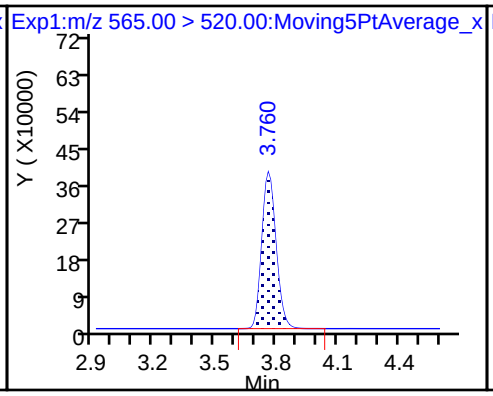
29 Perfluorodecane Sulfonic acid



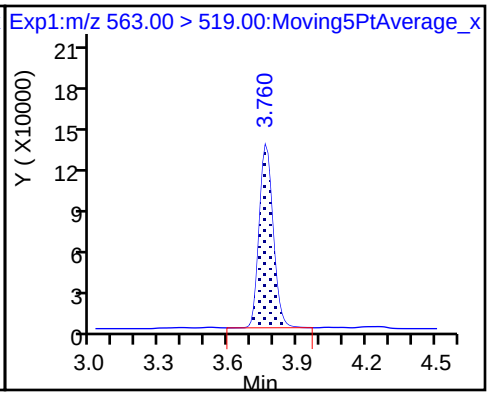
D 32 d5-NEtFOSAA



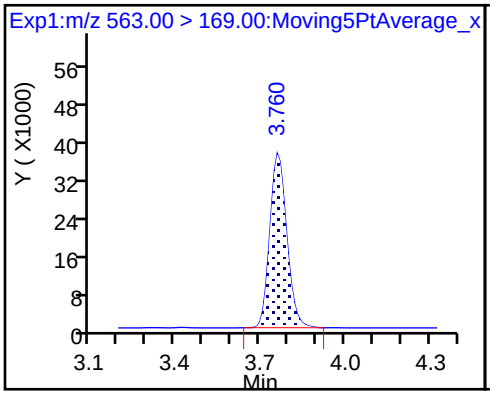
D 30 13C2 PFUnA



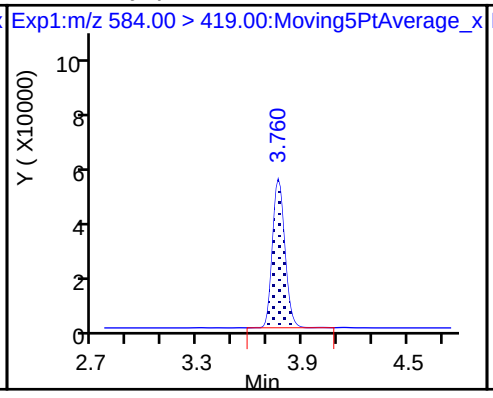
31 Perfluoroundecanoic acid



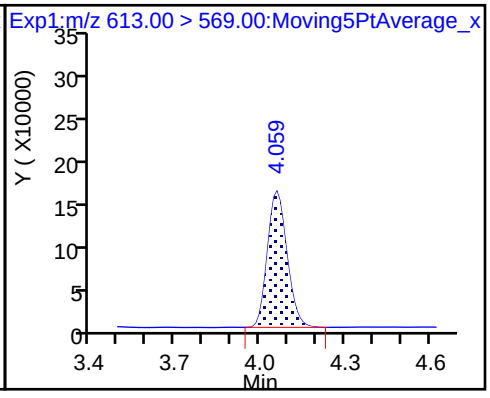
31 Perfluoroundecanoic acid



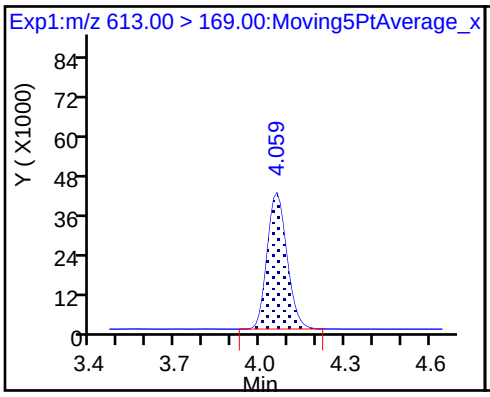
33 N-ethyl perfluorooctane sulfonamid



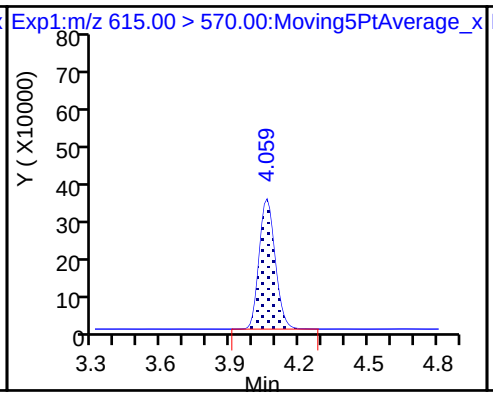
37 Perfluorododecanoic acid



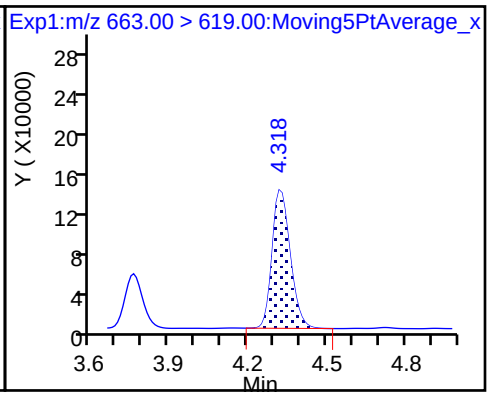
37 Perfluorododecanoic acid



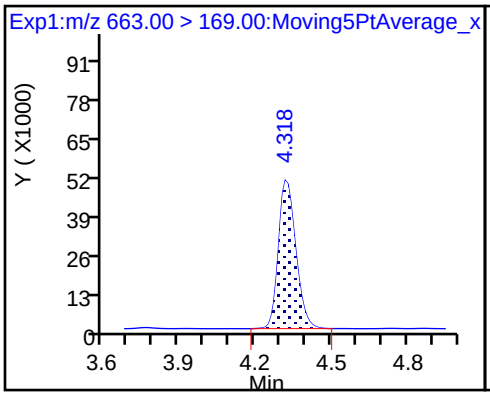
D 36 13C2 PFDoA



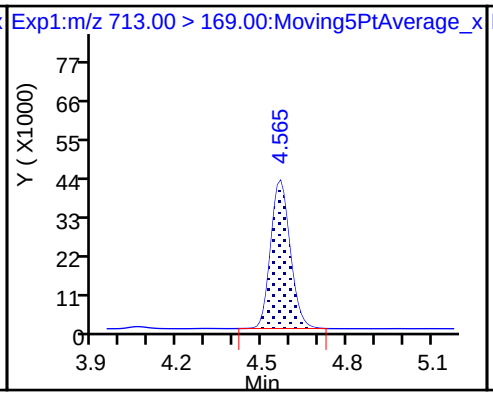
41 Perfluorotridecanoic acid



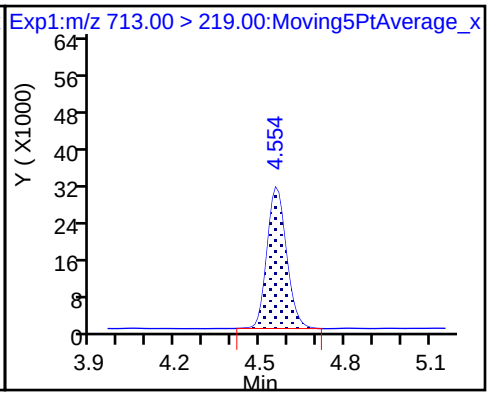
41 Perfluorotridecanoic acid



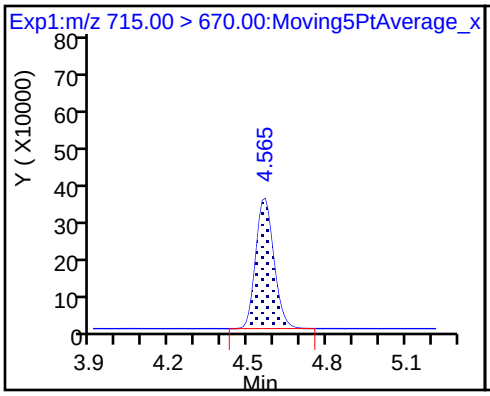
42 Perfluorotetradecanoic acid



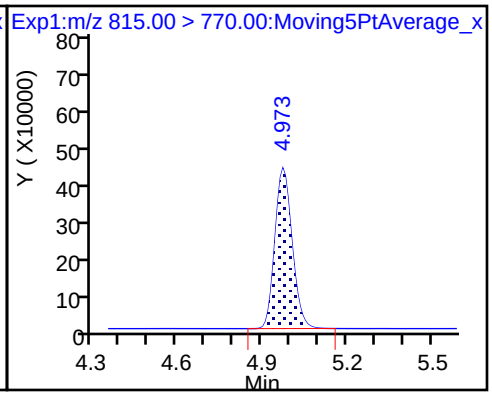
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: MW-BNA05-01-01 MS RE | Lab Sample ID: 320-36960-22 MS RE

Matrix: Water | Lab File ID: 2018.03.24LLAA_011.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 09:02

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 258(mL) | Date Analyzed: 03/24/2018 19:58

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	*Perfluoroheptanoic acid (PFHpA)*	*36.2*		*1.9*	1.5	*0.59*
335-67-1	*Perfluorooctanoic acid (PFOA)*	*44.9*		*1.9*	1.5	*0.52*
375-95-1	*Perfluorononanoic acid (PFNA)*	*37.2*		*1.9*	1.5	*0.50*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*35.4*		*1.9*	0.97	*0.45*
355-46-4	*Perfluorohexanesulfonic acid (PFHxS)*	*99.6*	*J1*	*1.9*	0.97	*0.37*
1763-23-1	*Perfluorooctanesulfonic acid (PFOS)*	*95.0*	*J1*	*3.9*	2.9	*1.1*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	60	Q	50-150
STL01892	13C4-PFHpA	62	Q	50-150
STL00990	13C4 PFOA	63	Q	50-150
STL00995	13C5 PFNA	61	Q	50-150
STL00994	18O2 PFHxS	63	Q	50-150
STL00991	13C4 PFOS	61	Q	50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_011.d
Lims ID: 320-36960-B-22-B MS
Client ID: MW-BNA05-01-01
Sample Type: MS
Inject. Date: 24-Mar-2018 19:58:04 ALS Bottle#: 5 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-b-22-b ms
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:48:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.456	1.459	-0.003	0.535	4603307	1.10		44.0	57295	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.456	1.462	-0.006	1.000	1903862	1.10		110	210	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.723	1.723	0.0	1.000	1683089	1.00		100	125	
D 3 13C5-PFPeA										
267.90 > 223.00	1.723	1.727	-0.004	0.633	3715524	1.34		53.6	23031	
D 47 13C3-PFBS										
301.90 > 83.00	1.758	1.762	-0.004	0.646	88146	1.39		59.8	138	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.767	1.767	0.0	1.005	2687320	0.9122		103	909	
298.90 > 99.00	1.767	1.767	0.0	1.005	1093007		2.46(1.25-3.74)		784	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.981	1.981	0.0	1.000	1000778	1.63		175	17826	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.025	2.014	0.011	1.005	1972585	1.17		117	518	
313.00 > 119.00	2.025	2.014	0.011	1.005	195932		10.07(5.03-15.10)		1219	
D 7 13C2 PFHxA										
315.00 > 270.00	2.014	2.019	-0.005	0.740	4119647	1.34		53.7	87512	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.361	2.348	0.013	1.000	1804997	0.9350		93.5	690	
363.00 > 169.00	2.361	2.348	0.013	1.000	731687		2.47(1.13-3.40)		1729	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.373	2.361	0.012	1.000	6737133	2.57		282	4191	
399.00 > 99.00	2.373	2.361	0.012	1.000	2187642		3.08(1.50-4.49)		2676	
D 9 13C4-PFHpA										
367.00 > 322.00	2.361	2.368	-0.007	0.867	4665223	1.54		61.6	106057	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.373	2.380	-0.007	0.872	5573178	1.49		63.1	103978	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.698	2.691	0.007	1.003	1023690	1.14		121	1330	
D 12 M2-6:2FTS										
429.00 > 81.00	2.691	2.704	-0.013	0.988	1218615	1.94		81.7	6640	
* 62 13C2-PFOA										s
415.00 > 370.00	2.722	2.714	0.008		8261451	2.50			168528	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.722	2.714	0.008	1.000	2556746	1.16		116	841	
413.00 > 169.00	2.722	2.714	0.008	1.000	1325315		1.93(0.84-2.52)		4190	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.730	2.722	0.008	1.000	1932266	0.9156		96.2	2986	
449.00 > 99.00	2.730	2.722	0.008	1.000	501091		3.86(1.94-5.82)		2000	
D 14 13C4 PFOA										
417.00 > 372.00	2.722	2.728	-0.006	1.000	4879781	1.58		63.0	133580	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.097	3.090	0.007	1.000	4496529	2.45		264	9912	
499.00 > 99.00	3.097	3.090	0.007	1.000	884986		5.08(2.31-6.93)		5854	
20 Perfluorononanoic acid										
463.00 > 419.00	3.097	3.090	0.007	1.000	1586918	0.9590		95.9	1566	
463.00 > 169.00	3.097	3.090	0.007	1.000	401018		3.96(1.90-5.69)		5478	
D 19 13C5 PFNA										
468.00 > 423.00	3.097	3.112	-0.015	1.138	4147193	1.52		60.7	92887	
D 18 13C4 PFOS										
503.00 > 80.00	3.097	3.112	-0.015	1.138	3936709	1.45		60.6	23977	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.418	3.411	0.007	1.000	1796964	0.9273		92.7	40700	
D 21 13C8 FOSA										
506.00 > 78.00	3.418	3.418	0.0	1.255	4914414	1.34		53.6	59392	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.454	3.447	0.007	1.000	580707	0.8782		91.7	10131	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.463	3.456	0.007	1.000	1261794	0.9217		92.2	5122	
513.00 > 169.00	3.463	3.456	0.007	1.000	221041		5.71(2.36-7.09)		7285	
D 26 M2-8:2FTS										
529.00 > 81.00	3.454	3.464	-0.010	1.269	1240884	1.46		61.1	16664	
D 23 13C2 PFDA										
515.00 > 470.00	3.463	3.473	-0.010	1.272	3463966	1.45		57.9	56376	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.623	3.615	0.008	1.003	649724	0.9574		95.7	6369	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.614	3.633	-0.019	1.327	1695231	1.35		53.8	36370	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.771	3.774	-0.003	1.000	870093	0.7768		80.6	16757	
599.00 > 99.00	3.771	3.774	-0.003	1.000	298530		2.91(1.39-4.16)		6997	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.792	3.784	0.008	1.003	592092	0.9203		92.0	13567	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.792	3.784	0.008	1.000	768283	0.8596		86.0	4189	
563.00 > 169.00	3.792	3.784	0.008	1.000	194193		3.96(2.12-6.36)		5877	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.782	3.804	-0.022	1.389	1721712	1.20		48.0	8876	
D 30 13C2 PFUnA										
565.00 > 520.00	3.792	3.815	-0.023	1.393	2591555	1.21		48.4	67560	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.081	4.084	-0.003	1.000	1068342	0.9209		92.1	894	
613.00 > 169.00	4.081	4.084	-0.003	1.000	283920		3.76(2.13-6.40)		4920	
D 36 13C2 PFDoA										
615.00 > 570.00	4.081	4.105	-0.024	1.499	2771659	1.14		45.6	20684	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.352	4.347	0.006	1.000	1087106	0.8908		89.1	602	
663.00 > 169.00	4.352	4.347	0.006	1.000	354893		3.06(1.25-3.76)		5179	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.587	4.592	-0.005	1.000	316210	0.9578		95.8	5536	
713.00 > 219.00	4.587	4.592	-0.005	1.000	232293		1.36(0.71-2.13)		4444	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.587	4.613	-0.026	1.685	3330802	1.12		44.9	19550	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.009	5.013	-0.004	1.000	1790987	NC			536	
813.00 > 169.00	5.009	5.013	-0.004	1.000	302730		5.92(2.86-8.58)		2891	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.009	5.049	-0.040	1.840	4870725	1.00		40.0	12457	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.378	5.380	-0.002	1.000	1447994	NC			394	
913.00 > 169.00	5.372	5.380	-0.008	0.999	190465		7.60(3.83-11.48)		2554	

QC Flag Legend

Processing Flags

NC - Not Calibrated

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

Report Date: 25-Mar-2018 10:51:14 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_011.d

Injection Date: 24-Mar-2018 19:58:04 Instrument ID: A8_N

Lims ID: 320-36960-B-22-B MS

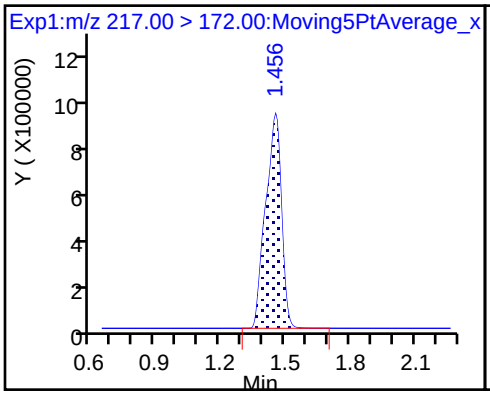
Client ID: MW-BNA05-01-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 9

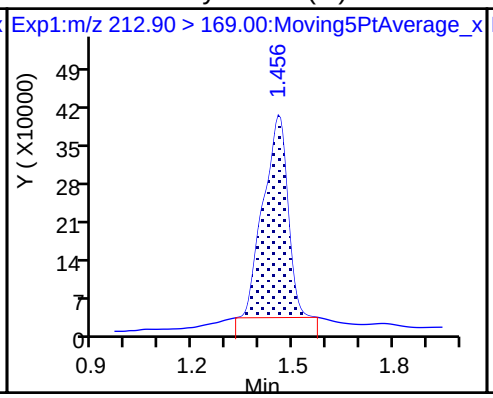
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

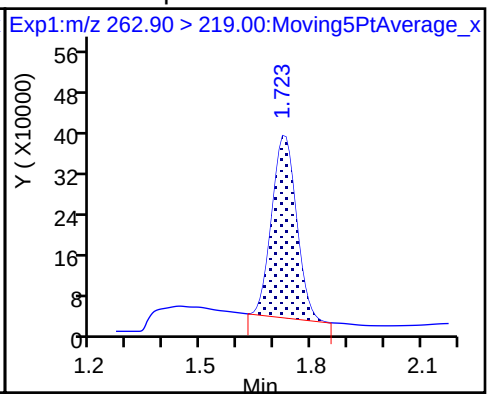
D 1 13C4 PFBA



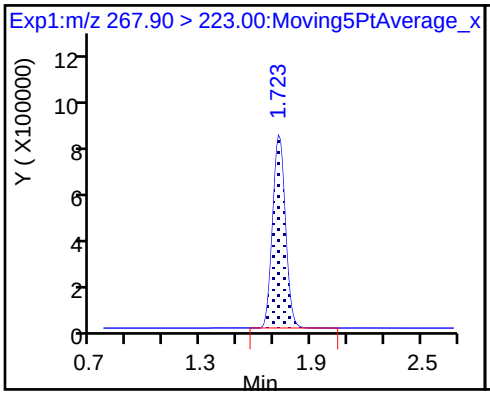
2 Perfluorobutyric acid (M)



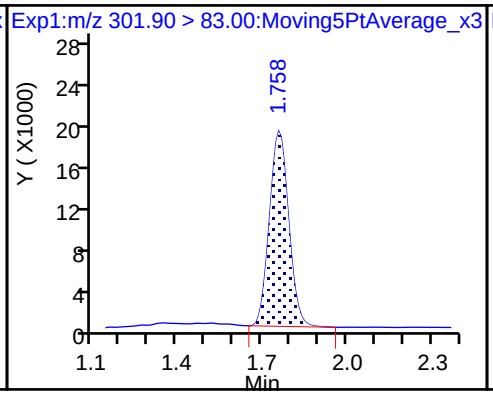
4 Perfluoropentanoic acid



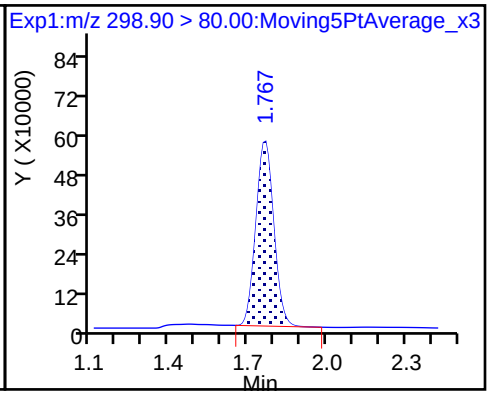
D 3 13C5-PFPeA



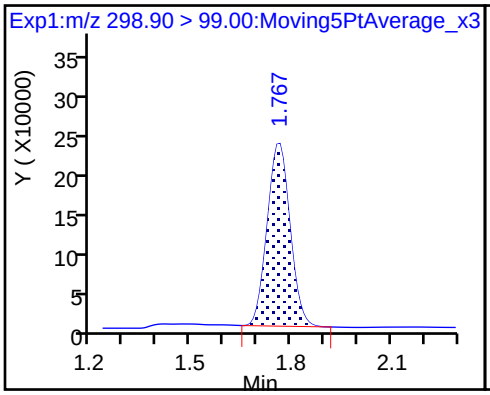
D 47 13C3-PFBS



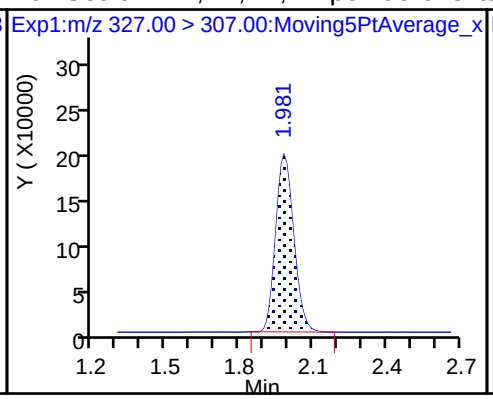
5 Perfluorobutanesulfonic acid



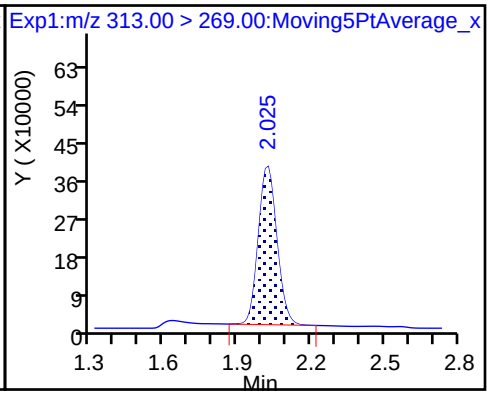
5 Perfluorobutanesulfonic acid



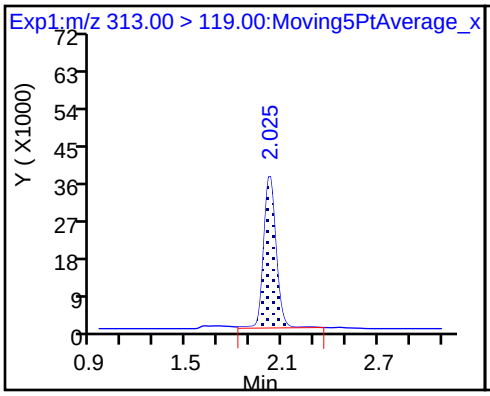
61 Sodium 1H,1H,2H,2H-perfluorohexane



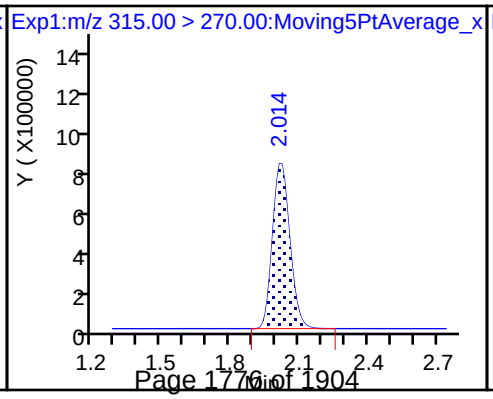
6 Perfluorohexanoic acid



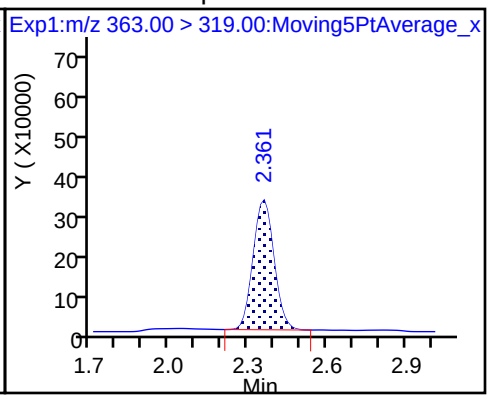
6 Perfluorohexanoic acid



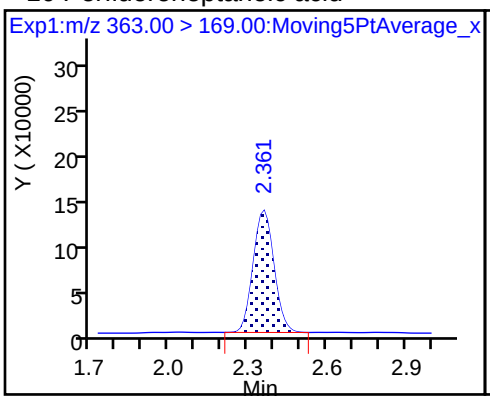
D 7 13C2 PFHxA



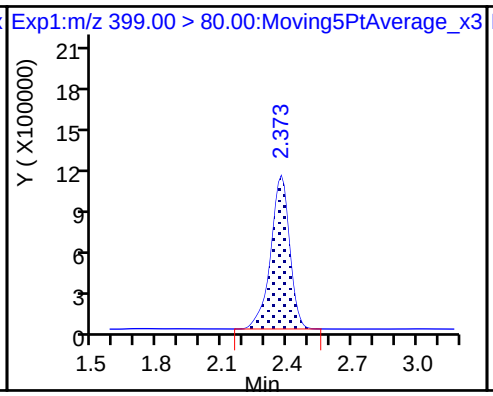
10 Perfluoroheptanoic acid



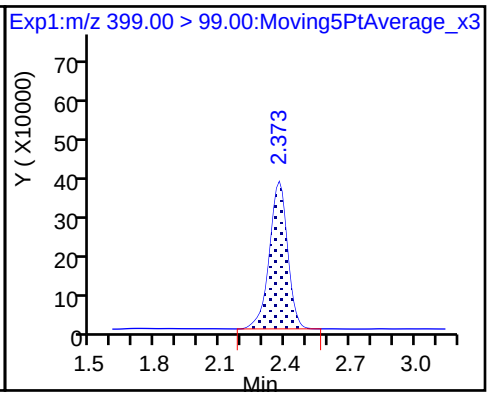
10 Perfluoroheptanoic acid



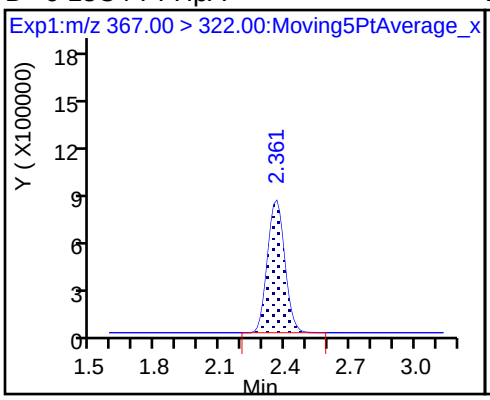
8 Perfluorohexanesulfonic acid



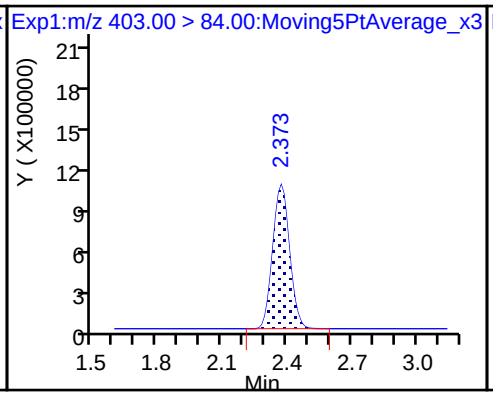
8 Perfluorohexanesulfonic acid



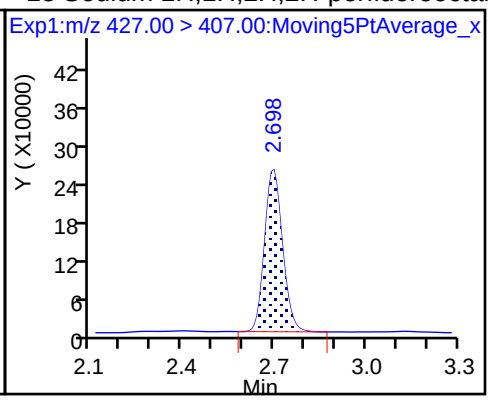
D 9 13C4-PFHpA



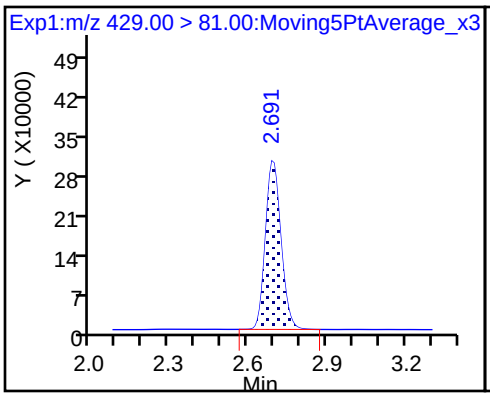
D 11 18O2 PFHxS



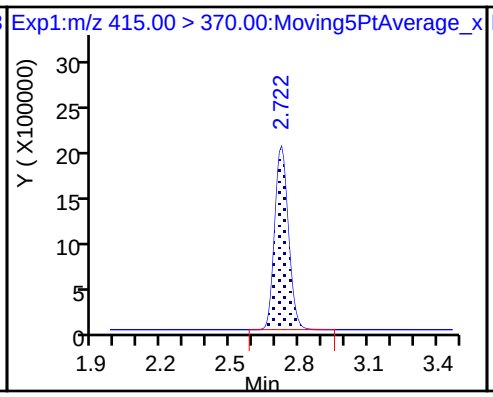
13 Sodium 1H,1H,2H,2H-perfluorooctane



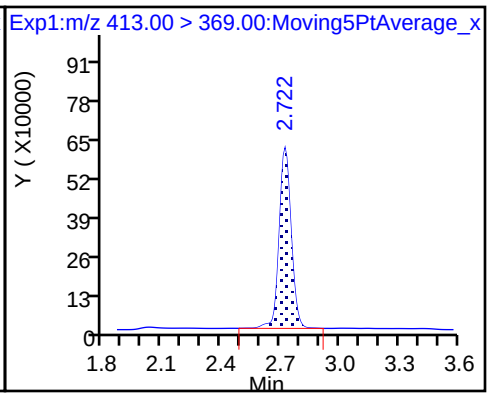
D 12 M2-6:2FTS



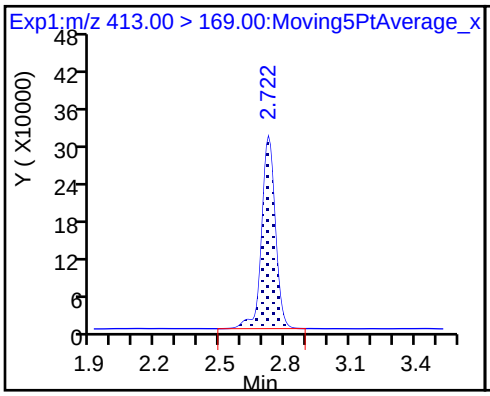
* 62 13C2-PFOA



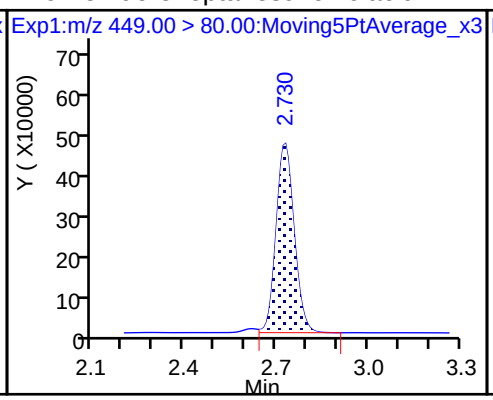
15 Perfluorooctanoic acid



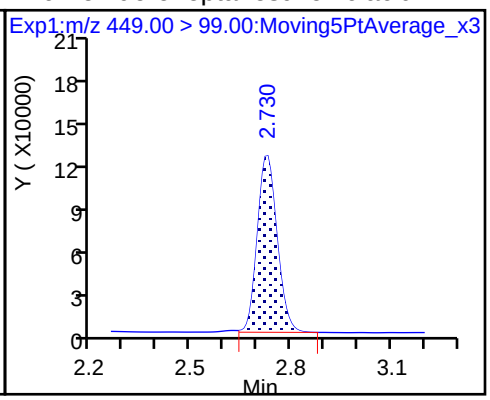
15 Perfluorooctanoic acid



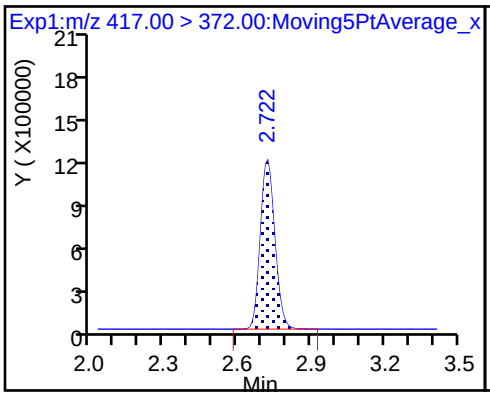
16 Perfluoroheptanesulfonic acid



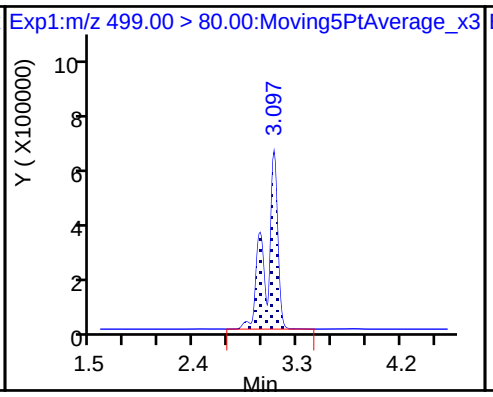
16 Perfluoroheptanesulfonic acid



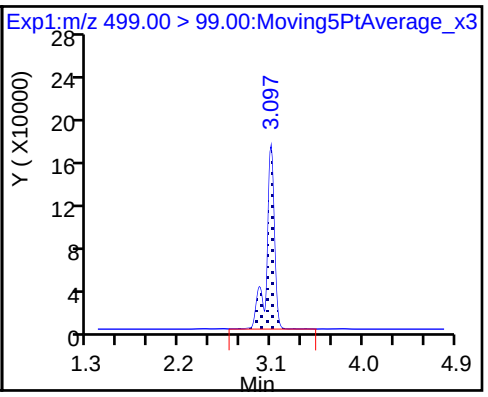
D 14 13C4 PFOA



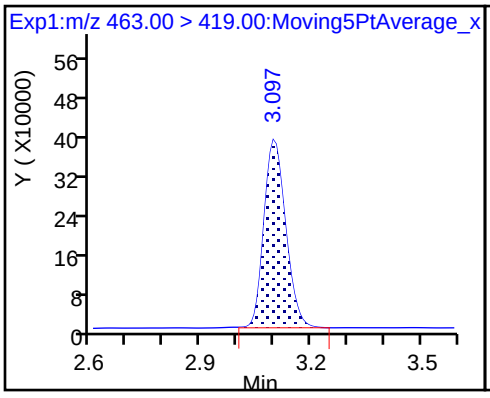
17 Perfluorooctane sulfonic acid



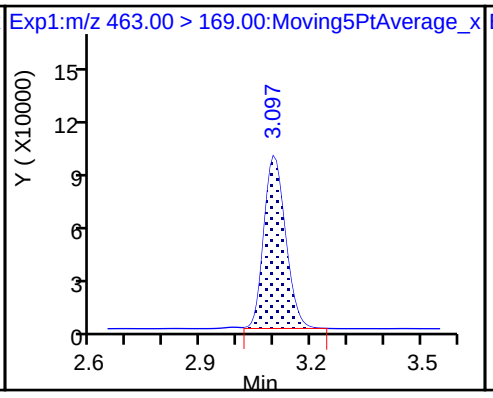
17 Perfluorooctane sulfonic acid



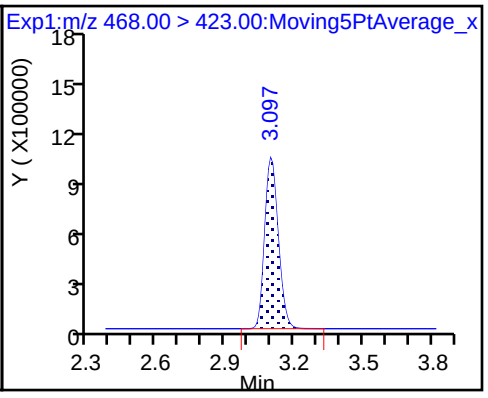
20 Perfluorononanoic acid



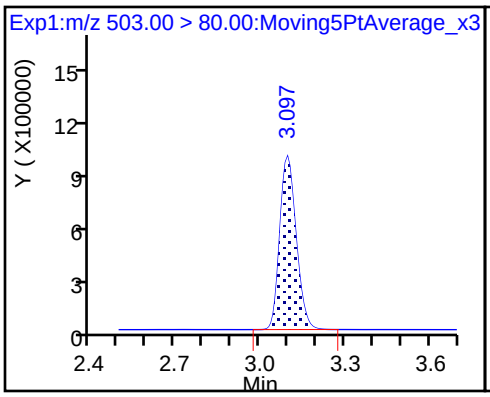
20 Perfluorononanoic acid



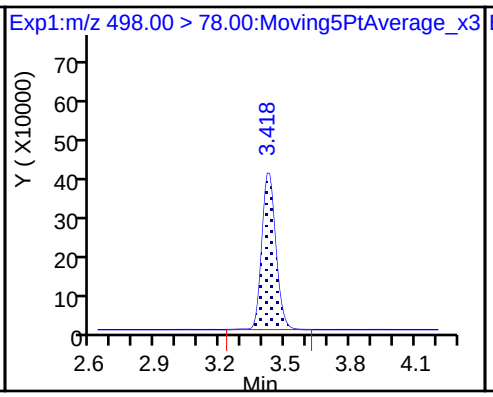
D 19 13C5 PFNA



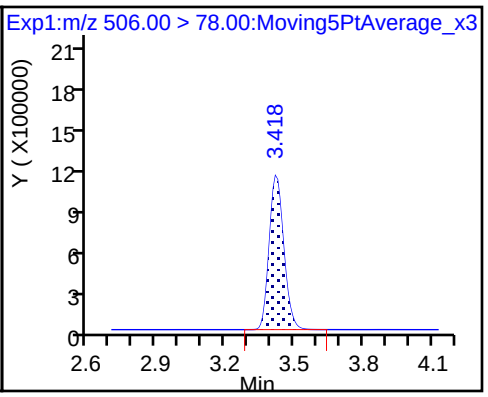
D 18 13C4 PFOS



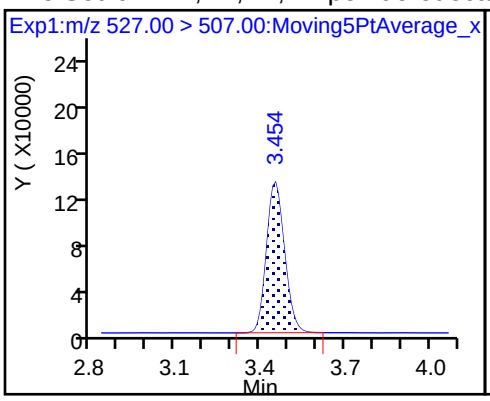
22 Perfluorooctane Sulfonamide



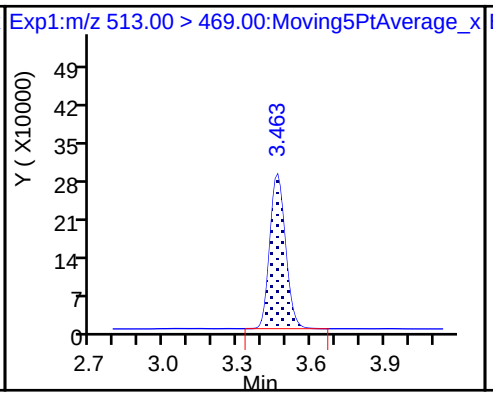
D 21 13C8 FOSA



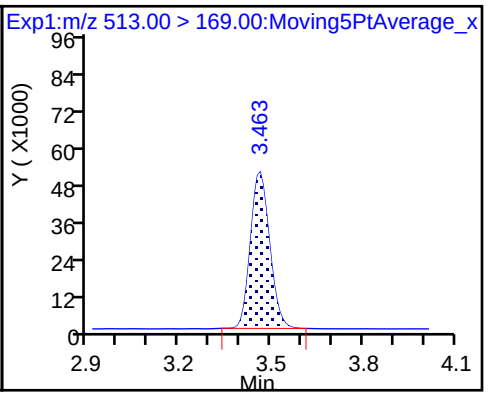
25 Sodium 1H,1H,2H,2H-perfluorodecane



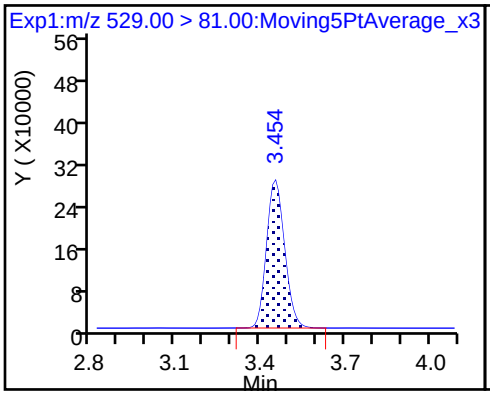
24 Perfluorodecanoic acid



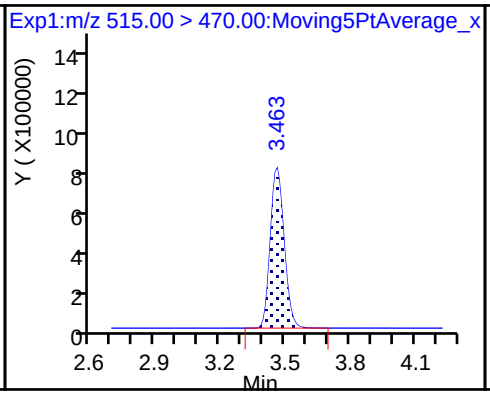
24 Perfluorodecanoic acid



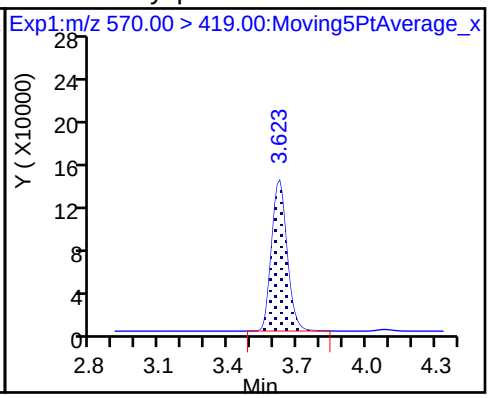
D 26 M2-8:2FTS



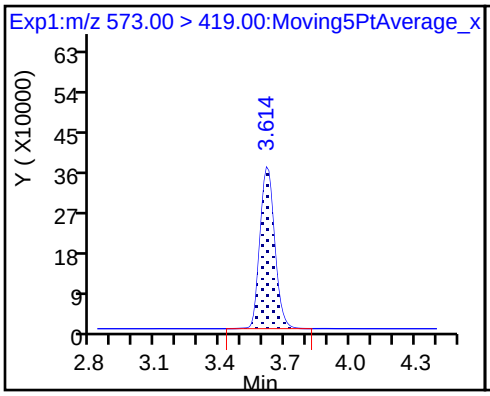
D 23 13C2 PFDA



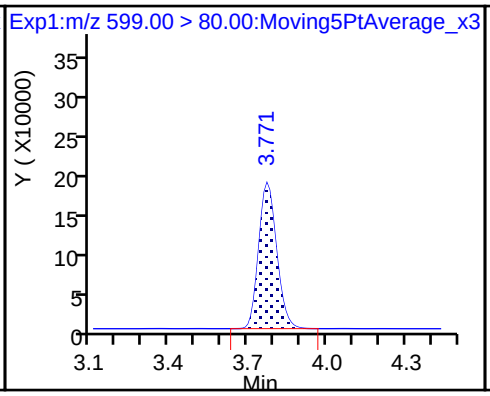
28 N-methyl perfluorooctane sulfonami



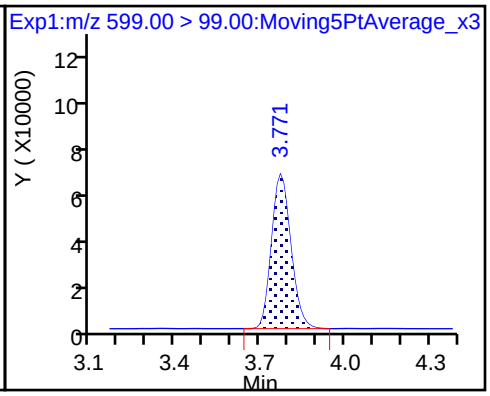
D 27 d3-NMeFOSAA



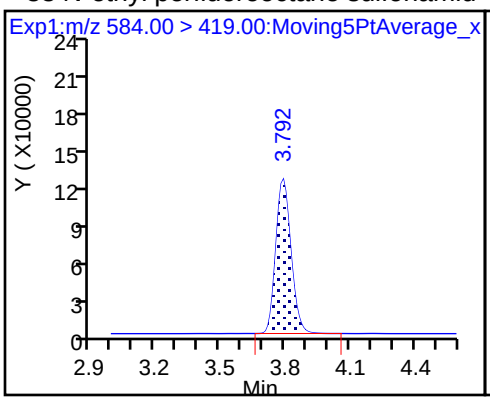
29 Perfluorodecane Sulfonic acid



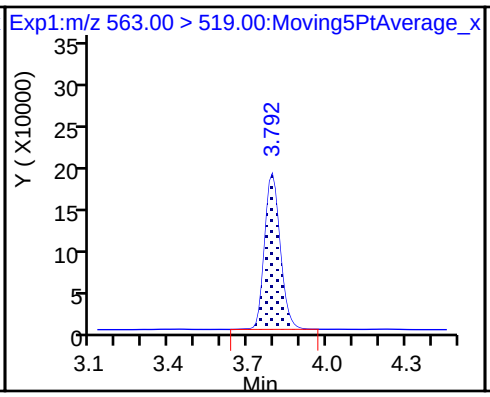
29 Perfluorodecane Sulfonic acid



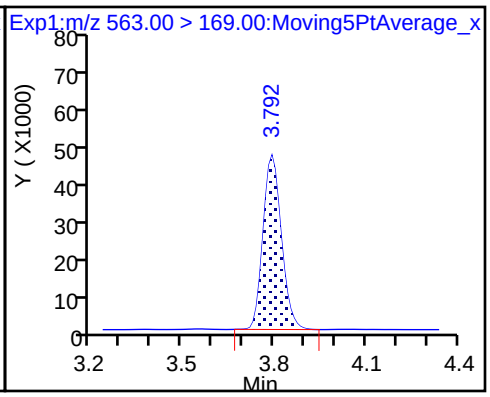
33 N-ethyl perfluorooctane sulfonamid



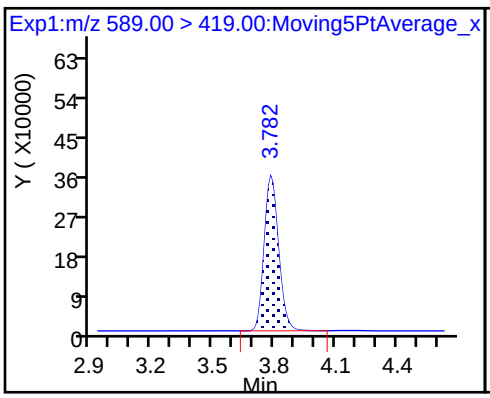
31 Perfluoroundecanoic acid



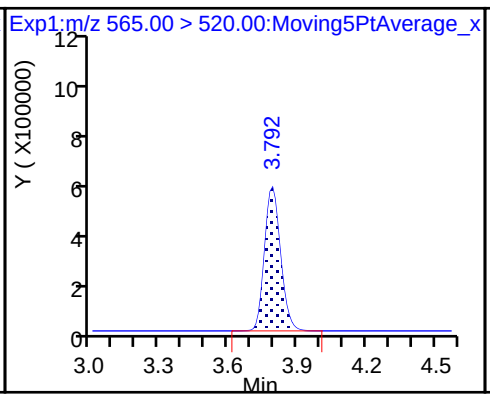
31 Perfluoroundecanoic acid



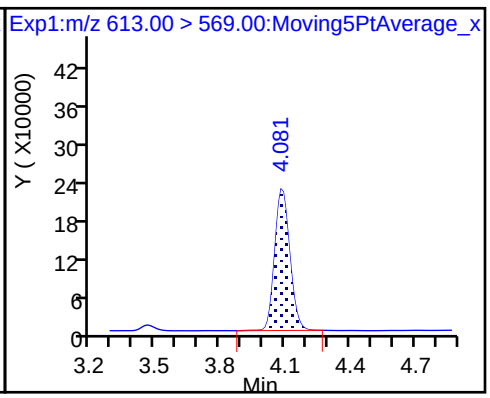
D 32 d5-NEtFOSAA



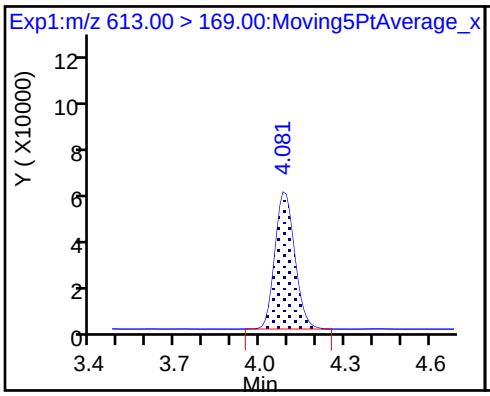
D 30 13C2 PFUnA



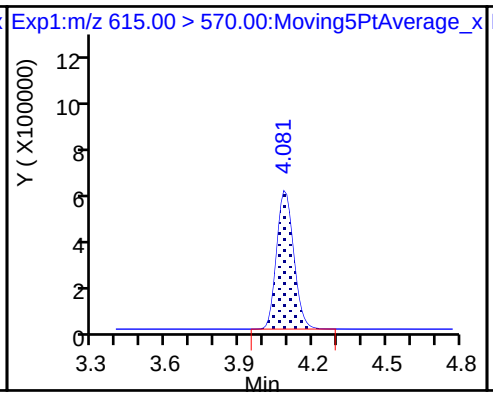
37 Perfluorododecanoic acid



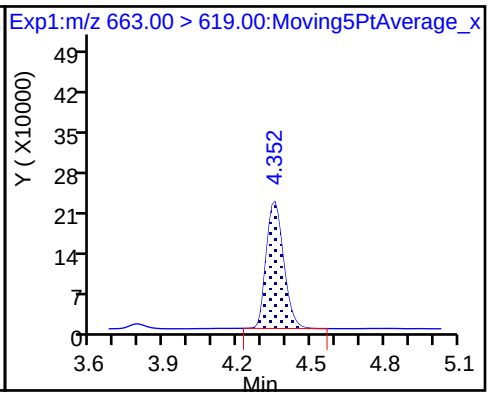
37 Perfluorododecanoic acid



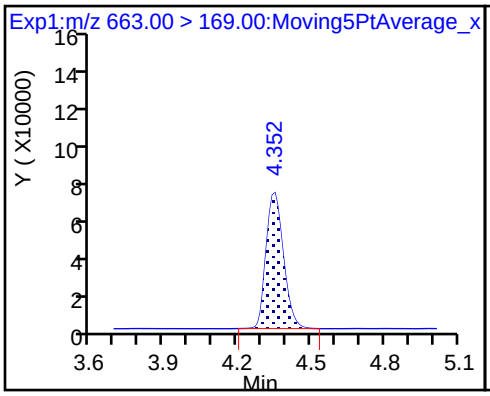
D 36 13C2 PFDoA



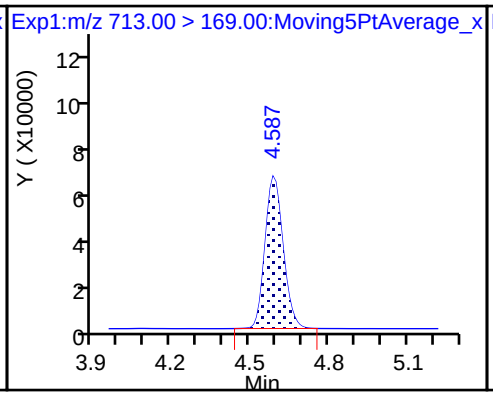
41 Perfluorotridecanoic acid



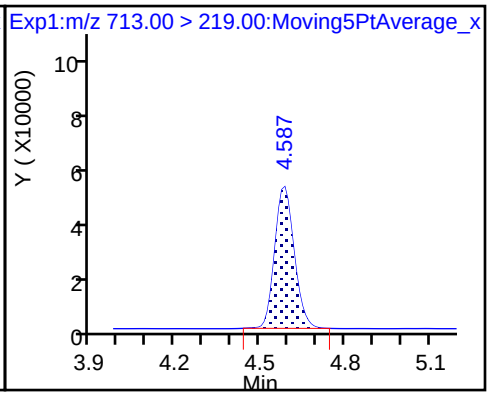
41 Perfluorotridecanoic acid



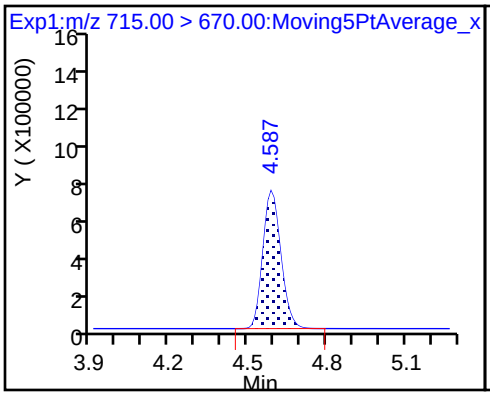
42 Perfluorotetradecanoic acid



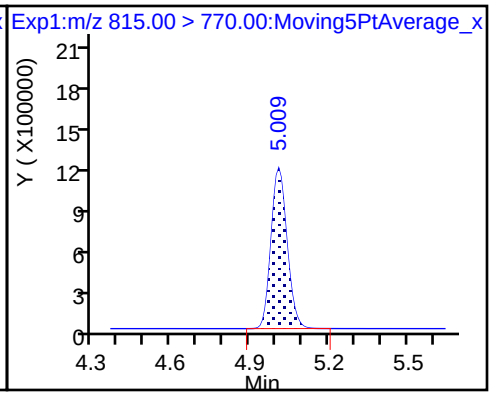
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA01-SB1-01 MSD | Lab Sample ID: 320-36960-4 MSD

Matrix: Solid | Lab File ID: 2018.04.07LLA_011.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 14:15

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.96(g) | Date Analyzed: 04/07/2018 09:55

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 19.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216821 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.74		0.38	0.25	0.098
335-67-1	Perfluorooctanoic acid (PFOA)	2.85		0.38	0.25	0.13
375-95-1	Perfluorononanoic acid (PFNA)	2.71		0.38	0.25	0.10
375-73-5	Perfluorobutanesulfonic acid (PFBS)	3.24		0.50	0.23	0.074
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.61	J1	0.38	0.25	0.078
1763-23-1	*Perfluorooctanesulfonic acid (PFOS)*	*25.8*	*E 4*	*1.3*	0.63	*0.30*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	56		50-150
STL01892	13C4-PFHpA	77		50-150
STL00990	13C4 PFOA	76		50-150
STL00995	13C5 PFNA	79		50-150
STL00994	18O2 PFHxS	60		50-150
STL00991	13C4 PFOS	58		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_011.d
Lims ID: 320-36960-A-4-C MSD
Client ID: BNA01-SB1-01
Sample Type: MSD
Inject. Date: 07-Apr-2018 09:55:57 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-4-c msd
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:26:42 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:21:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.425	-0.001	1.000	4678581	1.76		70.2	38457	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.431	-0.001	1.004	2187675	1.26		126	723	
D 3 13C5-PFPeA										
267.90 > 223.00	1.694	1.694	0.0	0.559	3007994	1.73		69.4	46192	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.694	1.704	-0.010	1.000	1680065	1.17		117	952	M
D 47 13C3-PFBS										
301.90 > 83.00	1.730	1.730	0.0	1.000	51661	1.30		56.0	349	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.730	1.740	-0.010	1.000	2255859	1.29		146	11249	
298.90 > 99.00	1.730	1.740	-0.010	1.000	934518		2.41(1.25-3.74)		4268	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.950	1.951	-0.001	1.000	424128	1.11		118	17164	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.982	0.0	1.000	3248519	1.70		68.0	83132	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.982	1.983	-0.001	1.000	2160658	1.62		162	3621	
313.00 > 119.00	1.982	1.983	-0.001	1.000	188570		11.46(5.03-15.10)		1930	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	1.993	2.005	-0.012	1.000	515556	0.3259		0.0	3722	
349.00 > 99.00	1.993	2.005	-0.012	1.000	209854		2.46(1.36-4.07)		1792	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.072	2.073	-0.001	1.000	179990	NC			4045	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.308	0.0	1.000	3539296	1.93		77.0	84842	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.310	-0.002	1.000	1675740	1.09		109	2058	
363.00 > 169.00	2.308	2.310	-0.002	1.000	657158		2.55(1.13-3.40)		3001	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.321	0.0	1.000	3274831	1.43		60.4	93524	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.323	-0.002	1.000	4064178	2.63		289	11175	
399.00 > 99.00	2.321	2.323	-0.002	1.000	1317151		3.09(1.50-4.49)		4082	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.637	-0.008	1.000	590423	1.39		58.5	7079	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.629	2.637	-0.008	1.000	432952	0.9325		98.4	3855	
D 14 13C4 PFOA										
417.00 > 372.00	2.661	2.660	0.001	1.000	3439864	1.90		76.2	102098	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.661	0.0		4819277	2.50			86431	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.661	2.669	-0.008	1.000	1852102	1.14		114	829	
413.00 > 169.00	2.654	2.669	-0.015	0.997	963464		1.92(0.84-2.52)		2764	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.661	2.669	-0.008	1.000	1421461	1.16		122	11657	
449.00 > 99.00	2.661	2.669	-0.008	1.000	399424		3.56(1.94-5.82)		5667	
D 18 13C4 PFOS										
503.00 > 80.00	3.030	3.023	0.007	1.000	2196997	1.38		57.8	17730	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.030	0.0	1.000	3003115	1.96		78.6	132713	
20 Perfluorononanoic acid										
463.00 > 419.00	3.030	3.032	-0.002	1.000	1332268	1.08		108	3356	
463.00 > 169.00	3.030	3.032	-0.002	1.000	322410		4.13(1.90-5.69)		8269	
17 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.023	3.032	-0.009	0.998	10777879	10.3		1106	33510	E
499.00 > 99.00	3.023	3.032	-0.009	0.998	2318471		4.65(2.31-6.93)		23041	
D 21 13C8 FOSA										
506.00 > 78.00	3.369	3.360	0.009	1.000	3177421	1.41		56.5	40889	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.369	3.371	-0.002	1.000	1310376	1.04		104	17929	
D 26 M2-8:2FTS										
529.00 > 81.00	3.397	3.378	0.019	1.000	649879	1.32		54.9	5539	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.397	3.380	0.017	1.000	378254	1.03		108	8842	
D 23 13C2 PFDA										
515.00 > 470.00	3.397	3.387	0.010	1.000	2642717	2.05		81.9	56218	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.397	3.399	-0.002	1.000	1144297	1.09		109	4806	
513.00 > 169.00	3.407	3.399	0.008	1.003	204633		5.59(2.36-7.09)		2719	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.547	3.537	0.010	1.000	1305282	1.89		75.6	23673	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.556	3.548	0.008	1.003	568076	1.03		103	5163	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.707	0.001	1.000	1357958	1.87		74.9	9637	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.709	-0.012	1.000	622947	0.9767		101	3918	
599.00 > 99.00	3.697	3.709	-0.012	1.000	211208		2.95(1.39-4.16)		1883	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.718	-0.010	1.000	2002545	1.90		76.0	50530	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.718	3.720	-0.002	1.003	581018	1.17		117	10932	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.720	-0.012	1.000	692503	1.08		108	2158	
563.00 > 169.00	3.708	3.720	-0.012	1.000	175531		3.95(2.12-6.36)		5302	
35 MeFOSA										
512.00 > 169.00	3.865	3.875	-0.010		179474	NC			1147	
D 36 13C2 PFDoA										
615.00 > 570.00	4.008	4.008	0.0	1.000	2282230	1.95		77.8	27700	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.008	4.020	-0.012	1.000	1064101	1.08		108	926	
613.00 > 169.00	4.008	4.020	-0.012	1.000	259439		4.10(2.13-6.40)		3666	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.271	4.282	-0.011	1.000	1080687	1.02		102	746	
663.00 > 169.00	4.271	4.282	-0.011	1.000	326359		3.31(1.25-3.76)		2813	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.511	0.0	1.000	2838950	1.90		76.2	16791	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.511	4.522	-0.011	1.000	296745	1.05		105	2771	
713.00 > 219.00	4.500	4.522	-0.022	0.998	221988		1.34(0.71-2.13)		2943	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.922	4.922	0.0	1.000	4354093	1.89		75.7	11144	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.922	4.932	-0.010	1.000	1820092	NC			514	
813.00 > 169.00	4.922	4.932	-0.010	1.000	297136		6.13(2.86-8.58)		1603	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.277	5.285	-0.008	1.000	2061072	NC			435	
913.00 > 169.00	5.277	5.285	-0.008	1.000	253089		8.14(3.83-11.48)		1644	

QC Flag Legend

Processing Flags

NC - Not Calibrated

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 09-Apr-2018 08:26:52 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b\2018.04.07LLA_011.d

Injection Date: 07-Apr-2018 09:55:57 Instrument ID: A8_N

Lims ID: 320-36960-A-4-C MSD

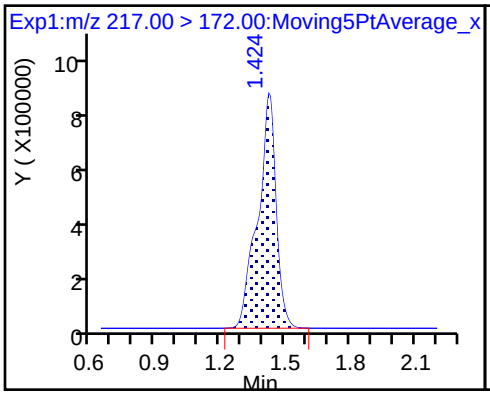
Client ID: BNA01-SB1-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8

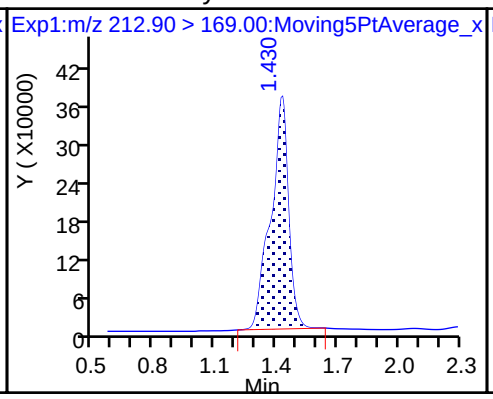
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

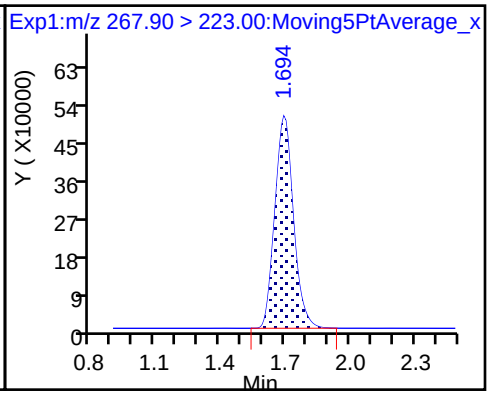
D 1 13C4 PFBA



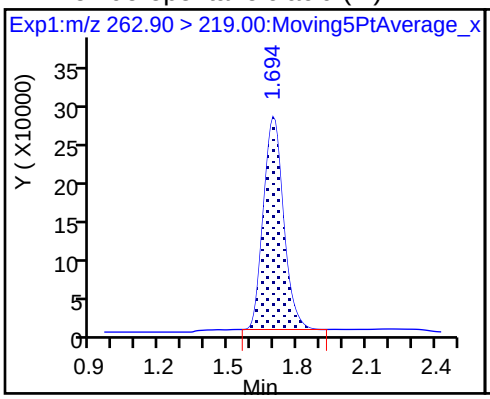
2 Perfluorobutyric acid



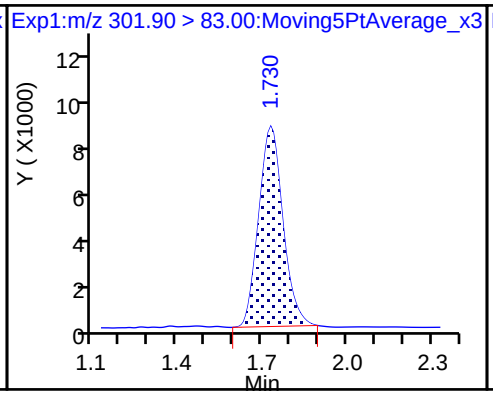
D 3 13C5-PFPeA



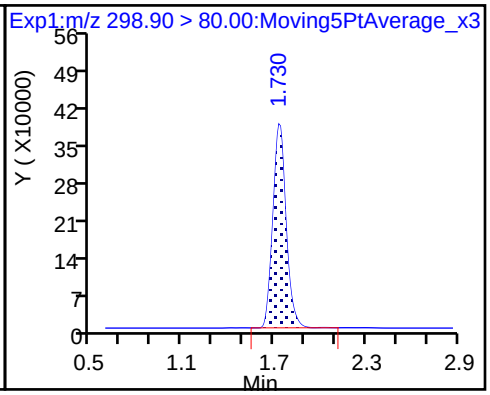
4 Perfluoropentanoic acid (M)



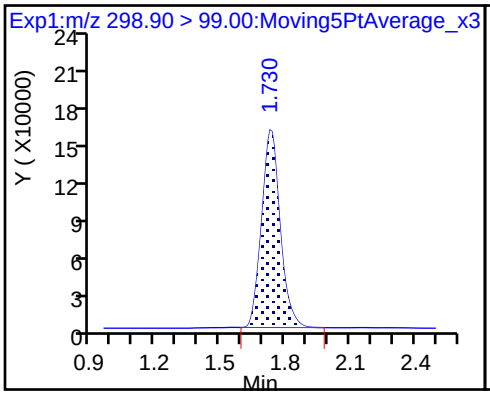
D 47 13C3-PFBS



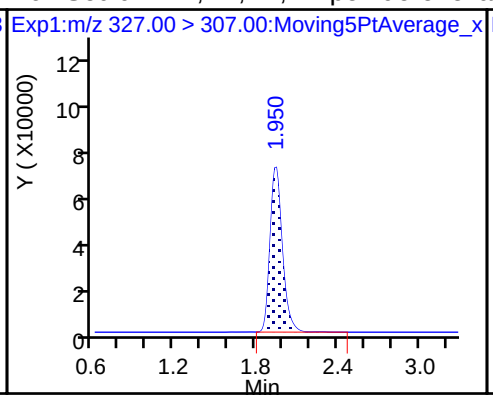
5 Perfluorobutanesulfonic acid



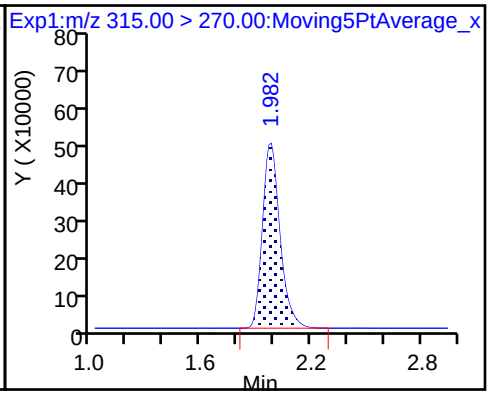
5 Perfluorobutanesulfonic acid



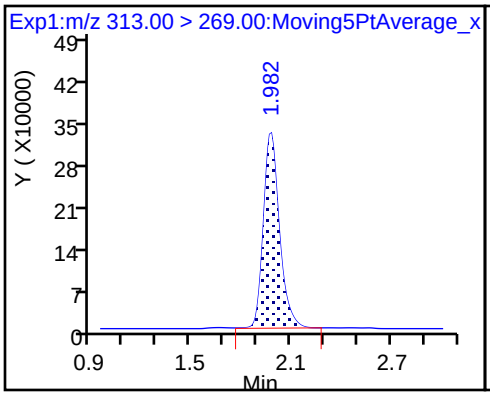
61 Sodium 1H,1H,2H,2H-perfluorohexa



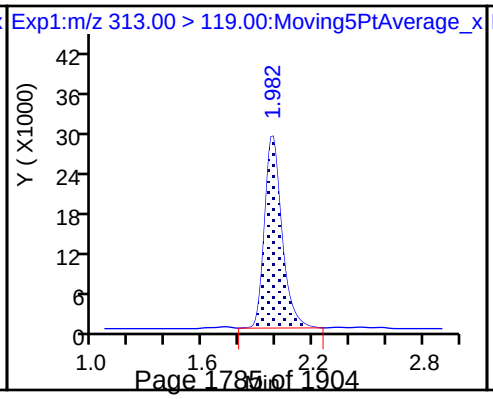
De 7 13C2 PFHxA



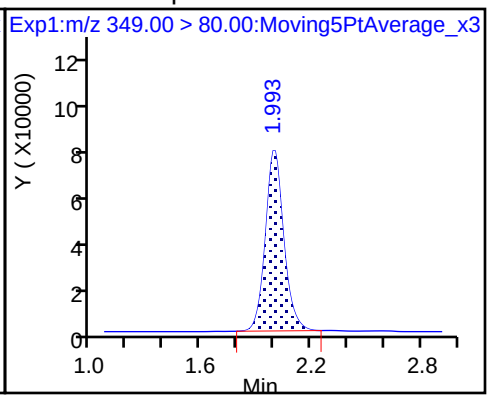
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid



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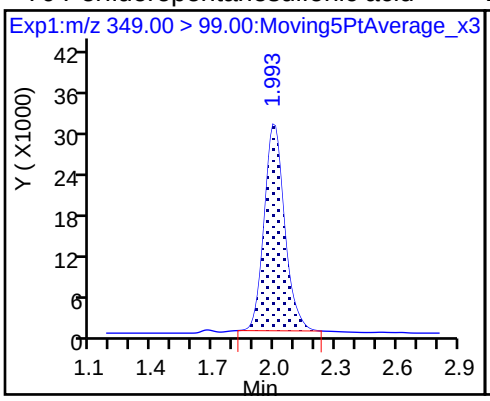
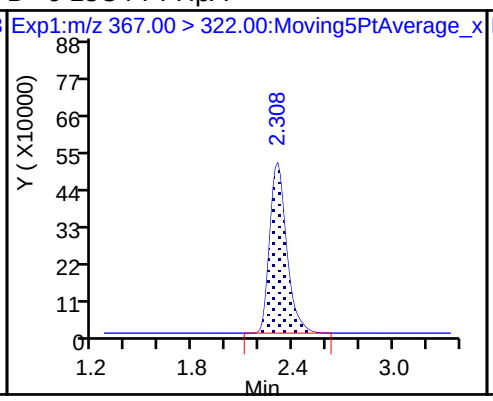
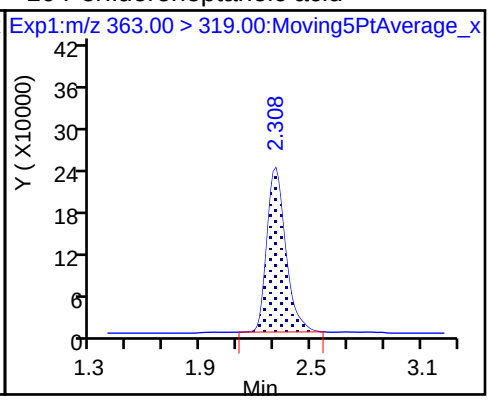


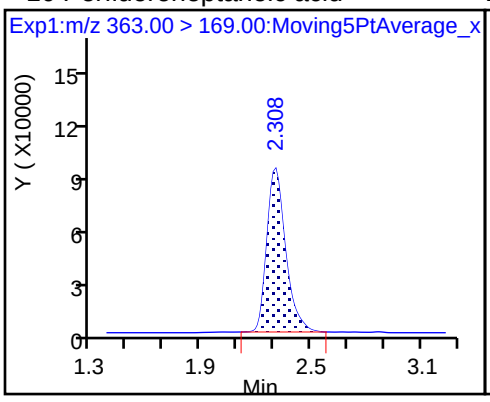
D 9 13C4-PFHpA



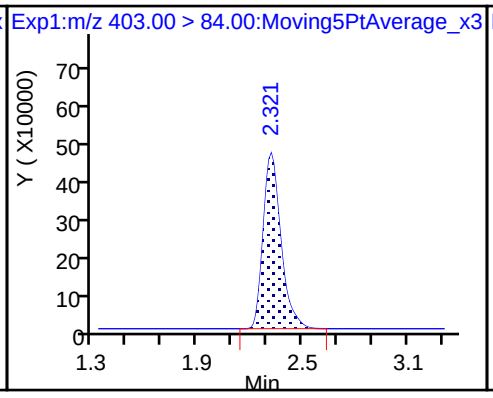
10 Perfluoroheptanoic acid



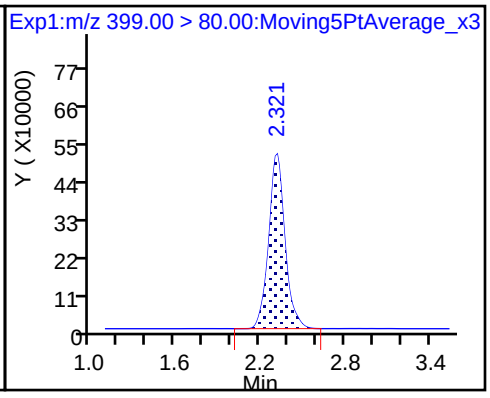
10 Perfluoroheptanoic acid



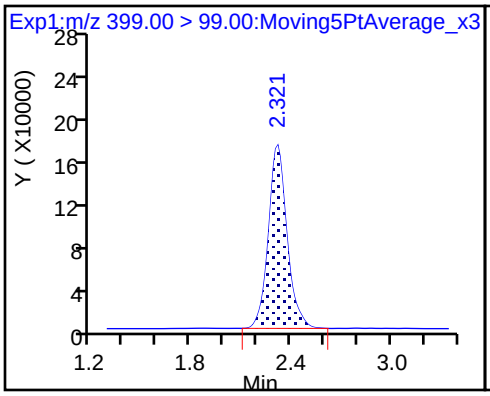
D 11 18O2 PFHxS



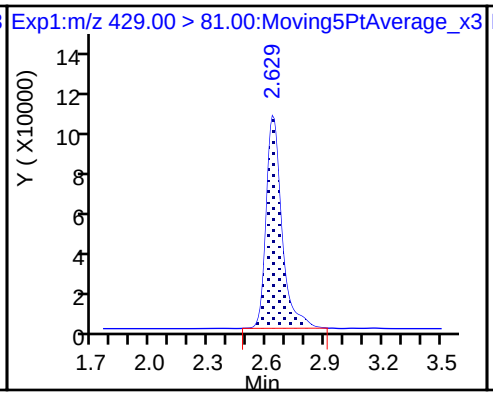
8 Perfluorohexanesulfonic acid



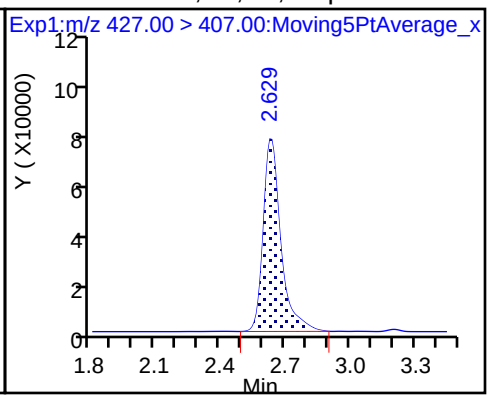
8 Perfluorohexanesulfonic acid



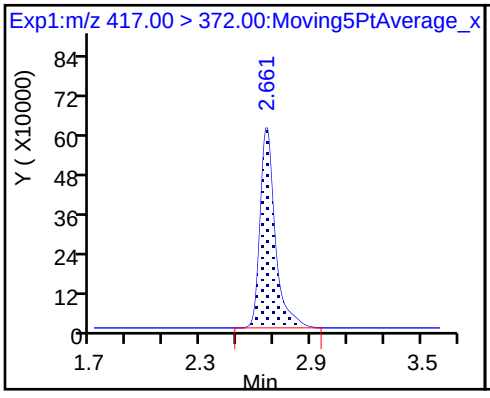
D 12 M2-6:2FTS



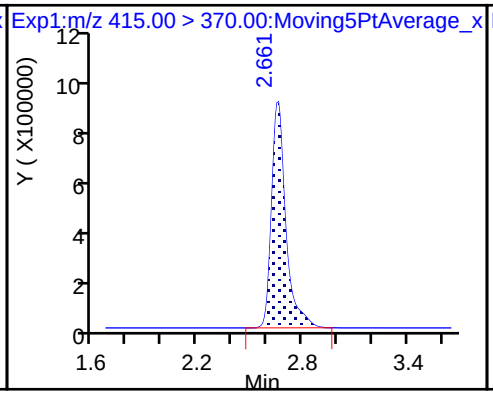
13 Sodium 1H,1H,2H,2H-perfluorooctane



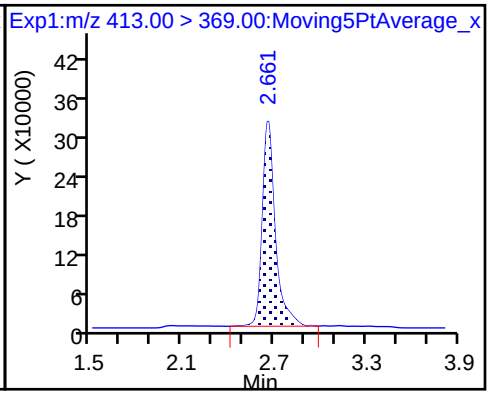
D 14 13C4 PFOA



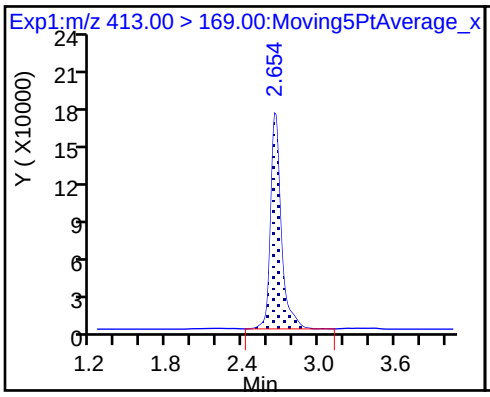
* 62 13C2-PFOA



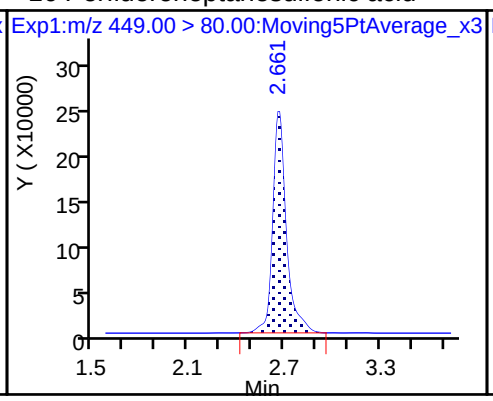
15 Perfluorooctanoic acid



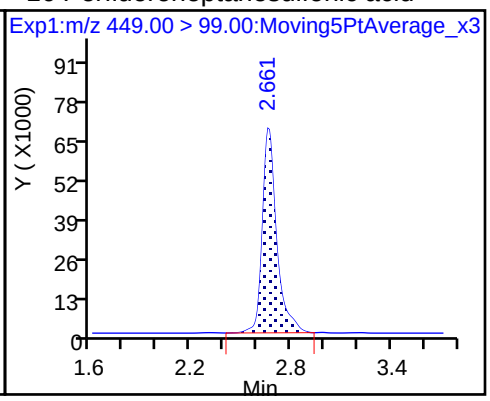
15 Perfluorooctanoic acid



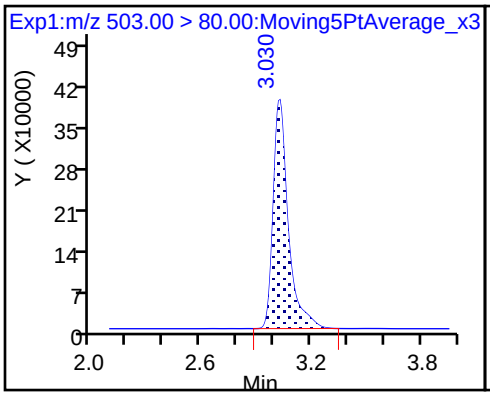
16 Perfluoroheptanesulfonic acid



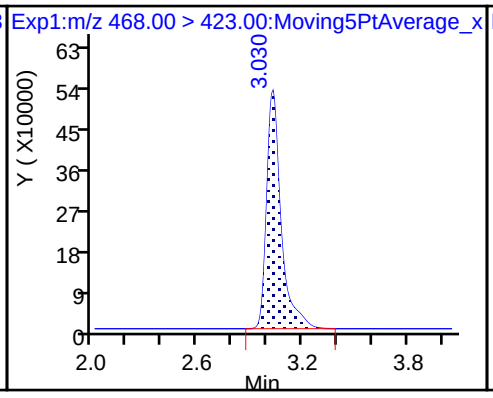
16 Perfluoroheptanesulfonic acid



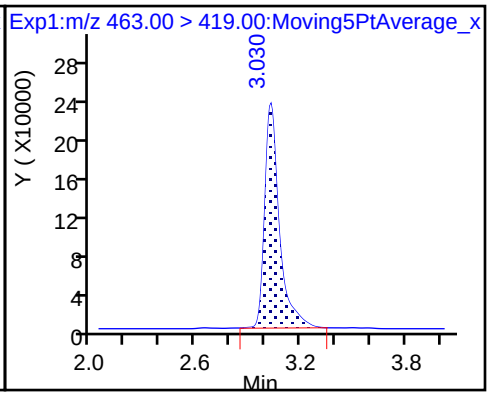
D 18 13C4 PFOS



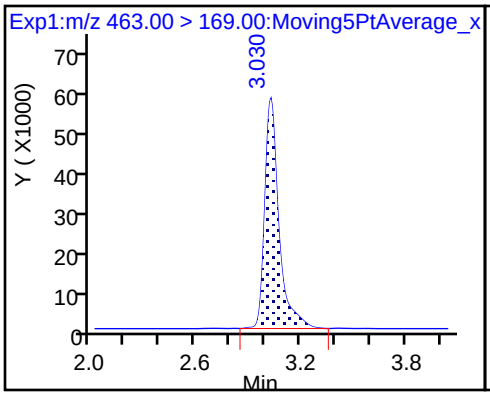
D 19 13C5 PFNA



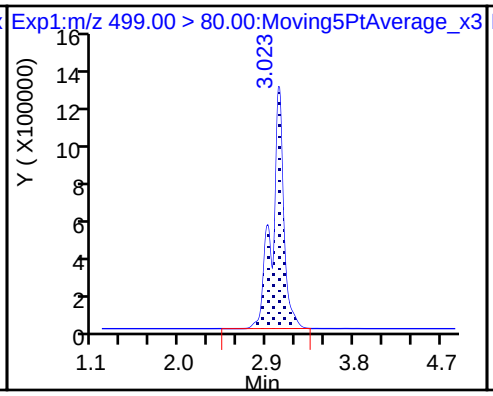
20 Perfluorononanoic acid



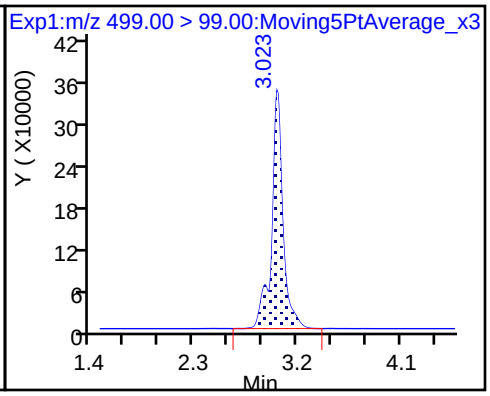
20 Perfluorononanoic acid



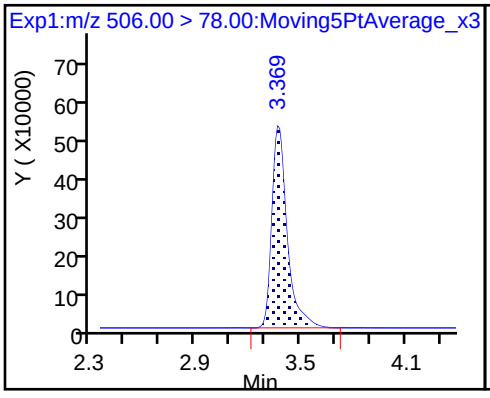
17 Perfluorooctane sulfonic acid



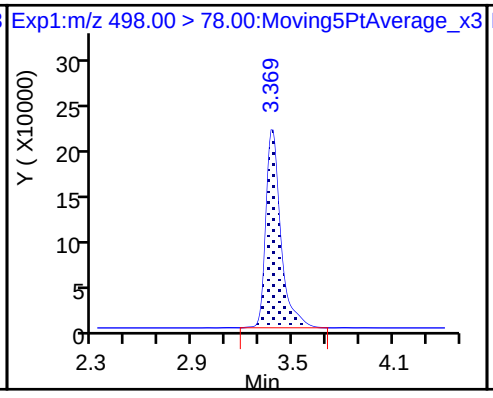
17 Perfluorooctane sulfonic acid



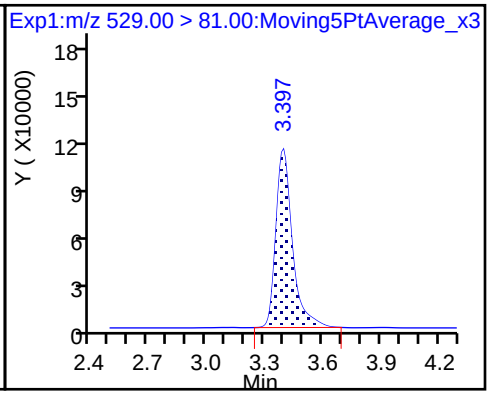
D 21 13C8 FOSA



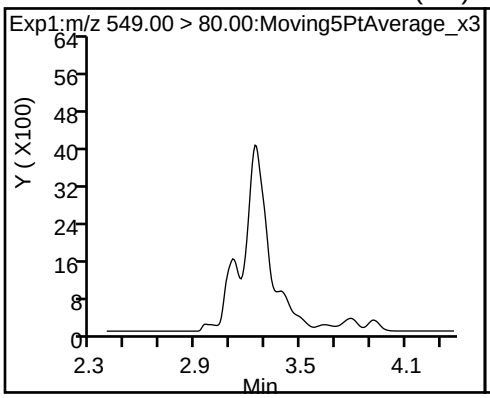
22 Perfluorooctane Sulfonamide



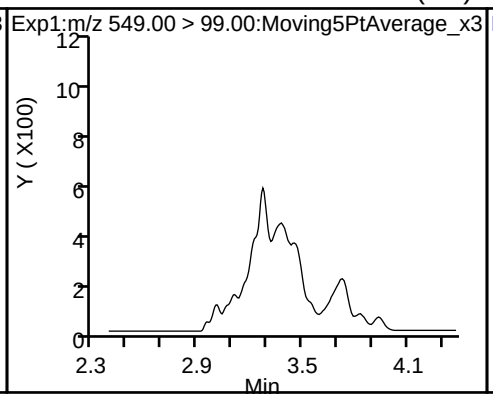
D 26 M2-8:2FTS



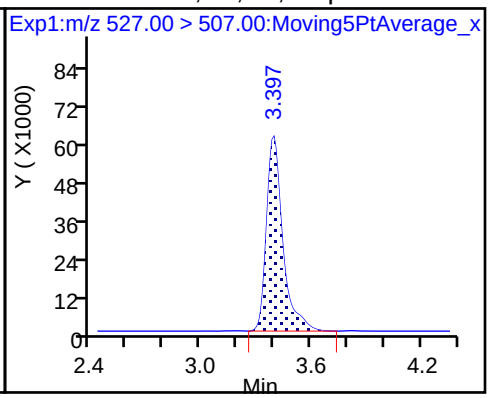
68 Perfluorononanesulfonic acid (ND)



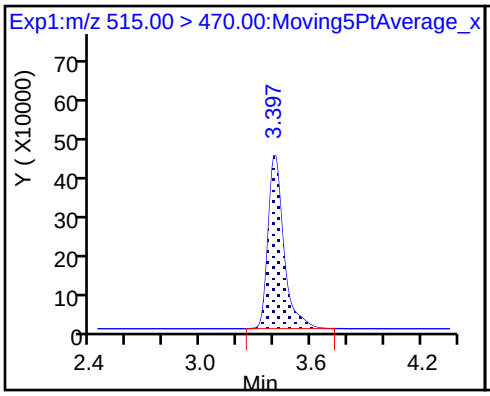
68 Perfluorononanesulfonic acid (ND)



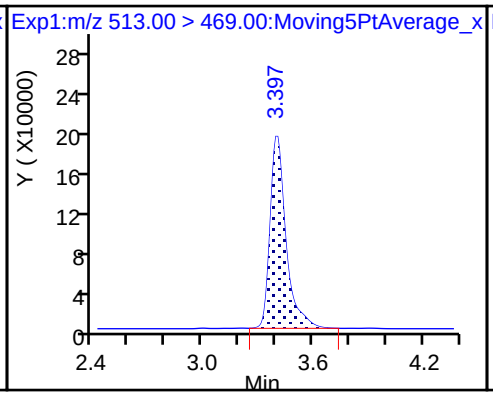
25 Sodium 1H,1H,2H,2H-perfluorodecane



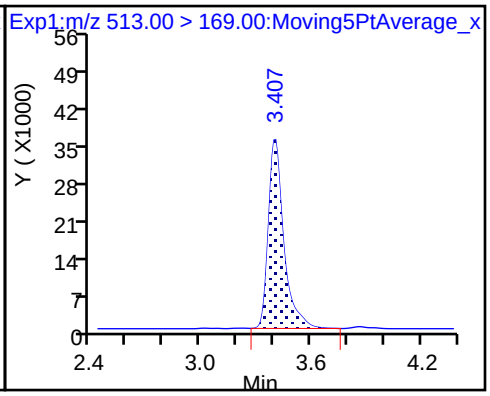
D 23 13C2 PFDA



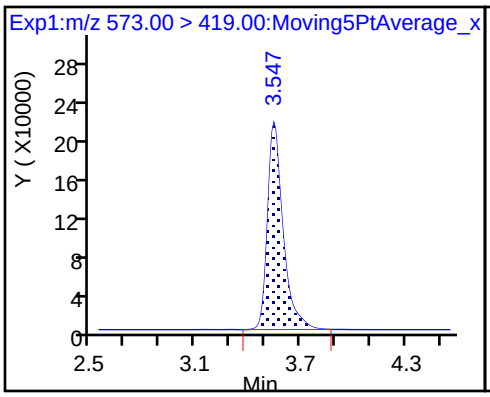
24 Perfluorodecanoic acid



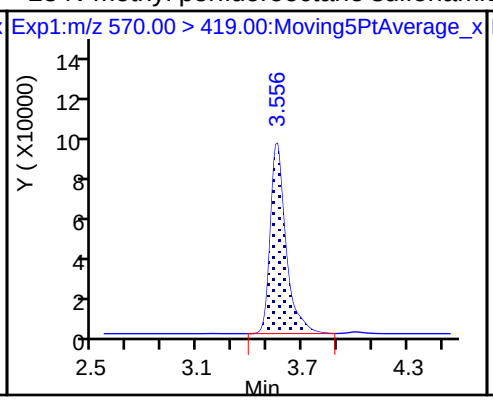
24 Perfluorodecanoic acid



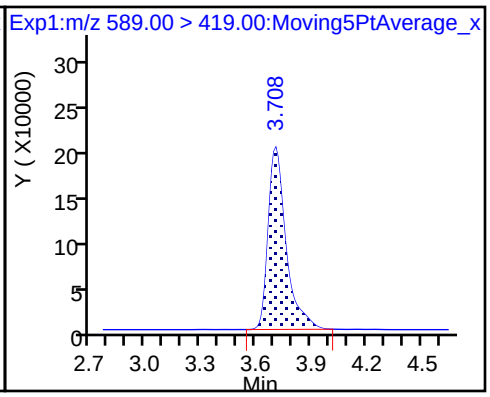
D 27 d3-NMeFOSAA



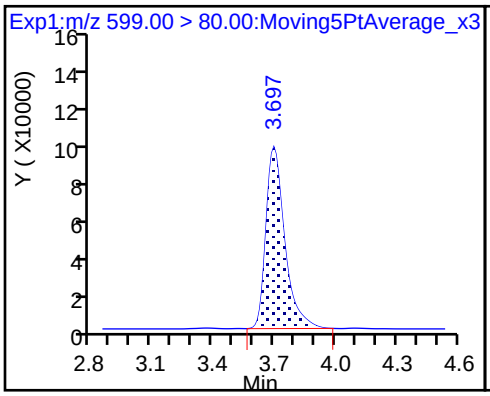
28 N-methyl perfluorooctane sulfonami



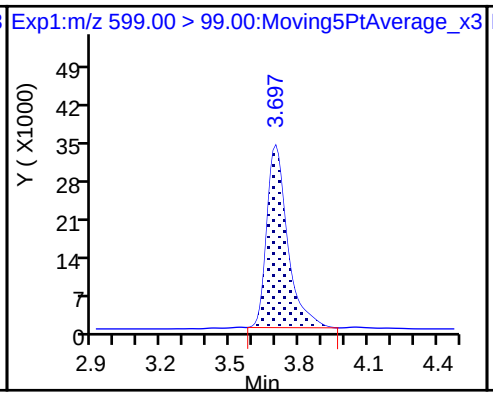
D 32 d5-NEtFOSAA



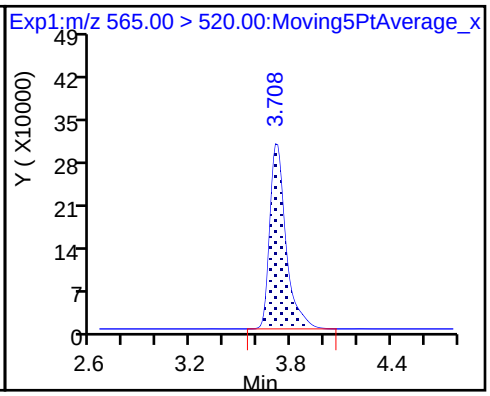
29 Perfluorodecane Sulfonic acid



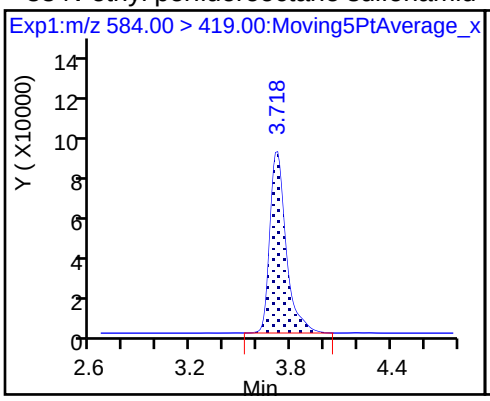
29 Perfluorodecane Sulfonic acid



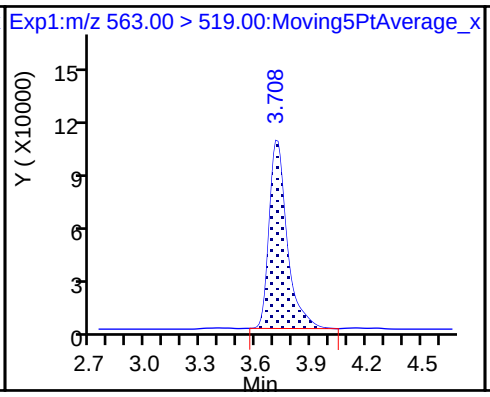
D 30 13C2 PFUnA



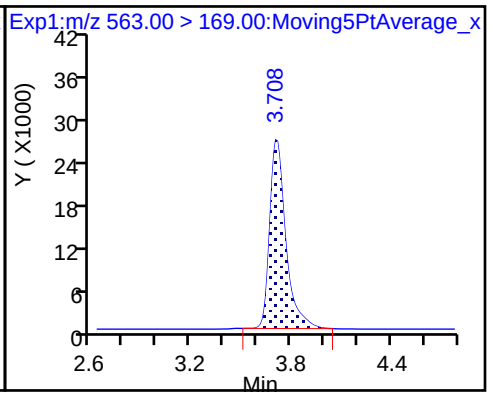
33 N-ethyl perfluorooctane sulfonamid



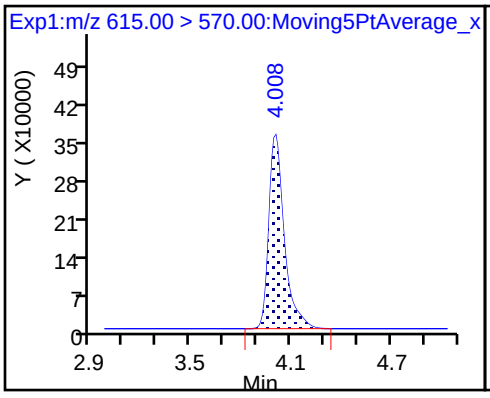
31 Perfluoroundecanoic acid



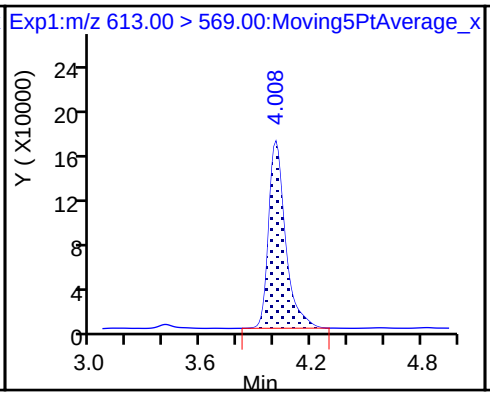
31 Perfluoroundecanoic acid



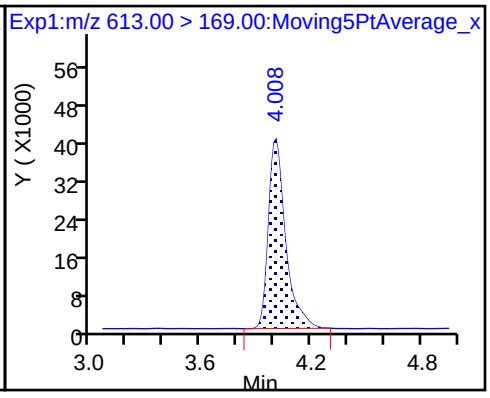
D 36 13C2 PFDoA



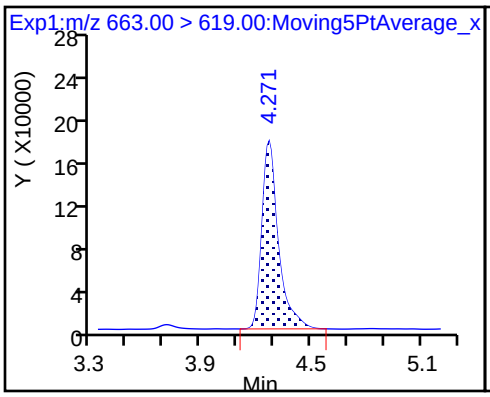
37 Perfluorododecanoic acid



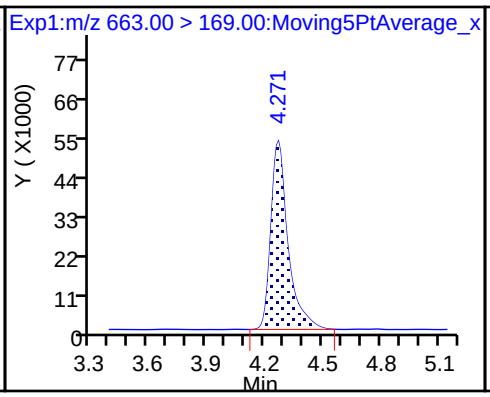
37 Perfluorododecanoic acid



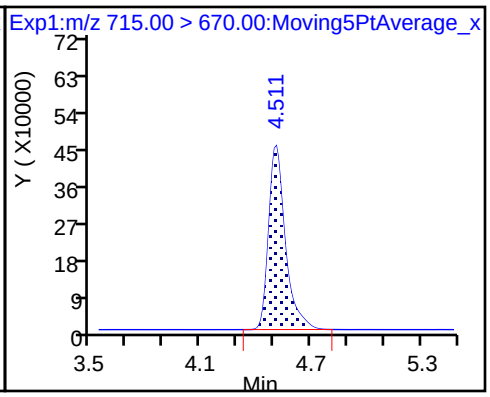
41 Perfluorotridecanoic acid



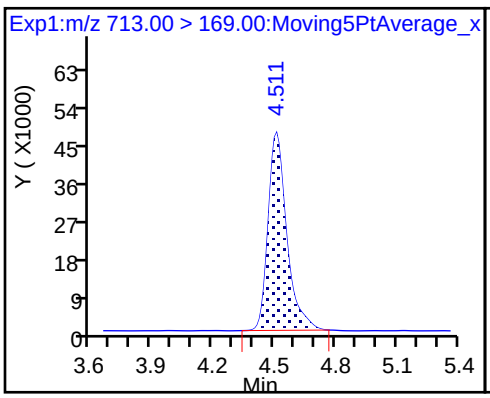
41 Perfluorotridecanoic acid



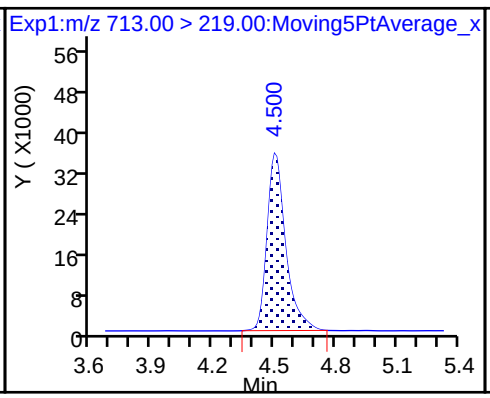
D 43 13C2-PFTeDA



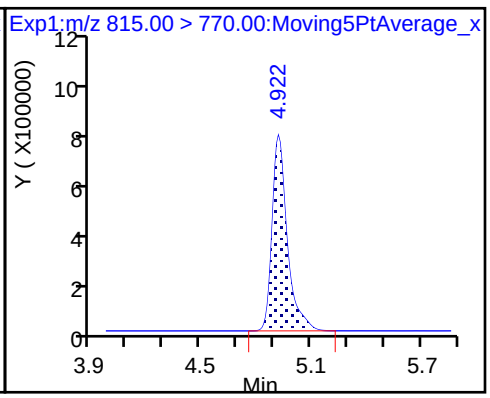
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: BNA01-SB1-01 MSD DL | Lab Sample ID: 320-36960-4 MSD DL

Matrix: Solid | Lab File ID: 2018.04.07LLA1_028.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/05/2018 14:15

Extraction Method: SHAKE | Date Extracted: 03/16/2018 11:19

Sample wt/vol: 4.96(g) | Date Analyzed: 04/07/2018 12:16

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 5

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 19.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 216849 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	*Perfluoroheptanoic acid (PFHpA)*	*3.15*	*D J1*	*1.9*	1.3	*0.49*
335-67-1	*Perfluorooctanoic acid (PFOA)*	*2.87*	*D M*	*1.9*	1.3	*0.63*
375-95-1	*Perfluorononanoic acid (PFNA)*	*2.78*	*D*	*1.9*	1.3	*0.51*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*3.67*	*D*	*2.5*	1.1	*0.37*
355-46-4	*Perfluorohexanesulfonic acid (PFHxS)*	*6.58*	*D J1*	*1.9*	1.3	*0.39*
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26.0	D M 4	6.3	3.1	1.5

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	50		50-150
STL01892	13C4-PFHpA	70		50-150
STL00990	13C4 PFOA	75		50-150
STL00995	13C5 PFNA	78		50-150
STL00994	18O2 PFHxS	61		50-150
STL00991	13C4 PFOS	58		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_028.d
Lims ID: 320-36960-A-4-C MSD
Client ID: BNA01-SB1-01
Sample Type: MSD
Inject. Date: 07-Apr-2018 12:16:54 ALS Bottle#: 20 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 5.0000
Sample Info: 320-36960-a-4-c msd 5X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 09-Apr-2018 08:30:34 Calib Date: 29-Mar-2018 18:14:21
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180330-56010.b\2018.03.29A_ICALB_008.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 09-Apr-2018 08:30:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.424	0.006	1.000	899039	0.3521		70.4	11432	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.424	0.006	1.000	426232	0.2565		128	167	
D 3 13C5-PFPeA										
267.90 > 223.00	1.693	1.693	0.0	0.558	592096	0.3563		71.3	17378	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.702	1.693	0.009	1.005	326386	0.2303		115	179	M
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.729	0.0	1.000	8905	0.2340		50.3	56.6	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.738	1.729	0.009	1.005	441374	0.2921		165	1729	
298.90 > 99.00	1.738	1.729	0.009	1.005	186818		2.36(1.25-3.74)		1105	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.948	1.938	0.010	1.000	65294	0.1976		106	3430	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.970	0.011	1.000	646617	0.3529		70.6	17228	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.981	1.970	0.011	1.000	420780	0.3180		159	766	M
313.00 > 119.00	1.981	1.970	0.011	1.000	38411		10.95(5.03-15.10)		562	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.003	1.992	0.011	1.000	101016	0.0741		0.0	736	
349.00 > 99.00	2.003	1.992	0.011	1.000	42597		2.37(1.36-4.07)		530	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.082	2.071	0.011	1.000	34932	NC			778	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.307	-0.001	1.000	614340	0.3488		69.8	14418	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.307	-0.001	1.000	334761	0.2508		125	364	
363.00 > 169.00	2.319	2.307	0.012	1.006	127455		2.63(1.13-3.40)		429	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.307	0.012	1.000	780588	0.5234		288	2195	
399.00 > 99.00	2.319	2.307	0.012	1.000	248060		3.15(1.50-4.49)		1009	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.320	-0.001	1.000	631523	0.2876		60.8	18177	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.629	0.007	1.000	98001	0.2408		50.7	1147	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.644	2.629	0.015	1.003	73884	0.1917		101	742	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.653	0.014	1.000	652120	0.3766		75.3	16909	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.653	0.014		923834	0.5000			23508	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.667	2.660	0.007	1.000	352593	0.2280		114	134	M
413.00 > 169.00	2.667	2.660	0.007	1.000	185262		1.90(0.84-2.52)		592	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.675	2.660	0.015	1.000	286573	0.2437		128	2338	
449.00 > 99.00	2.675	2.660	0.015	1.000	68687		4.17(1.94-5.82)		763	
D 18 13C4 PFOS										
503.00 > 80.00	3.035	3.023	0.012	1.000	421696	0.2764		57.8	2851	
D 19 13C5 PFNA										
468.00 > 423.00	3.035	3.023	0.012	1.000	570645	0.3895		77.9	17659	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.035	3.023	0.012	1.000	2082652	2.07		1113	8619	M
499.00 > 99.00	3.029	3.023	0.006	0.998	451129		4.62(2.31-6.93)		7681	
20 Perfluorononanoic acid										
463.00 > 419.00	3.035	3.023	0.012	1.000	259469	0.2209		110	570	
463.00 > 169.00	3.035	3.023	0.012	1.000	62160		4.17(1.90-5.69)		1629	
D 21 13C8 FOSA										
506.00 > 78.00	3.366	3.359	0.007	1.000	613868	0.2848		57.0	12639	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.366	3.359	0.007	1.000	262145	0.2162		108	5492	
D 26 M2-8:2FTS										
529.00 > 81.00	3.385	3.369	0.016	1.000	125473	0.2651		55.3	1081	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.385	3.378	0.007	1.000	71167	0.2014		105	2371	
D 23 13C2 PFDA										
515.00 > 470.00	3.394	3.387	0.007	1.000	477462	0.3858		77.2	15905	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.394	3.387	0.007	1.000	215037	0.2276		114	803	
513.00 > 169.00	3.394	3.387	0.007	1.000	45931		4.68(2.36-7.09)		1050	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.544	3.537	0.007	1.000	237534	0.3588		71.8	4671	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.553	3.546	0.007	1.003	113219	0.2261		113	2645	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.705	3.696	0.009	1.000	119339	0.1950		101	968	
599.00 > 99.00	3.705	3.696	0.009	1.000	42737		2.79(1.39-4.16)		767	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.715	3.707	0.008	1.000	264547	0.3808		76.2	1859	
D 30 13C2 PFUnA										
565.00 > 520.00	3.726	3.718	0.008	1.000	413950	0.4098		82.0	9109	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.726	3.718	0.008	1.000	137535	0.2070		104	420	
563.00 > 169.00	3.715	3.718	-0.003	0.997	31880		4.31(2.12-6.36)		636	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.715	3.718	-0.003	1.000	115723	0.2385		119	1457	
35 MeFOSA										
512.00 > 169.00	3.883	3.875	0.008		36665	NC			573	
D 36 13C2 PFDoA										
615.00 > 570.00	4.016	4.007	0.009	1.000	436815	0.3884		77.7	4995	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.016	4.007	0.009	1.000	193396	0.2048		102	213	
613.00 > 169.00	4.016	4.007	0.009	1.000	53062		3.64(2.13-6.40)		569	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.279	4.270	0.009	1.000	205713	0.2037		102	170	
663.00 > 169.00	4.279	4.270	0.009	1.000	61896		3.32(1.25-3.76)		516	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.520	4.511	0.009	1.000	526885	0.3688		73.8	3634	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.520	4.511	0.009	1.000	59643	0.2266		113	556	
713.00 > 219.00	4.509	4.511	-0.002	0.998	41514		1.44(0.71-2.13)		423	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.929	4.922	0.007	1.000	844407	0.3828		76.6	3264	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.929	4.922	0.007	1.000	357876	NC			140	
813.00 > 169.00	4.929	4.922	0.007	1.000	57447		6.23(2.86-8.58)		313	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.283	5.276	0.007	1.000	396929	NC			163	
913.00 > 169.00	5.290	5.276	0.014	1.001	44322		8.96(3.83-11.48)		245	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Report Date: 09-Apr-2018 08:33:50 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_028.d

Injection Date: 07-Apr-2018 12:16:54 Instrument ID: A8_N

Lims ID: 320-36960-A-4-C MSD

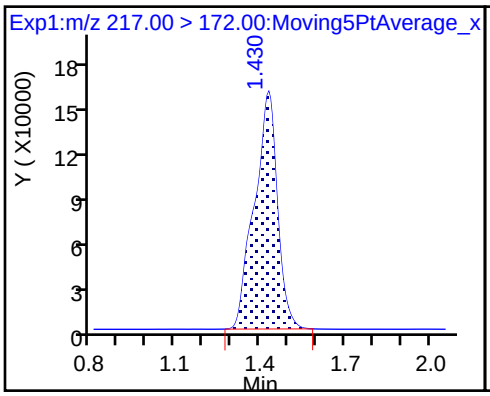
Client ID: BNA01-SB1-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 5

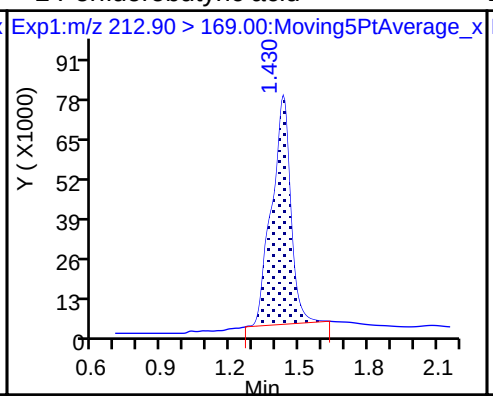
Injection Vol: 2.0 ul Dil. Factor: 5.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

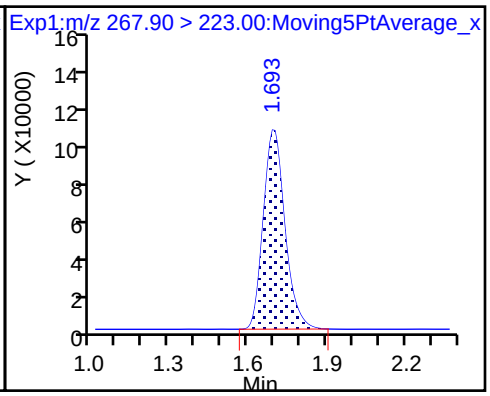
D 1 13C4 PFBA



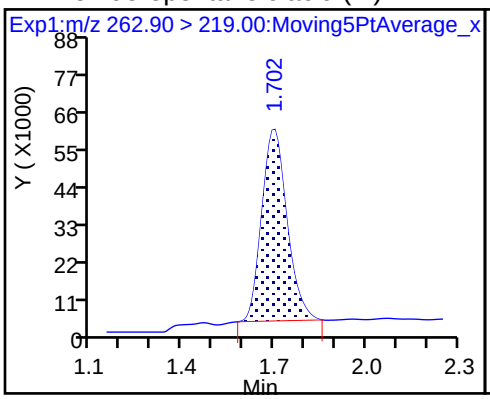
2 Perfluorobutyric acid



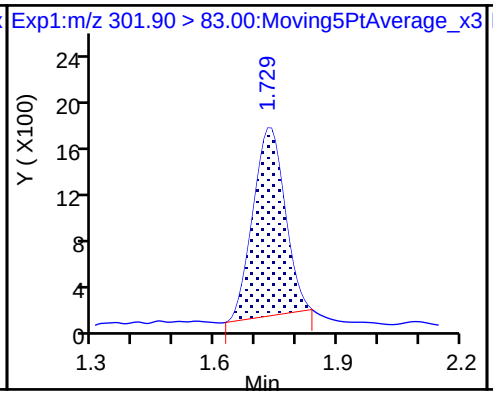
D 3 13C5-PFPeA



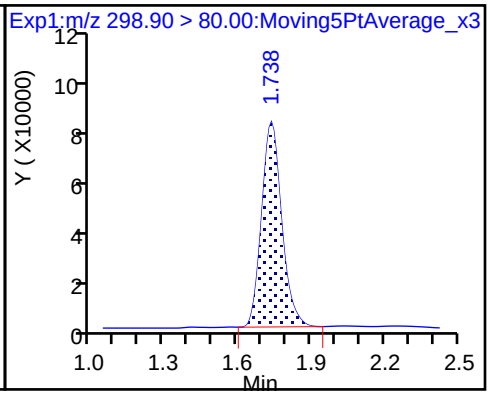
4 Perfluoropentanoic acid (M)



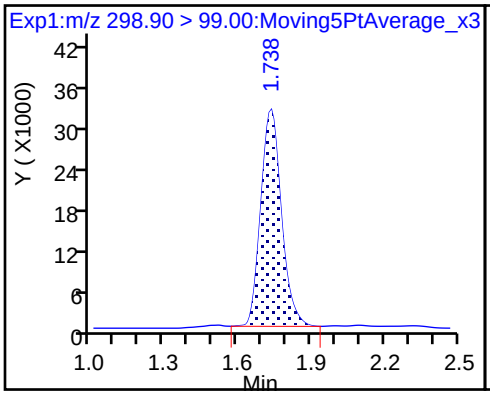
D 47 13C3-PFBS



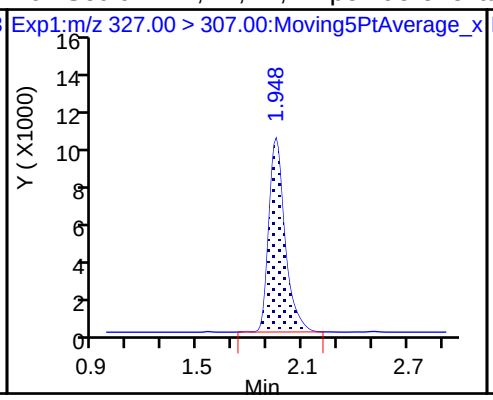
5 Perfluorobutanesulfonic acid



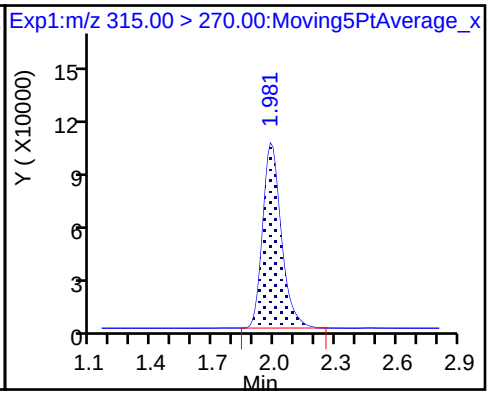
5 Perfluorobutanesulfonic acid



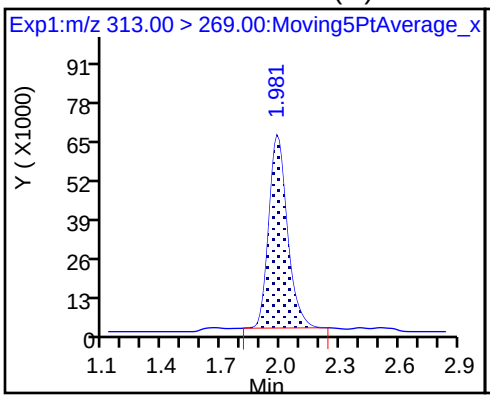
61 Sodium 1H,1H,2H,2H-perfluorohexa



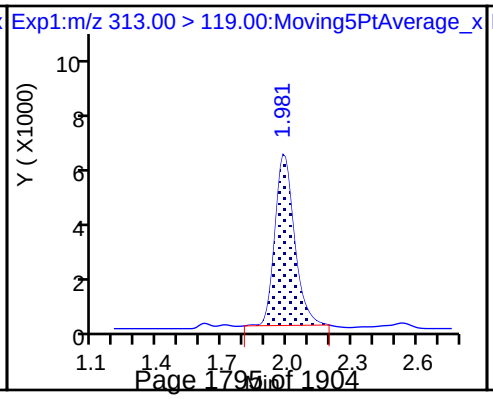
De 7 13C2 PFHxA



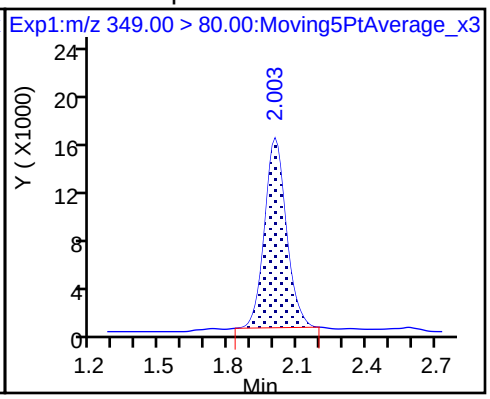
6 Perfluorohexanoic acid (M)



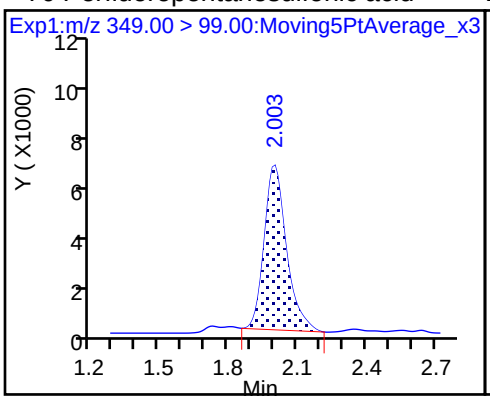
6 Perfluorohexanoic acid



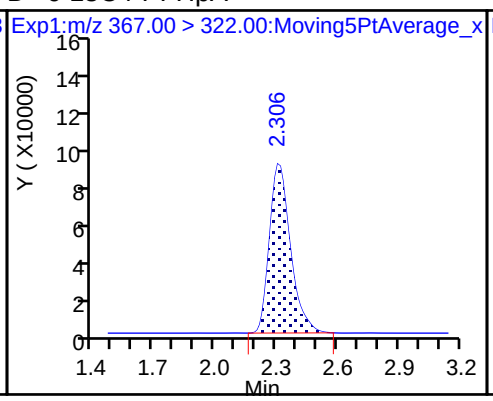
70 Perfluoropentanesulfonic acid



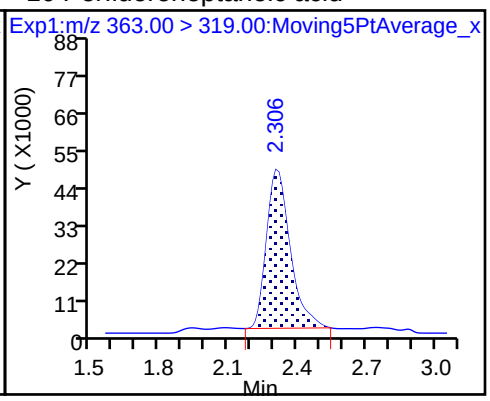
70 Perfluoropentanesulfonic acid



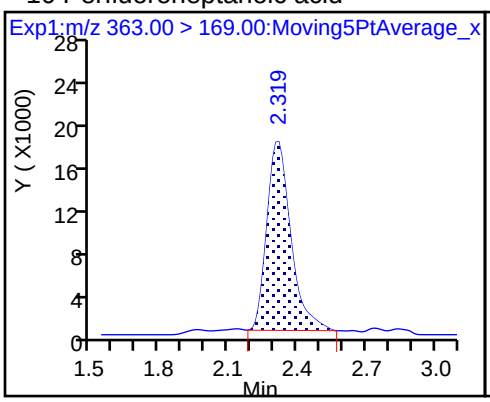
D 9 13C4-PFHpA



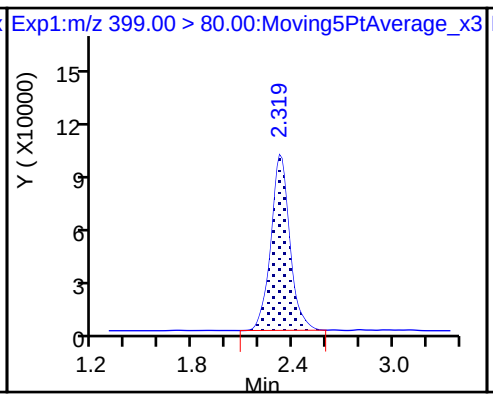
10 Perfluoroheptanoic acid



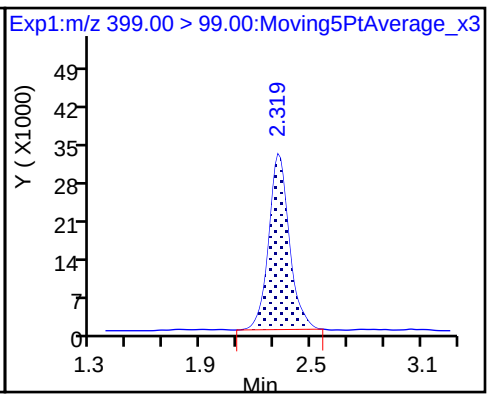
10 Perfluoroheptanoic acid



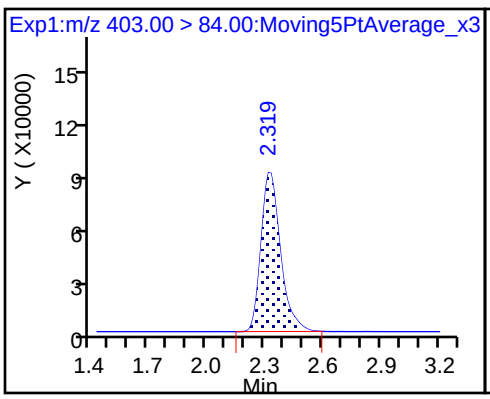
8 Perfluorohexanesulfonic acid



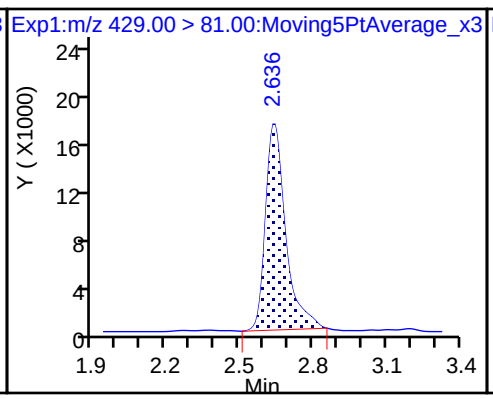
8 Perfluorohexanesulfonic acid



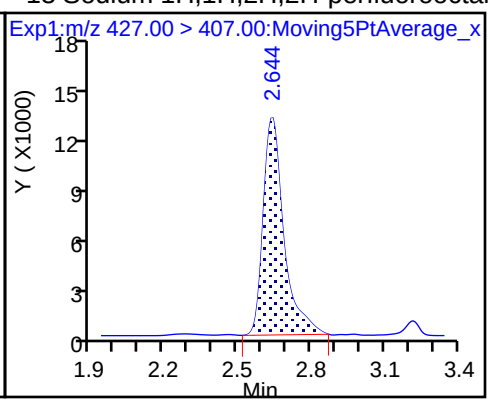
D 11 18O2 PFHxS



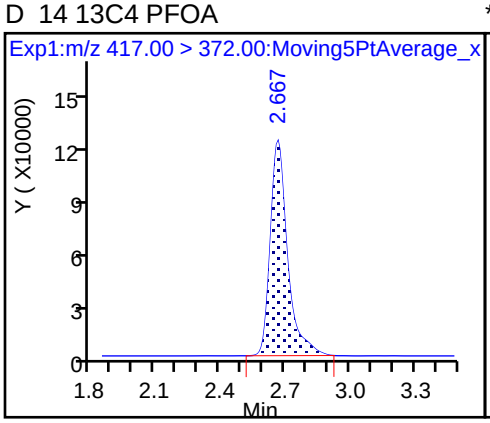
D 12 M2-6:2FTS



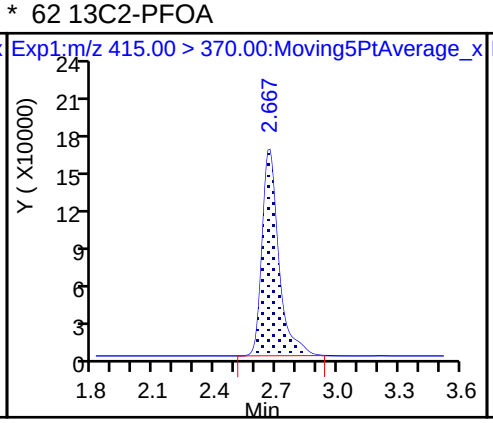
13 Sodium 1H,1H,2H,2H-perfluorooctane



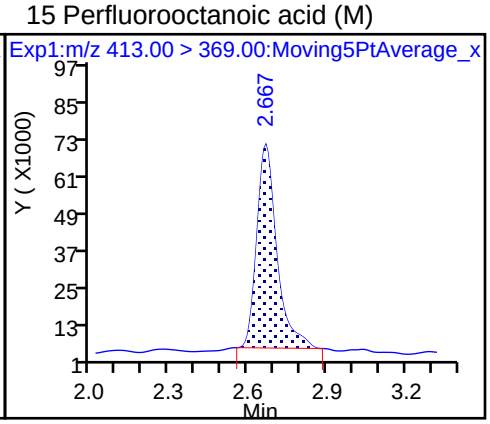
D 14 13C4 PFOA



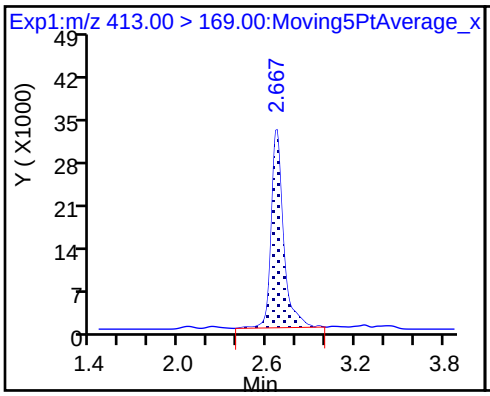
* 62 13C2-PFOA



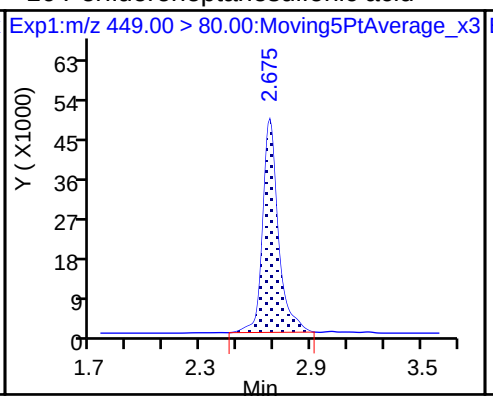
15 Perfluorooctanoic acid (M)



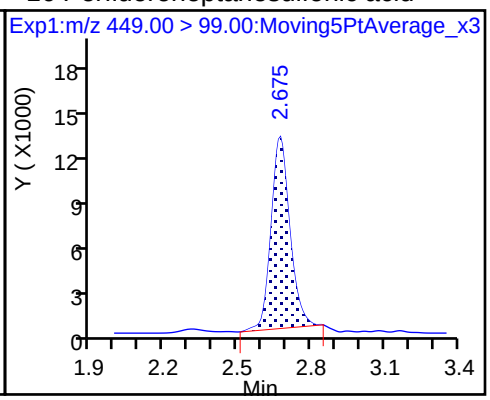
15 Perfluorooctanoic acid



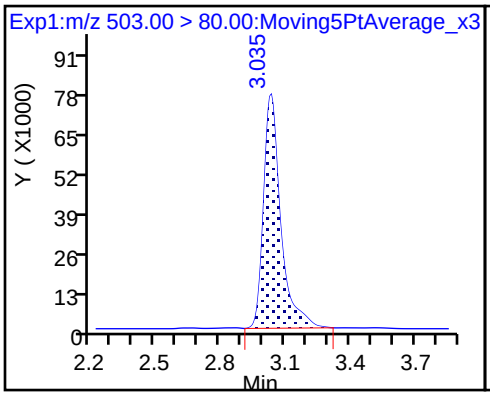
16 Perfluoroheptanesulfonic acid



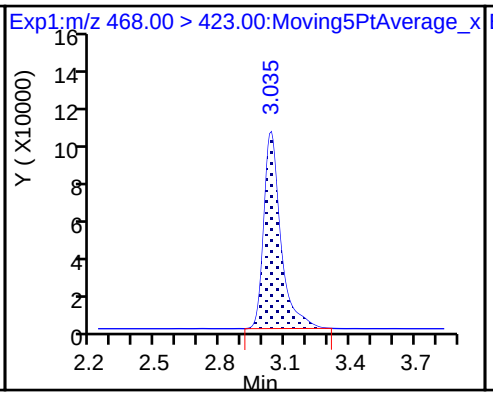
16 Perfluoroheptanesulfonic acid



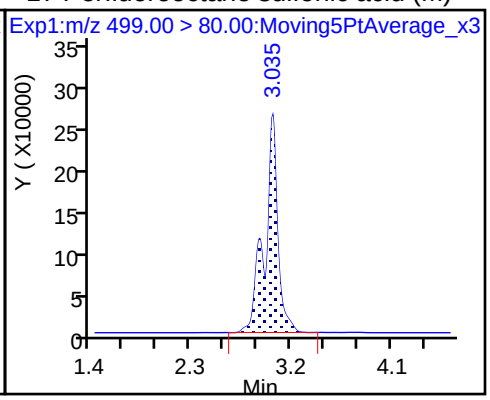
D 18 13C4 PFOS



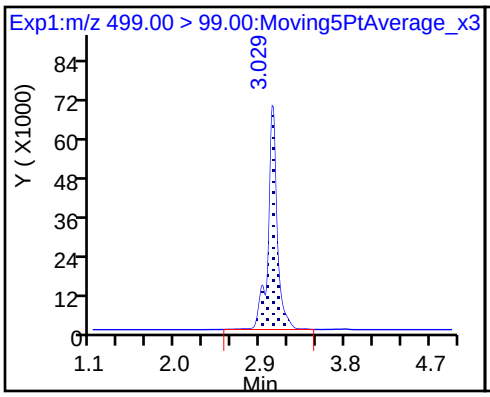
D 19 13C5 PFNA



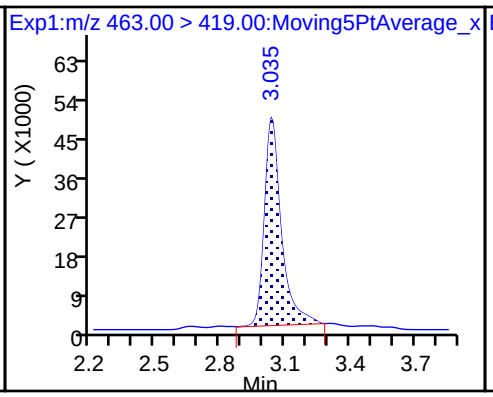
17 Perfluorooctane sulfonic acid (M)



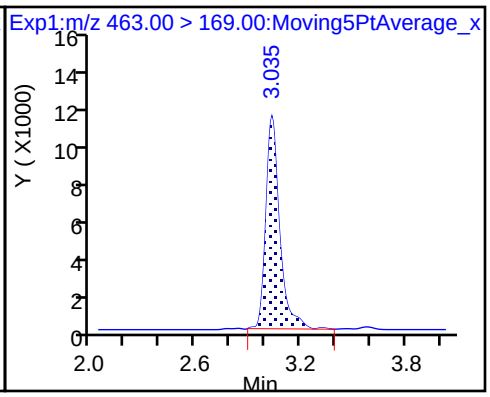
17 Perfluorooctane sulfonic acid



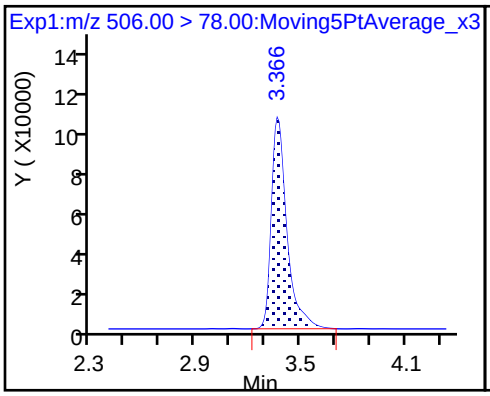
20 Perfluorononanoic acid



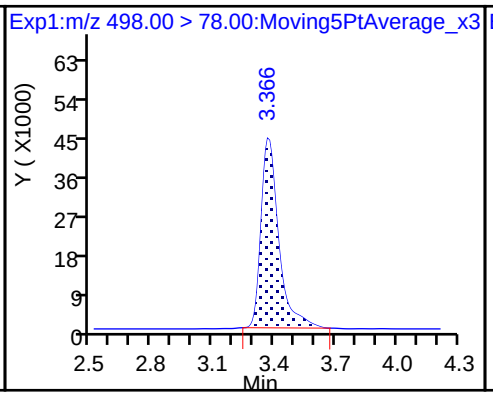
20 Perfluorononanoic acid



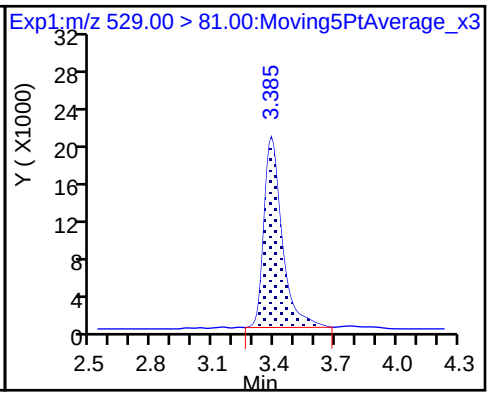
D 21 13C8 FOSA



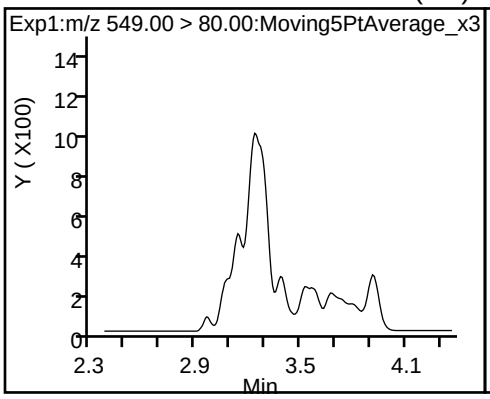
22 Perfluorooctane Sulfonamide



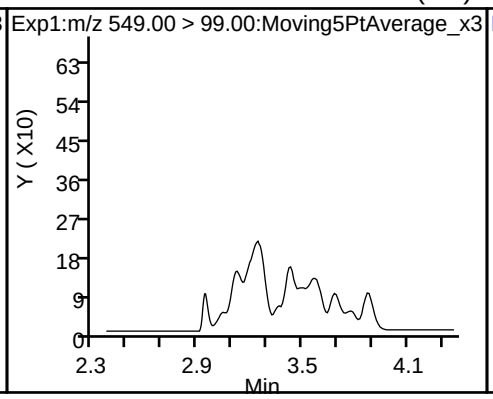
D 26 M2-8:2FTS



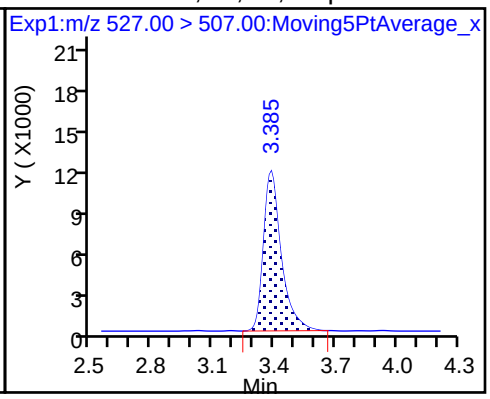
68 Perfluorononanesulfonic acid (ND)



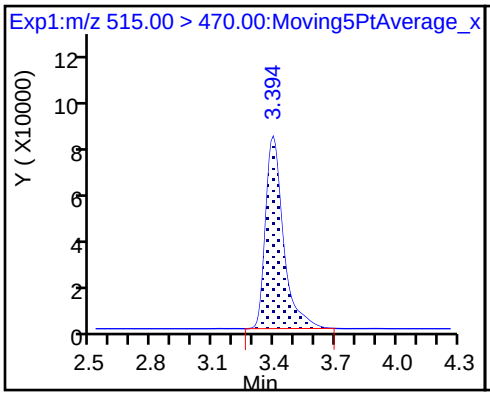
68 Perfluorononanesulfonic acid (ND)



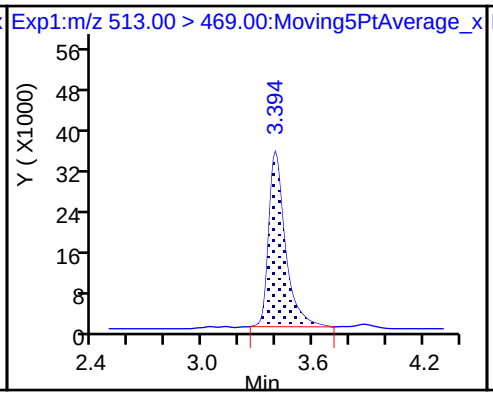
25 Sodium 1H,1H,2H,2H-perfluorodecane



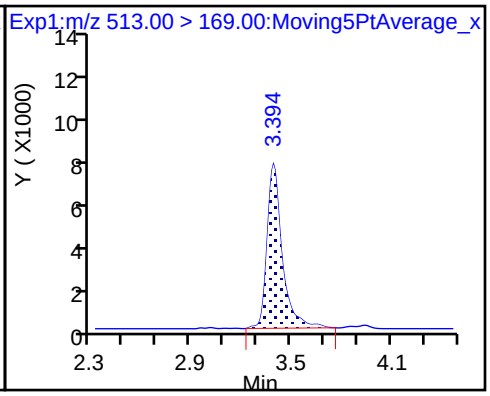
D 23 13C2 PFDA



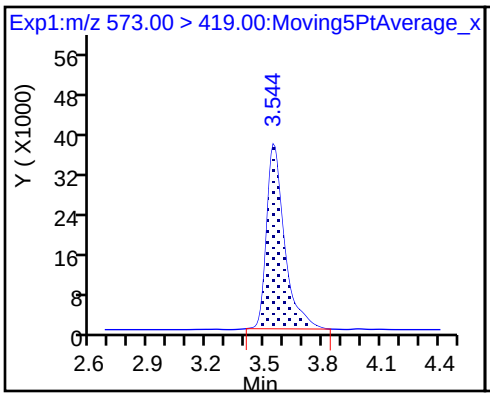
24 Perfluorodecanoic acid



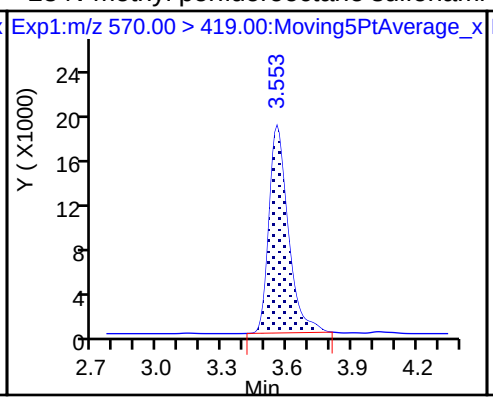
24 Perfluorodecanoic acid



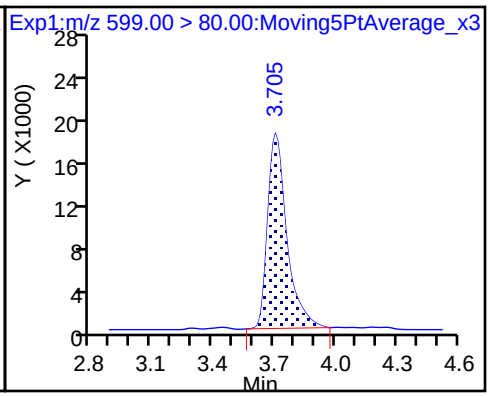
D 27 d3-NMeFOSAA



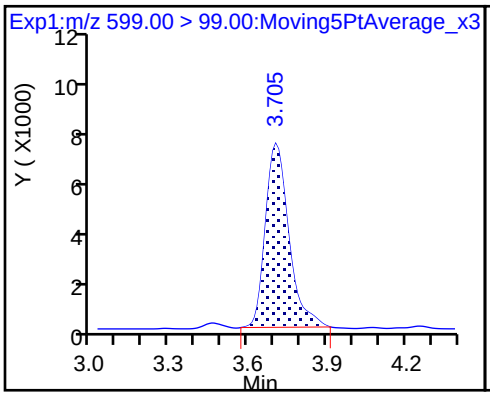
28 N-methyl perfluorooctane sulfonami



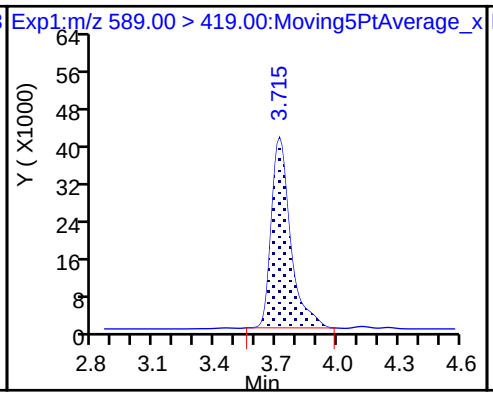
29 Perfluorodecane Sulfonic acid



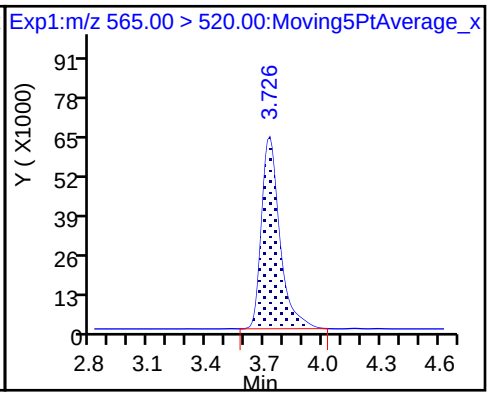
29 Perfluorodecane Sulfonic acid



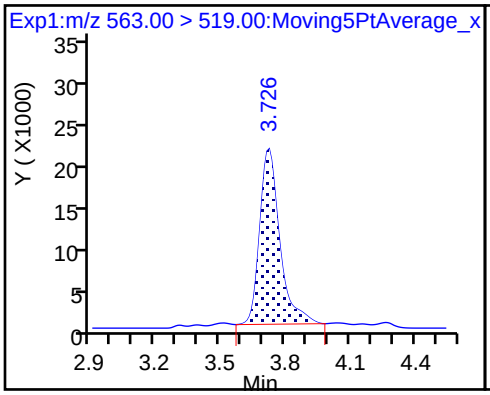
D 32 d5-NEtFOSAA



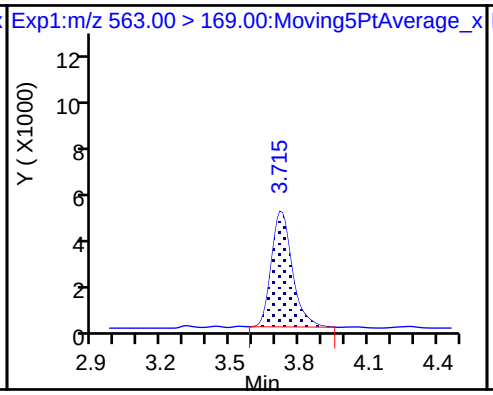
D 30 13C2 PFUnA



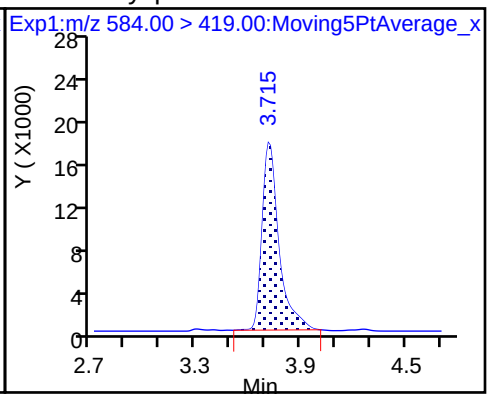
31 Perfluoroundecanoic acid



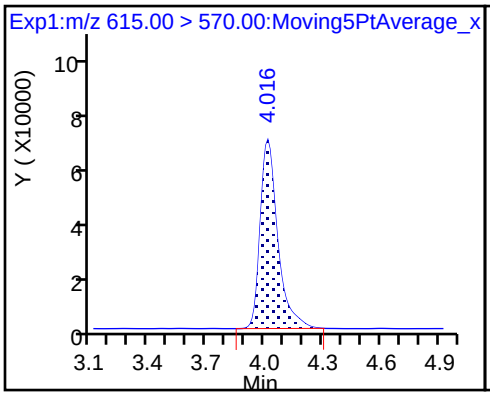
31 Perfluoroundecanoic acid



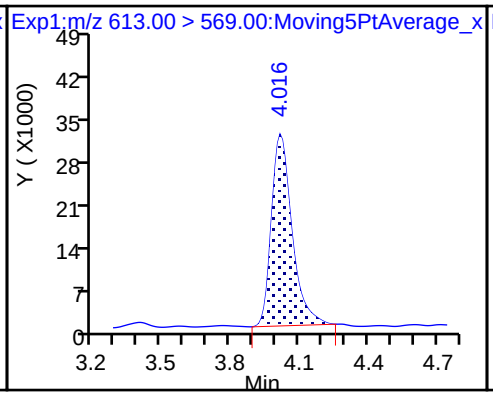
33 N-ethyl perfluorooctane sulfonamid



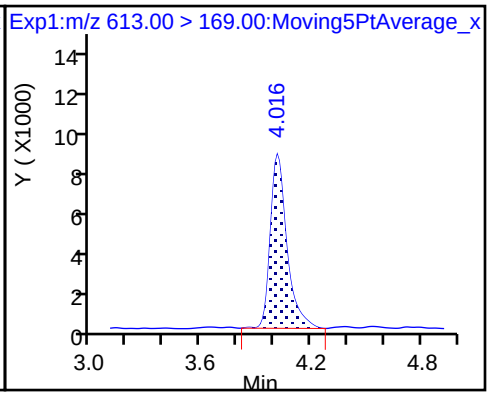
D 36 13C2 PFDoA



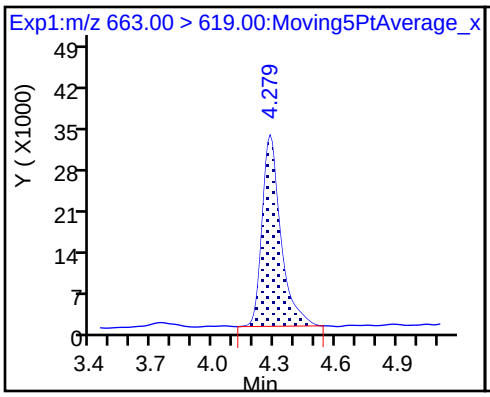
37 Perfluorododecanoic acid



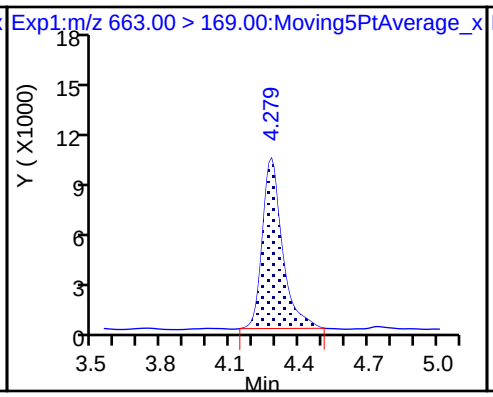
37 Perfluorododecanoic acid



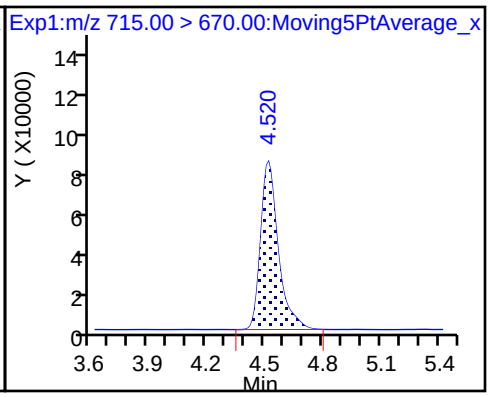
41 Perfluorotridecanoic acid



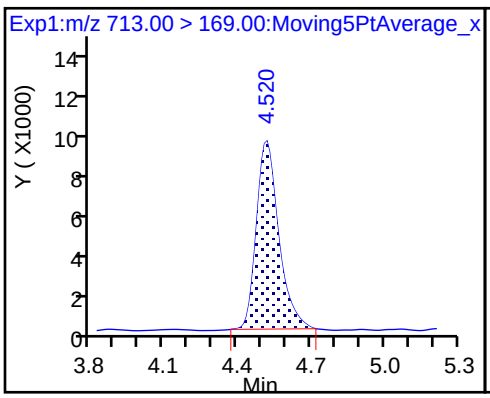
41 Perfluorotridecanoic acid



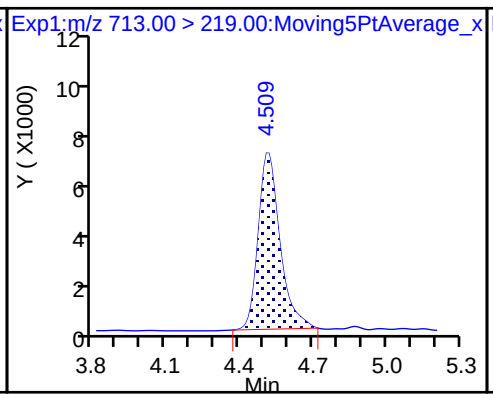
D 43 13C2-PFTeDA



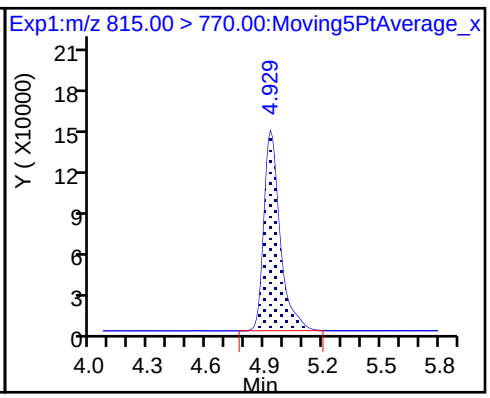
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

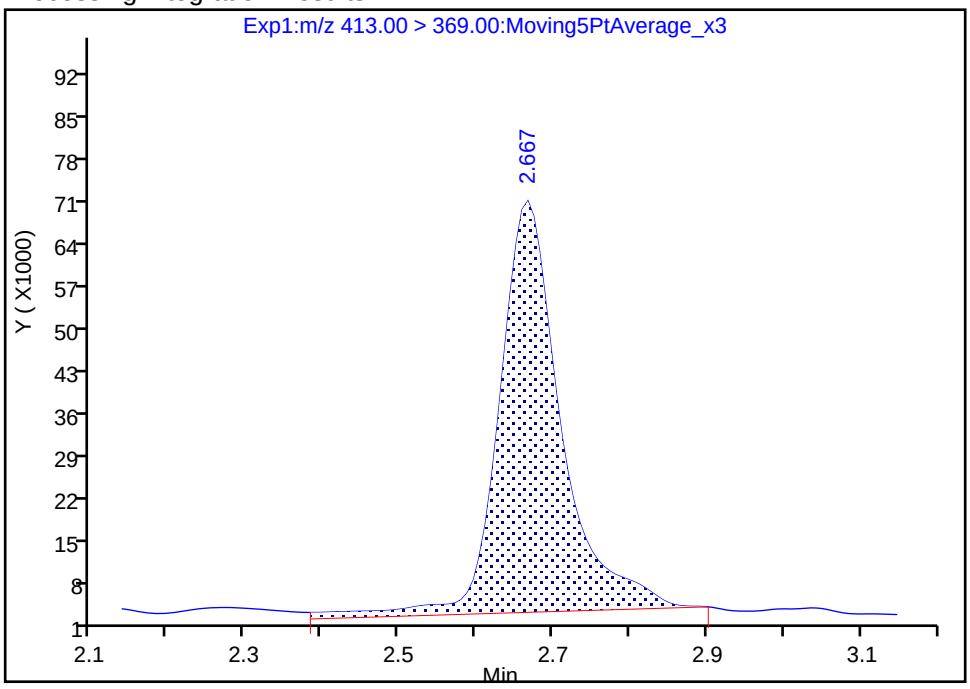
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_028.d				
Injection Date:	07-Apr-2018 12:16:54	Instrument ID:	A8_N		
Lims ID:	320-36960-A-4-C MSD				
Client ID:	BNA01-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

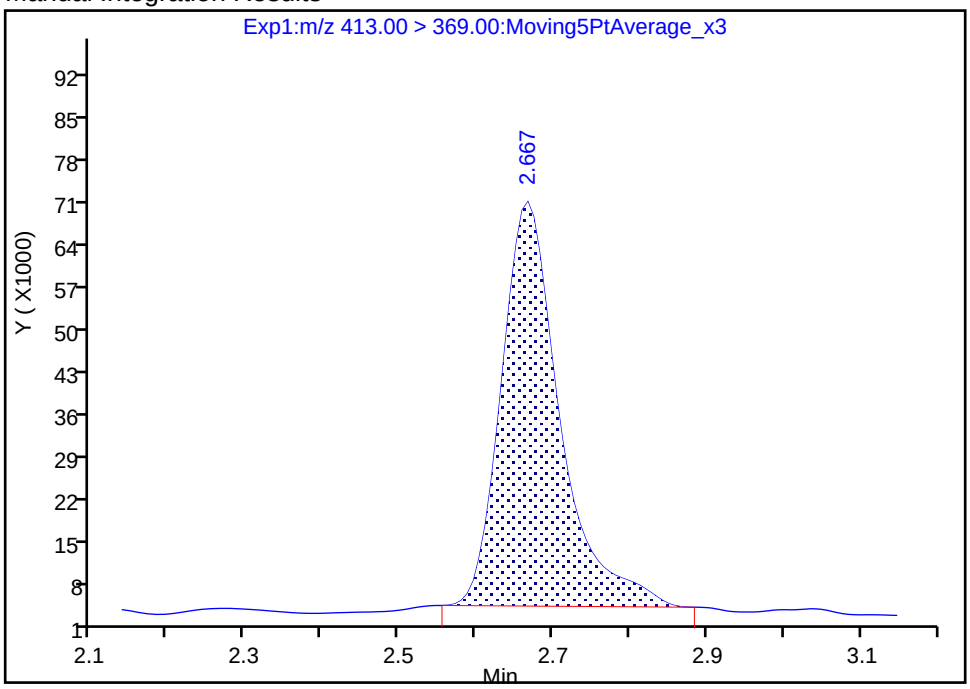
Processing Integration Results

RT: 2.67
Area: 383280
Amount: 0.247825
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 352593
Amount: 0.227983
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:29:53

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

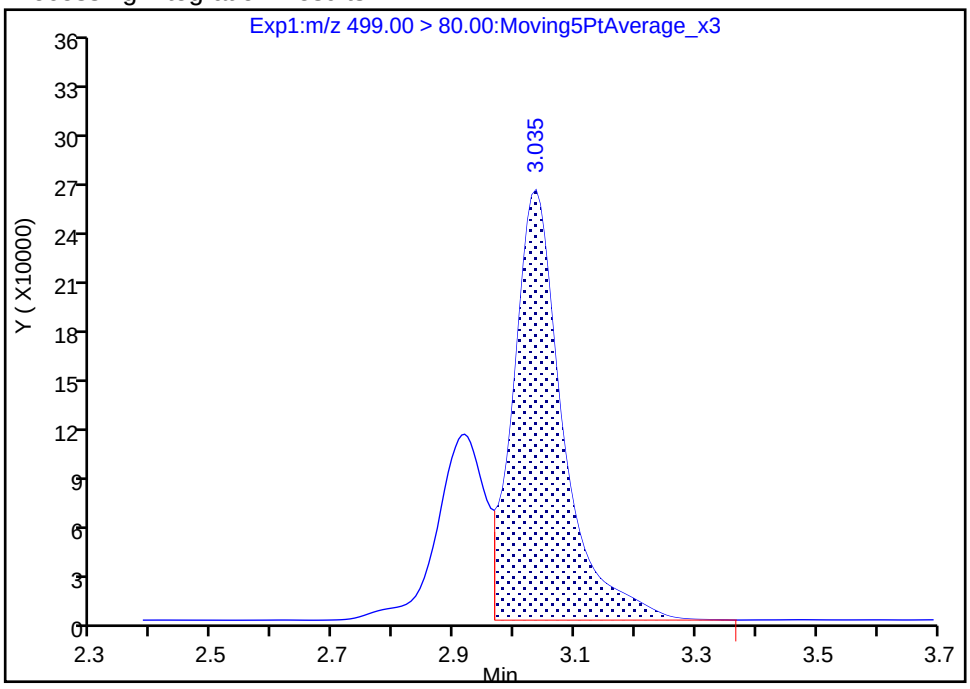
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b\2018.04.07LLA1_028.d				
Injection Date:	07-Apr-2018 12:16:54	Instrument ID:	A8_N		
Lims ID:	320-36960-A-4-C MSD				
Client ID:	BNA01-SB1-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

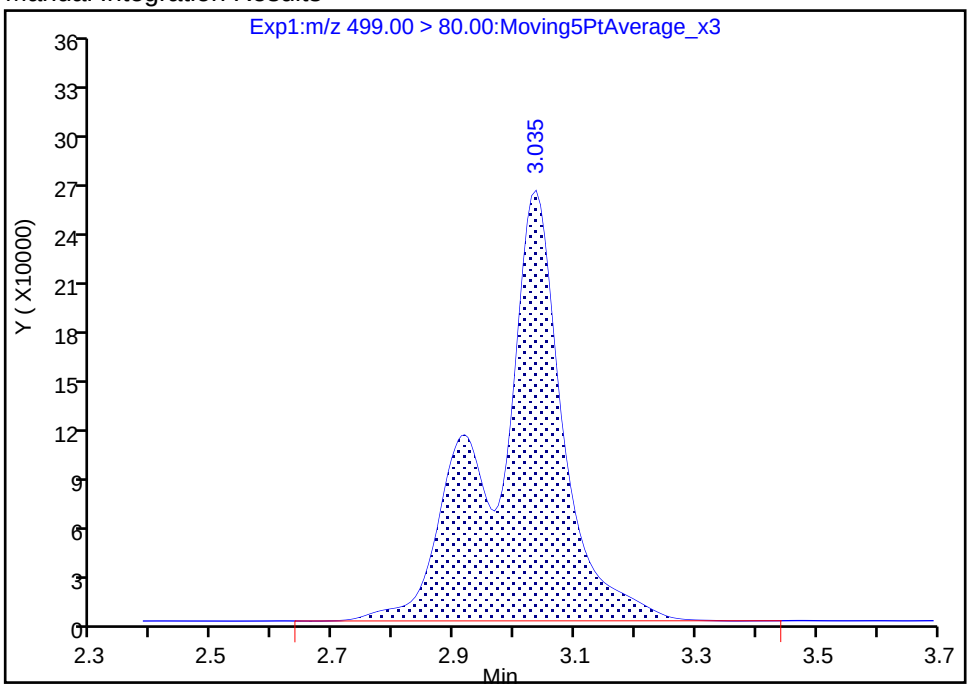
Processing Integration Results

RT: 3.04
Area: 1467408
Amount: 1.455693
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 2082652
Amount: 2.066026
Amount Units: ng/ml



Reviewer: westendorfc, 09-Apr-2018 08:30:04

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: MW-BNA05-01-01 MSD | Lab Sample ID: 320-36960-22 MSD

Matrix: Water | Lab File ID: 2018.03.19LLAX_046.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 09:02

Extraction Method: 3535 | Date Extracted: 03/16/2018 10:38

Sample wt/vol: 252.2(mL) | Date Analyzed: 03/19/2018 20:36

Con. Extract Vol.: 10.0(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 213789 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	47.2		2.0	1.5	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	57.0	J1	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	42.7		2.0	1.5	0.52
375-73-5	Perfluorobutanesulfonic acid (PFBS)	42.8		2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	114	J1	2.0	0.99	0.38
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	105		4.0	3.0	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	88		50-150
STL01892	13C4-PFHpA	87		50-150
STL00990	13C4 PFOA	94		50-150
STL00995	13C5 PFNA	95		50-150
STL00994	18O2 PFHxS	91		50-150
STL00991	13C4 PFOS	93		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_046.d
Lims ID: 320-36960-A-22-C MSD
Client ID: MW-BNA05-01-01
Sample Type: MSD
Inject. Date: 19-Mar-2018 20:36:34 ALS Bottle#: 32 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-a-22-c msd
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 22-Mar-2018 10:49:21 Calib Date: 16-Mar-2018 23:56:35
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Mar-2018 10:47:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.444	-0.003	0.536	3564185	1.63		65.1	57543	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.444	-0.003	1.000	2020732	1.53		153	337	
D 3 13C5-PFPeA										
267.90 > 223.00	1.701	1.705	-0.004	0.632	3158117	2.05		81.8	31804	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.701	1.705	-0.004	1.000	1612990	1.09		109	171	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.740	-0.004	0.646	78360	2.06		88.5	151	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.740	-0.004	1.000	2811811	1.08		122	683	
298.90 > 99.00	1.736	1.740	-0.004	1.000	1179633		2.38(1.25-3.74)		674	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.956	1.960	-0.004	1.000	625043	1.15		124	12068	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.987	1.992	-0.005	1.000	1910625	1.35		135	849	
313.00 > 119.00	1.987	1.992	-0.005	1.000	171933		11.11(5.03-15.10)		1370	
D 7 13C2 PFHxA										
315.00 > 270.00	1.987	1.992	-0.005	0.739	3502975	2.03		81.4	74424	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.335	-0.006	0.866	3623954	2.16		86.6	78294	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.329	2.335	-0.006	1.000	1787822	1.19		119	764	
363.00 > 169.00	2.329	2.335	-0.006	1.000	717209		2.49(1.13-3.40)		6898	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.348	-0.007	1.000	6547393	2.88		317	3338	
399.00 > 99.00	2.341	2.348	-0.007	1.000	2037065		3.21(1.50-4.49)		2340	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.348	-0.007	0.871	4818277	2.16		91.2	77105	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.665	2.675	-0.010	1.000	838950	1.04		110	28875	
D 12 M2-6:2FTS										
429.00 > 81.00	2.665	2.675	-0.010	0.991	1149049	2.68		113	4462	
D 14 13C4 PFOA										
417.00 > 372.00	2.689	2.706	-0.017	1.000	3795883	2.35		93.9	102146	
* 62 13C2-PFOA										
415.00 > 370.00	2.689	2.706	-0.017		4286182	2.50			129544	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.689	2.706	-0.017	1.000	2436236	1.44		144	1025	
413.00 > 169.00	2.689	2.706	-0.017	1.000	1258690		1.94(0.84-2.52)		5181	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.697	2.706	-0.009	1.000	2078523	1.08		114	2873	
449.00 > 99.00	2.697	2.706	-0.009	1.000	559312		3.72(1.94-5.82)		2477	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.083	-0.018	1.140	3485061	2.23		93.3	19913	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.065	3.083	-0.018	1.000	4198469	2.66		287	6435	
499.00 > 99.00	3.065	3.083	-0.018	1.000	865019		4.85(2.31-6.93)		4400	
20 Perfluorononanoic acid										
463.00 > 419.00	3.065	3.083	-0.018	1.000	1355066	1.08		108	1923	
463.00 > 169.00	3.065	3.083	-0.018	1.000	345162		3.93(1.90-5.69)		6281	
D 19 13C5 PFNA										
468.00 > 423.00	3.065	3.083	-0.018	1.140	3083469	2.38		95.3	77466	
D 21 13C8 FOSA										
506.00 > 78.00	3.399	3.403	-0.004	1.264	4991621	2.21		88.3	57081	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.399	3.412	-0.013	1.000	2190133	1.13		113	45416	
D 26 M2-8:2FTS										
529.00 > 81.00	3.417	3.439	-0.022	1.271	945020	2.35		97.9	8165	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.417	3.439	-0.022	1.000	514570	1.04		108	23056	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.426	3.448	-0.022	1.000	1105404	1.14		114	3778	
513.00 > 169.00	3.426	3.448	-0.022	1.000	206210		5.36(2.36-7.09)		3611	
D 23 13C2 PFDA										
515.00 > 470.00	3.426	3.448	-0.022	1.274	2545877	2.36		94.2	44218	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.579	3.606	-0.027	1.331	589150	1.65		66.0	18296	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.590	3.617	-0.027	1.003	284064	1.16		116	4377	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.738	3.765	-0.027	1.000	906655	0.9738		101	23814	
599.00 > 99.00	3.738	3.765	-0.027	1.000	308783		2.94(1.39-4.16)		5474	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.748	3.775	-0.027	1.394	639137	1.87		74.9	1372	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 30 13C2 PFUnA										
565.00 > 520.00	3.758	3.786	-0.028	1.398	1784062	2.11		84.3	46504	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.786	-0.028	1.000	605078	1.01		101	1364	
563.00 > 169.00	3.758	3.786	-0.028	1.000	160795		3.76(2.12-6.36)		9683	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.758	3.786	-0.028	1.003	258589	1.03		103	6699	
35 MeFOSA										
512.00 > 169.00	3.892	3.875	0.017		333762	NC			3889	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.088	4.066	0.022		261772	NC			2371	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.056	4.084	-0.028	1.000	718133	1.02		102	156	
613.00 > 169.00	4.056	4.084	-0.028	1.000	196268		3.66(2.13-6.40)		5771	
D 36 13C2 PFDoA										
615.00 > 570.00	4.056	4.084	-0.028	1.509	1724780	2.15		86.0	9884	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.346	-0.028	1.000	699513	0.9856		98.6	161	
663.00 > 169.00	4.318	4.346	-0.028	1.000	230261		3.04(1.25-3.76)		2848	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.554	4.581	-0.027	1.000	203600	1.03		103	3053	
713.00 > 219.00	4.554	4.581	-0.027	1.000	150868		1.35(0.71-2.13)		1511	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.554	4.581	-0.027	1.694	1783379	2.44		97.4	14486	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.973	5.004	-0.031	1.000	837762	NC			70.6	
813.00 > 169.00	4.973	5.004	-0.031	1.000	140257		5.97(2.86-8.58)		1948	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.973	5.004	-0.031	1.849	1929662	1.80		72.1	8154	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.330	5.374	-0.044	1.000	580664	NC			146	
913.00 > 169.00	5.330	5.374	-0.044	1.000	73074		7.95(3.83-11.48)		1034	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 22-Mar-2018 10:49:40 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b\2018.03.19LLAX_046.d

Injection Date: 19-Mar-2018 20:36:34 Instrument ID: A8_N

Lims ID: 320-36960-A-22-C MSD

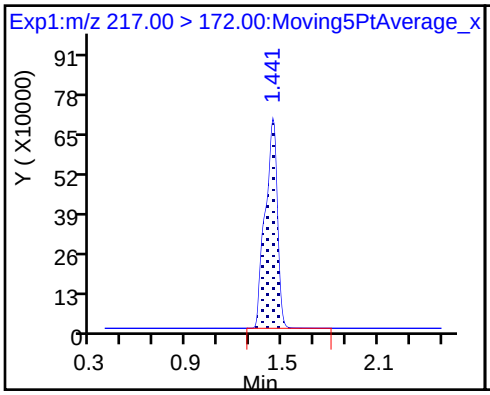
Client ID: MW-BNA05-01-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 11

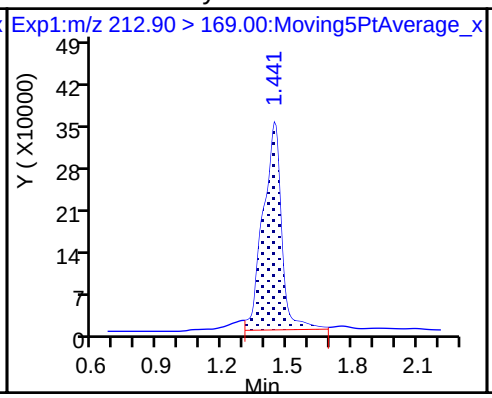
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

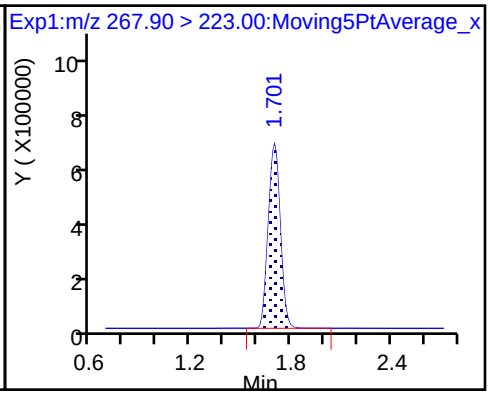
D 1 13C4 PFBA



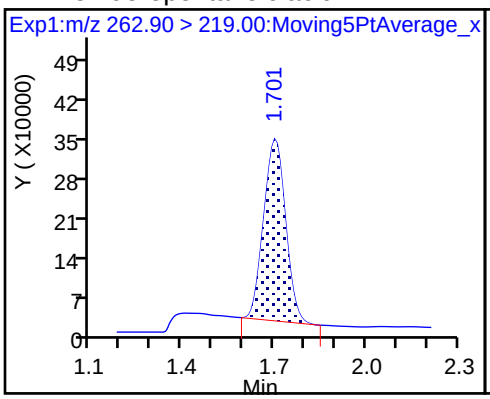
2 Perfluorobutyric acid



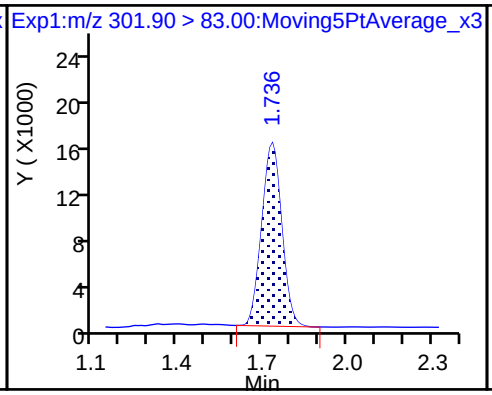
D 3 13C5-PFPeA



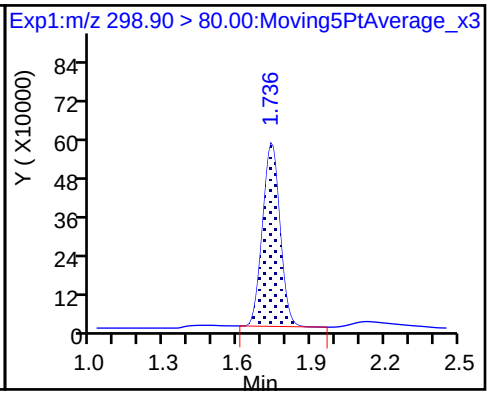
4 Perfluoropentanoic acid



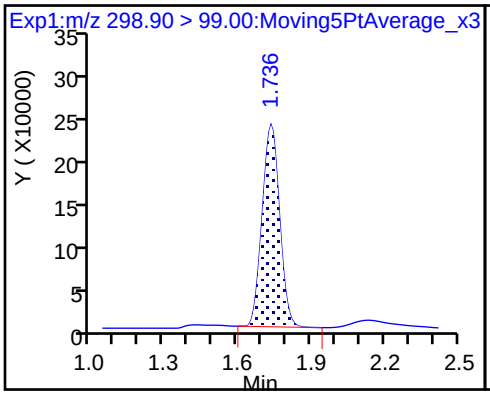
D 47 13C3-PFBS



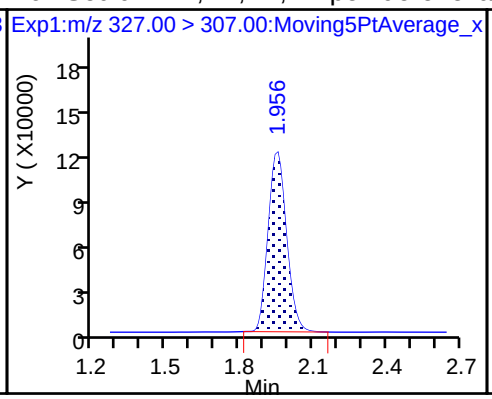
5 Perfluorobutanesulfonic acid



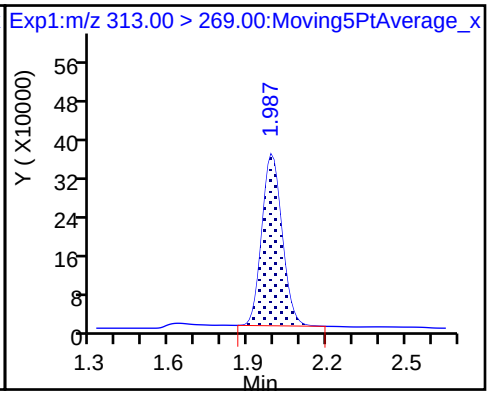
5 Perfluorobutanesulfonic acid



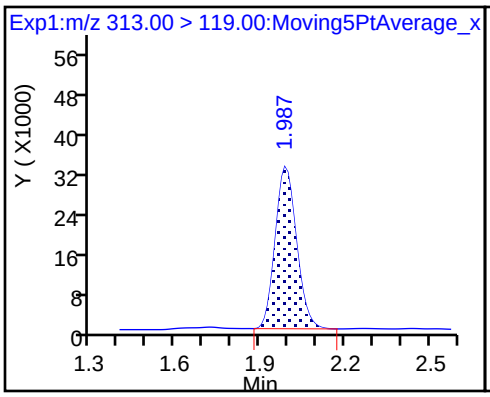
61 Sodium 1H,1H,2H,2H-perfluorohexane



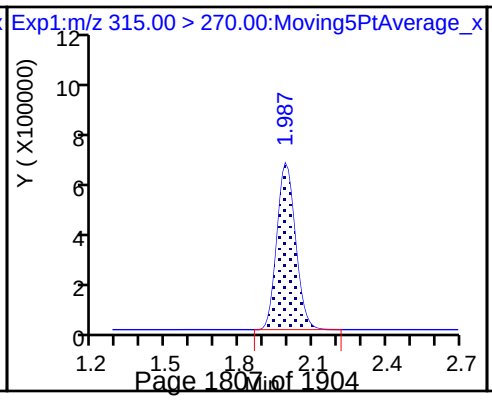
6 Perfluorohexanoic acid



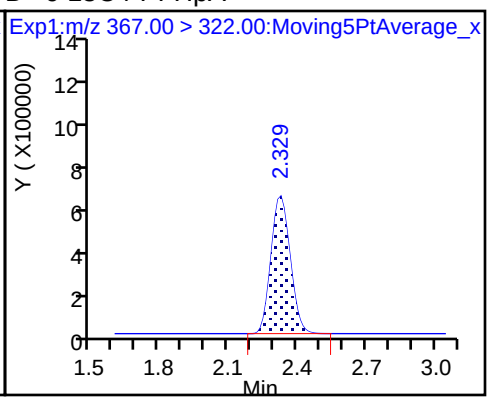
6 Perfluorohexanoic acid



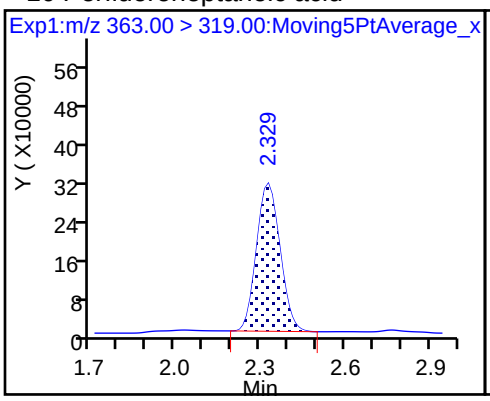
D 7 13C2 PFHxA



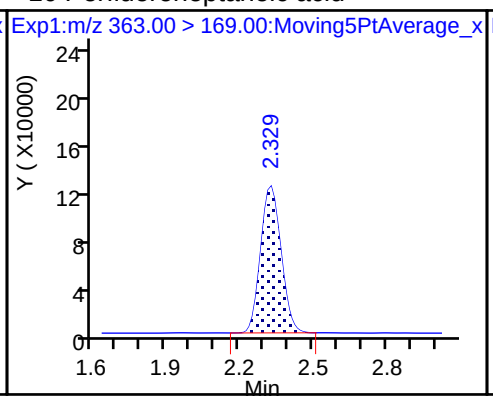
D 9 13C4-PFHpA



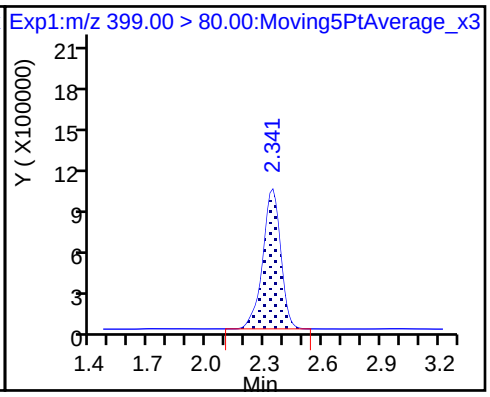
10 Perfluoroheptanoic acid



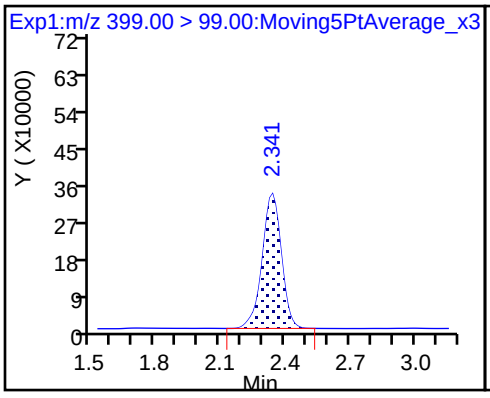
10 Perfluoroheptanoic acid



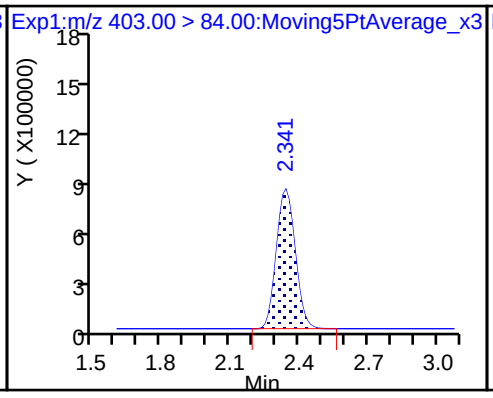
8 Perfluorohexanesulfonic acid



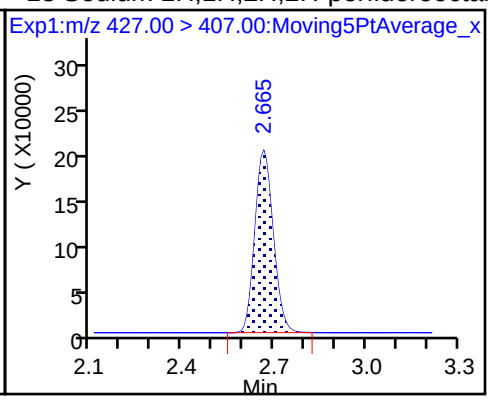
8 Perfluorohexanesulfonic acid



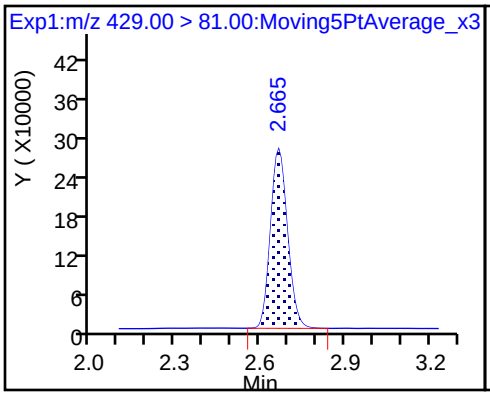
D 11 18O2 PFHxS



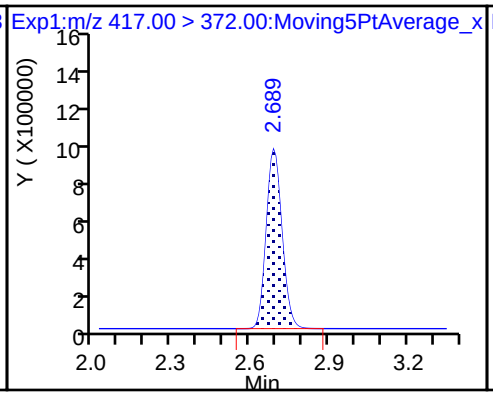
13 Sodium 1H,1H,2H,2H-perfluorooctane



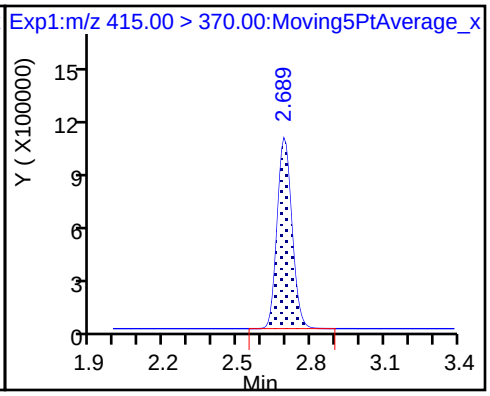
D 12 M2-6:2FTS



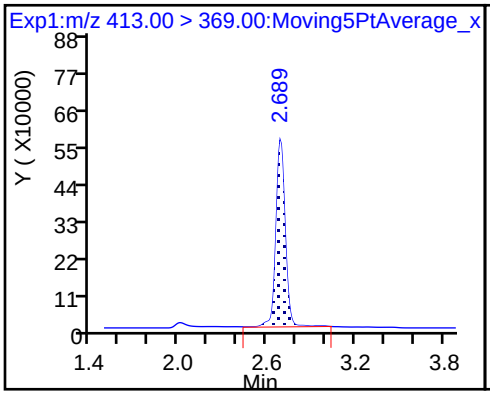
D 14 13C4 PFOA



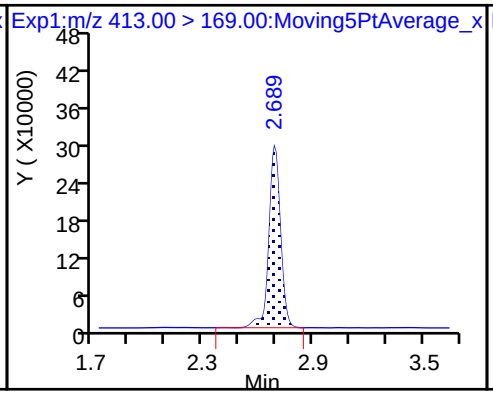
* 62 13C2-PFOA



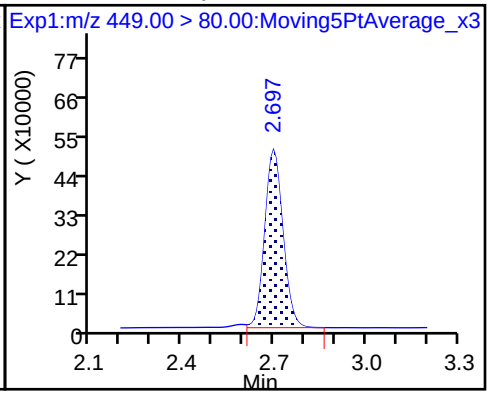
15 Perfluorooctanoic acid



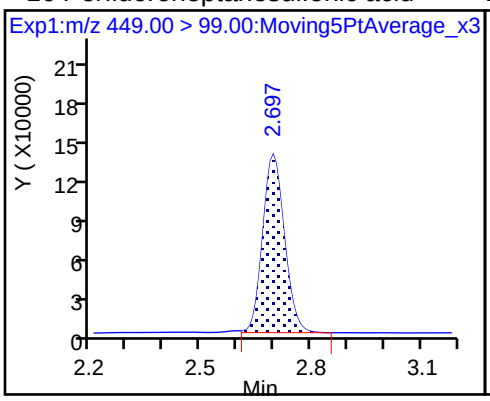
15 Perfluorooctanoic acid



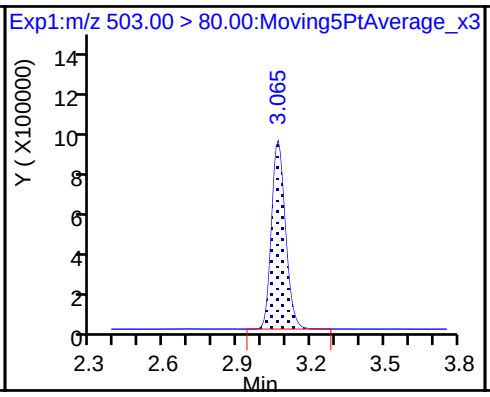
16 Perfluoroheptanesulfonic acid



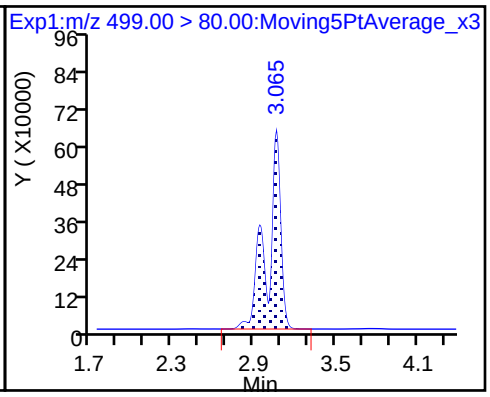
16 Perfluoroheptanesulfonic acid



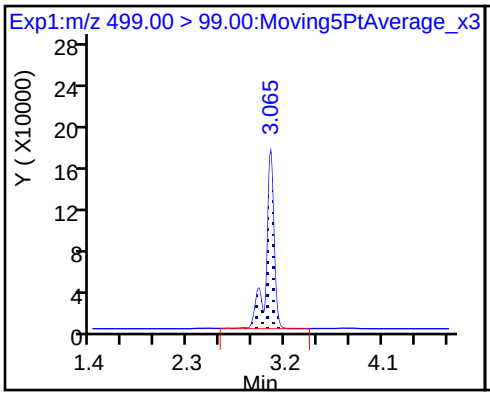
D 18 13C4 PFOS



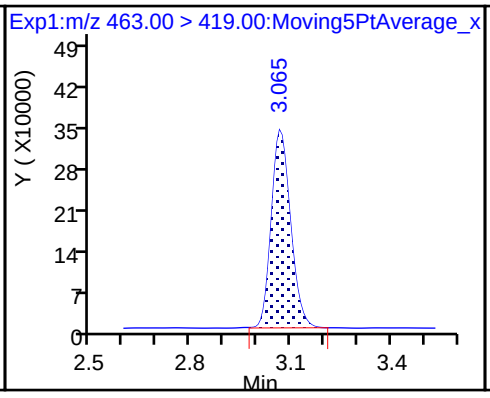
17 Perfluorooctane sulfonic acid



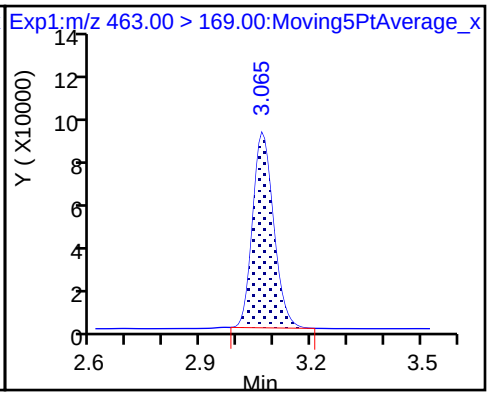
17 Perfluorooctane sulfonic acid



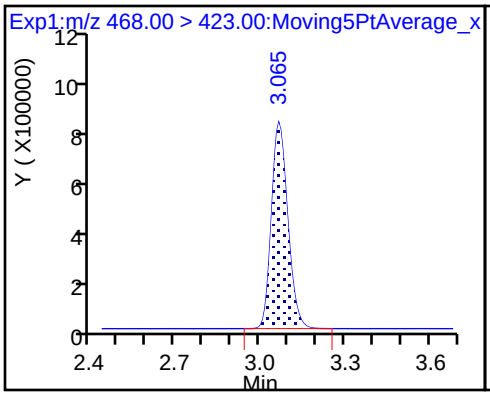
20 Perfluorononanoic acid



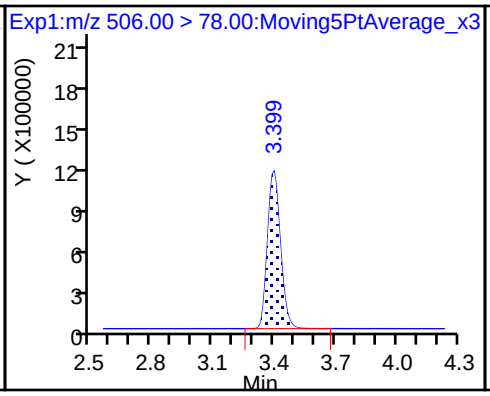
20 Perfluorononanoic acid



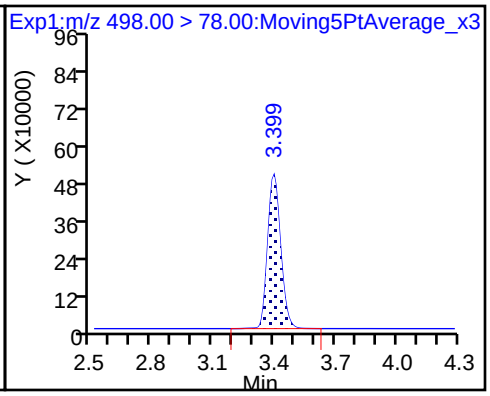
D 19 13C5 PFNA



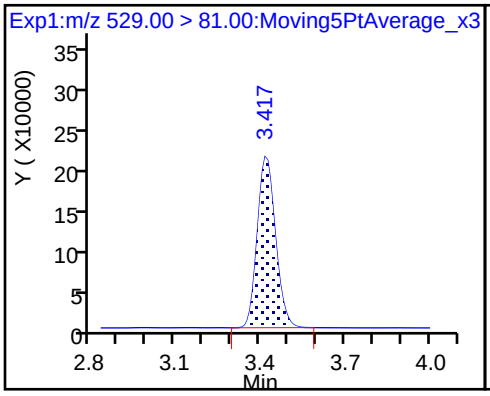
D 21 13C8 FOSA



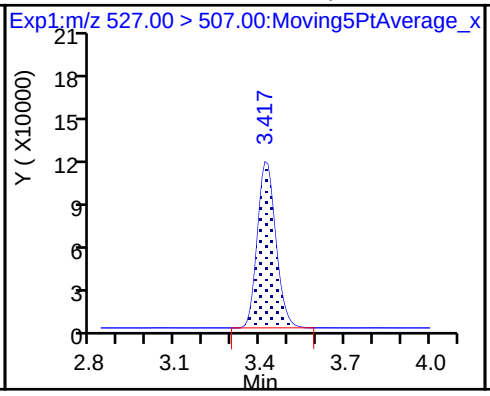
22 Perfluorooctane Sulfonamide



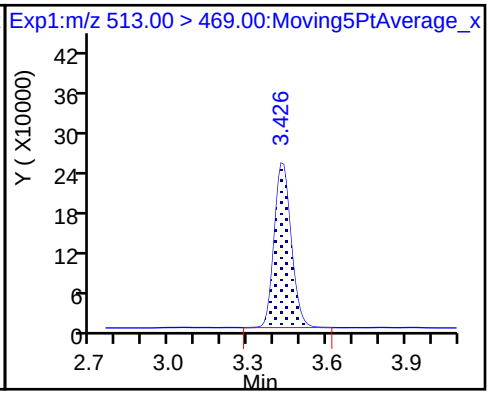
D 26 M2-8:2FTS



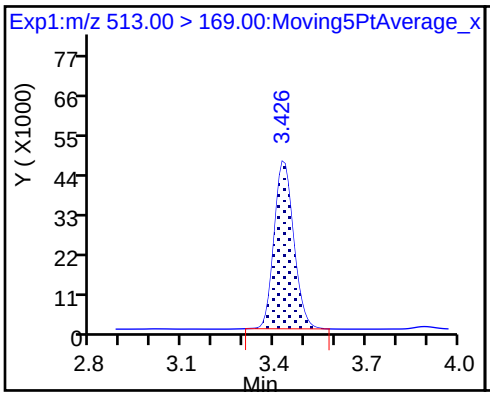
25 Sodium 1H,1H,2H,2H-perfluorodecan



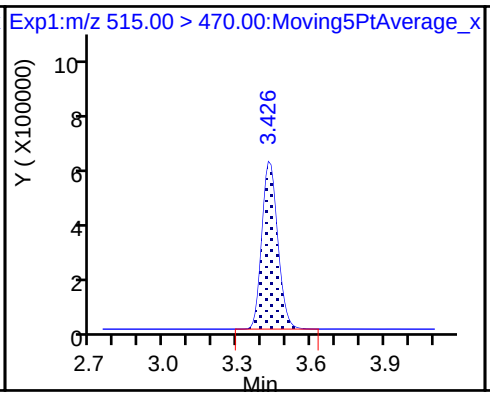
24 Perfluorodecanoic acid



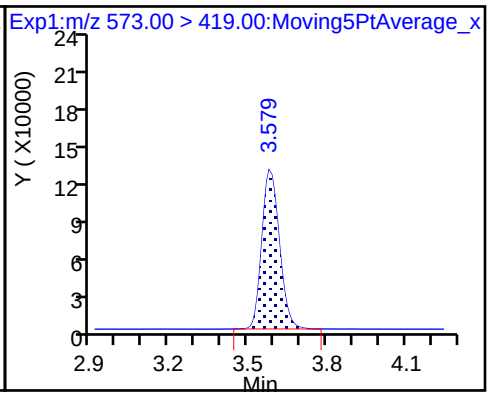
24 Perfluorodecanoic acid



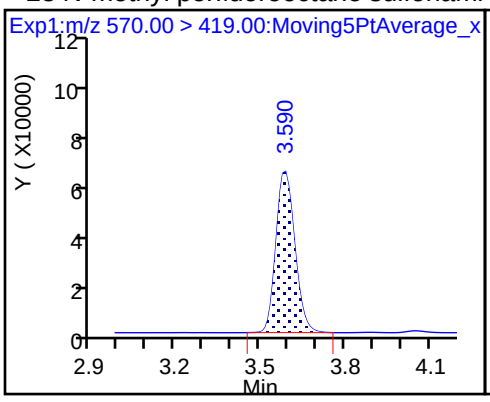
D 23 13C2 PFDA



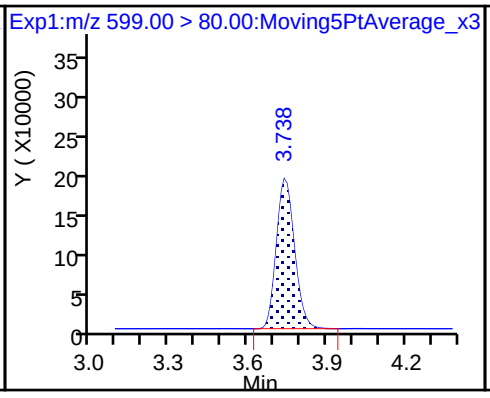
D 27 d3-NMeFOSAA



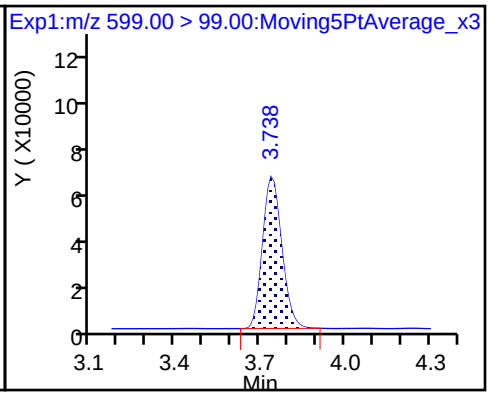
28 N-methyl perfluorooctane sulfonami



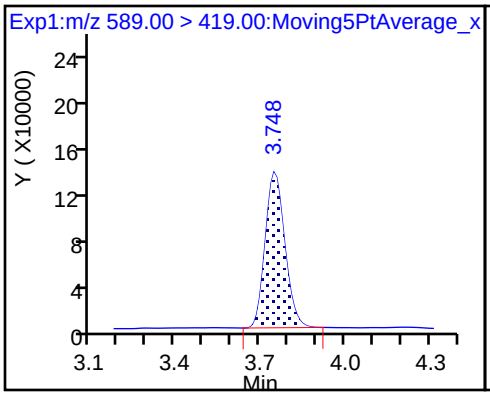
29 Perfluorodecane Sulfonic acid



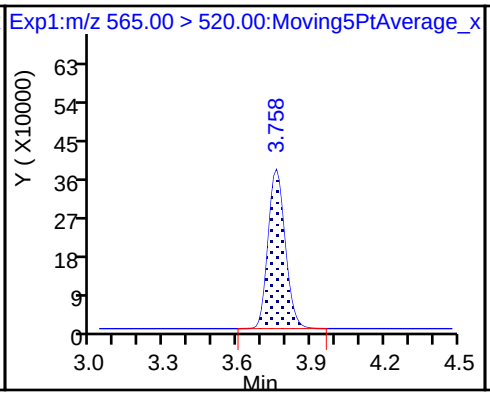
29 Perfluorodecane Sulfonic acid



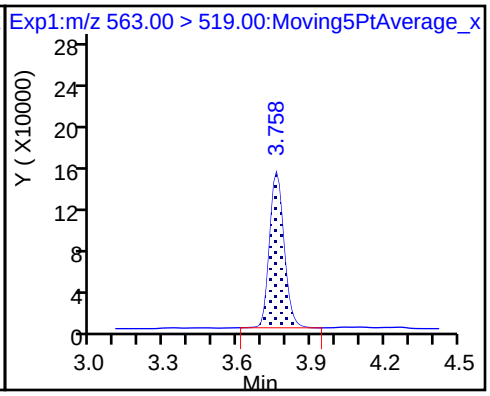
D 32 d5-NEtFOSAA



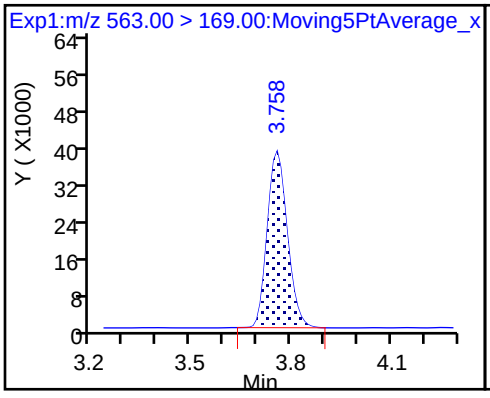
D 30 13C2 PFUnA



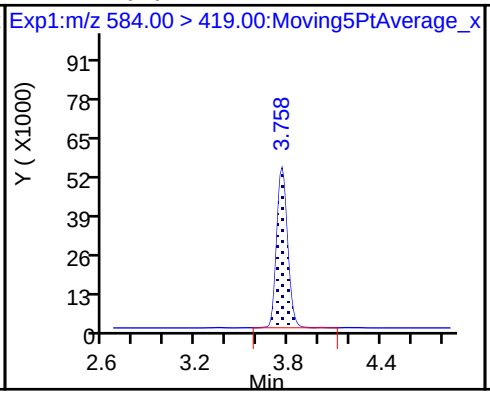
31 Perfluoroundecanoic acid



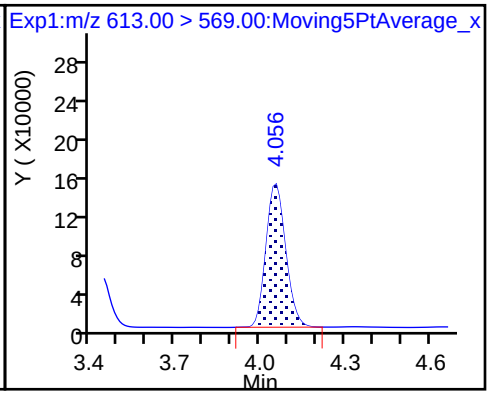
31 Perfluoroundecanoic acid



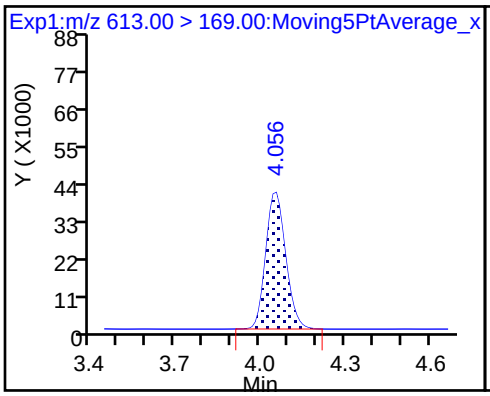
33 N-ethyl perfluorooctane sulfonamid



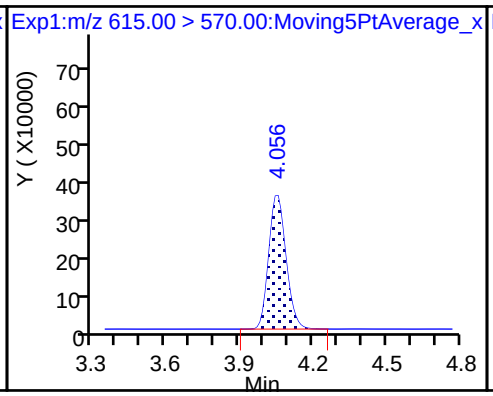
37 Perfluorododecanoic acid



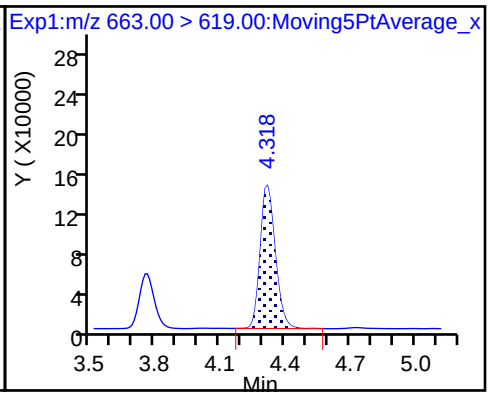
37 Perfluorododecanoic acid



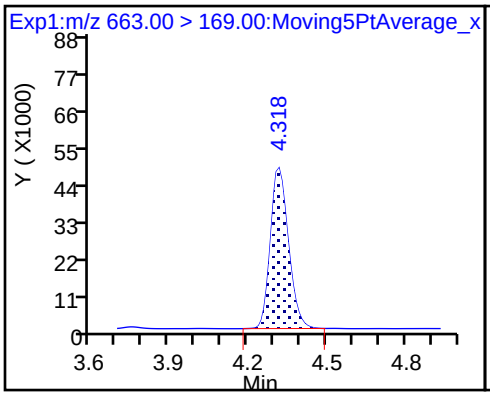
D 36 13C2 PFDoA



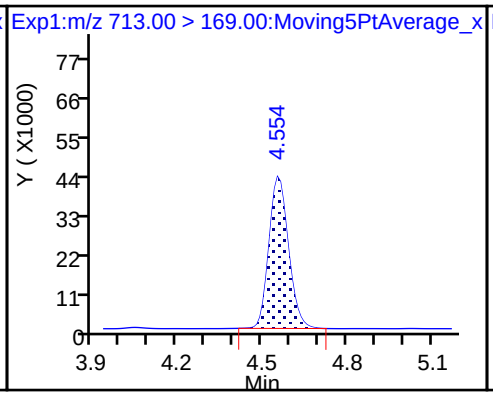
41 Perfluorotridecanoic acid



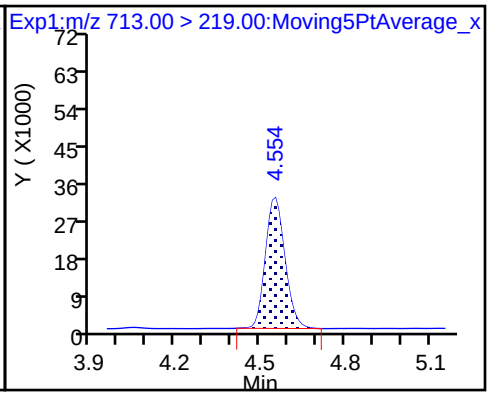
41 Perfluorotridecanoic acid



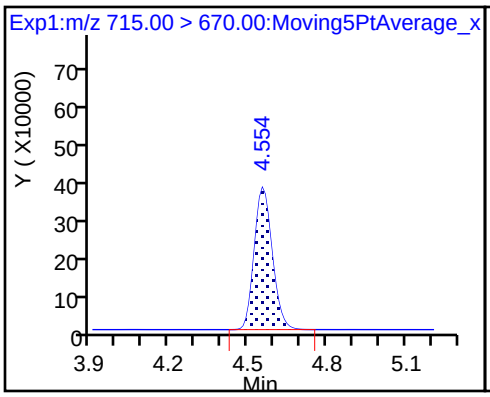
42 Perfluorotetradecanoic acid



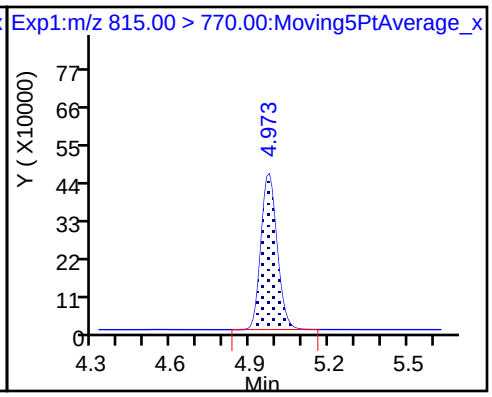
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-36960-1

SDG No.:

Client Sample ID: MW-BNA05-01-01 MSD RE | Lab Sample ID: 320-36960-22 MSD RE

Matrix: Water | Lab File ID: 2018.03.24LLAA_012.d

Analysis Method: EPA 537 (Mod) | Date Collected: 03/09/2018 09:02

Extraction Method: 3535 | Date Extracted: 03/22/2018 18:07

Sample wt/vol: 261.9(mL) | Date Analyzed: 03/24/2018 20:05

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 214716 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	*Perfluoroheptanoic acid (PFHpA)*	*38.9*		*1.9*	1.4	*0.58*
335-67-1	*Perfluorooctanoic acid (PFOA)*	*46.7*		*1.9*	1.4	*0.52*
375-95-1	*Perfluorononanoic acid (PFNA)*	*37.0*		*1.9*	1.4	*0.50*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*35.7*		*1.9*	0.95	*0.44*
355-46-4	*Perfluorohexanesulfonic acid (PFHxS)*	*97.9*	*J1*	*1.9*	0.95	*0.36*
1763-23-1	*Perfluorooctanesulfonic acid (PFOS)*	*95.9*	*J1*	*3.8*	2.9	*1.1*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02337	13C3-PFBS	72		50-150
STL01892	13C4-PFHpA	76		50-150
STL00990	13C4 PFOA	74		50-150
STL00995	13C5 PFNA	74		50-150
STL00994	18O2 PFHxS	77		50-150
STL00991	13C4 PFOS	75		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_012.d
Lims ID: 320-36960-B-22-C MSD
Client ID: MW-BNA05-01-01
Sample Type: MSD
Inject. Date: 24-Mar-2018 20:05:55 ALS Bottle#: 6 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36960-b-22-c msd
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\A8_N.m
Limit Group: LC PFC_QSM5-1 ICAL
Last Update: 25-Mar-2018 10:51:04 Calib Date: 21-Mar-2018 19:11:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180321-55646.b\2018.03.21LLICALAX_008.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: westendorfc Date: 25-Mar-2018 10:48:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.453	1.459	-0.006	0.534	4530584	1.38		55.3	54922	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.459	1.462	-0.003	1.004	1909205	1.12		112	227	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.727	1.723	0.004	1.005	1705862	1.02		102	142	
D 3 13C5-PFPeA										
267.90 > 223.00	1.718	1.727	-0.009	0.632	3710297	1.71		68.3	20034	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.762	-0.009	0.644	83149	1.68		72.1	154	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.762	1.767	-0.005	1.005	2596732	0.9344		106	995	
298.90 > 99.00	1.762	1.767	-0.005	1.005	1068968		2.43(1.25-3.74)		770	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.976	1.981	-0.005	1.000	966753	1.67		179	13601	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.019	2.014	0.005	1.000	2010450	1.19		119	547	
313.00 > 119.00	2.019	2.014	0.005	1.000	181666		11.07(5.03-15.10)		913	
D 7 13C2 PFHxA										
315.00 > 270.00	2.019	2.019	0.0	0.742	4145839	1.72		69.0	112661	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.354	2.348	0.006	1.000	1897330	1.02		102	754	
363.00 > 169.00	2.354	2.348	0.006	1.000	747007		2.54(1.13-3.40)		1562	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.368	2.361	0.007	1.000	6424553	2.56		282	4466	
399.00 > 99.00	2.368	2.361	0.007	1.000	2082496		3.09(1.50-4.49)		2834	
D 9 13C4-PFHpA										
367.00 > 322.00	2.354	2.368	-0.014	0.865	4502248	1.90		75.9	89555	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.368	2.380	-0.012	0.870	5325953	1.82		77.0	97043	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.689	2.691	-0.002	1.000	1143121	1.38		145	1407	
D 12 M2-6:2FTS										
429.00 > 81.00	2.689	2.704	-0.015	0.988	1129198	2.30		96.7	7691	
* 62 13C2-PFOA										
415.00 > 370.00	2.721	2.714	0.007		6471516	2.50			104421	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.721	2.714	0.007	1.000	2480641	1.22		122	834	
413.00 > 169.00	2.721	2.714	0.007	1.000	1401932		1.77(0.84-2.52)		4228	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.721	2.722	-0.001	1.000	1927940	0.9424		99.0	3468	
449.00 > 99.00	2.728	2.722	0.006	1.003	511583		3.77(1.94-5.82)		2110	
D 14 13C4 PFOA										
417.00 > 372.00	2.721	2.728	-0.007	1.000	4490644	1.85		74.0	98290	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.096	3.090	0.006	1.000	4466346	2.51		271	11932	
499.00 > 99.00	3.096	3.090	0.006	1.000	916057		4.88(2.31-6.93)		4979	
20 Perfluorononanoic acid										
463.00 > 419.00	3.096	3.090	0.006	1.000	1523431	0.9701		97.0	1595	
463.00 > 169.00	3.096	3.090	0.006	1.000	393211		3.87(1.90-5.69)		7536	
D 19 13C5 PFNA										
468.00 > 423.00	3.096	3.112	-0.016	1.138	3935686	1.84		73.6	69526	
D 18 13C4 PFOS										
503.00 > 80.00	3.096	3.112	-0.016	1.138	3816134	1.79		75.0	26905	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.417	3.411	0.006	1.000	1782711	0.9195		91.9	36593	
D 21 13C8 FOSA										
506.00 > 78.00	3.417	3.418	-0.001	1.256	4916818	1.71		68.5	59499	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.453	3.447	0.006	1.000	584349	0.9011		94.1	6875	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.462	3.456	0.006	1.000	1187616	0.8762		87.6	5026	
513.00 > 169.00	3.462	3.456	0.006	1.000	227696		5.22(2.36-7.09)		4280	
D 26 M2-8:2FTS										
529.00 > 81.00	3.453	3.464	-0.011	1.269	1216886	1.83		76.5	17018	
D 23 13C2 PFDA										
515.00 > 470.00	3.462	3.473	-0.011	1.273	3429336	1.83		73.1	60255	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.621	3.615	0.006	1.000	612238	0.9806		98.1	5512	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.621	3.633	-0.012	1.331	1559606	1.58		63.2	29970	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.769	3.774	-0.005	1.000	814265	0.7500		77.8	17022	
599.00 > 99.00	3.769	3.774	-0.005	1.000	304709		2.67(1.39-4.16)		5349	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.790	3.784	0.006	1.003	595952	0.9293		92.9	24833	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.790	3.784	0.006	1.000	744272	0.8174		81.7	3626	
563.00 > 169.00	3.790	3.784	0.006	1.000	193786		3.84(2.12-6.36)		7869	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.779	3.804	-0.025	1.389	1716094	1.53		61.0	7710	
D 30 13C2 PFUnA										
565.00 > 520.00	3.790	3.815	-0.025	1.393	2640249	1.57		62.9	46142	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.079	4.084	-0.005	1.000	1025533	0.9135		91.3	885	
613.00 > 169.00	4.079	4.084	-0.005	1.000	267284		3.84(2.13-6.40)		3964	
D 36 13C2 PFDoA										
615.00 > 570.00	4.079	4.105	-0.026	1.499	2682263	1.41		56.4	20625	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.350	4.347	0.004	1.000	1033675	0.8753		87.5	569	
663.00 > 169.00	4.350	4.347	0.004	1.000	335411		3.08(1.25-3.76)		4860	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.585	4.592	-0.007	1.000	327996	0.8921		89.2	4353	
713.00 > 219.00	4.575	4.592	-0.017	0.998	234954		1.40(0.71-2.13)		4063	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.585	4.613	-0.028	1.685	3709591	1.60		63.8	21295	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.008	5.013	-0.005	1.002	1699904	NC			507	
813.00 > 169.00	5.008	5.013	-0.005	1.002	303696		5.60(2.86-8.58)		2750	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.999	5.049	-0.050	1.838	4780513	1.25		50.2	12441	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.371	5.380	-0.009	1.000	1299289	NC			370	
913.00 > 169.00	5.371	5.380	-0.009	1.000	167876		7.74(3.83-11.48)		2241	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Report Date: 25-Mar-2018 10:51:15 Chrom Revision: 2.2 13-Mar-2018 08:45:20

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b\2018.03.24LLAA_012.d

Injection Date: 24-Mar-2018 20:05:55 Instrument ID: A8_N

Lims ID: 320-36960-B-22-C MSD

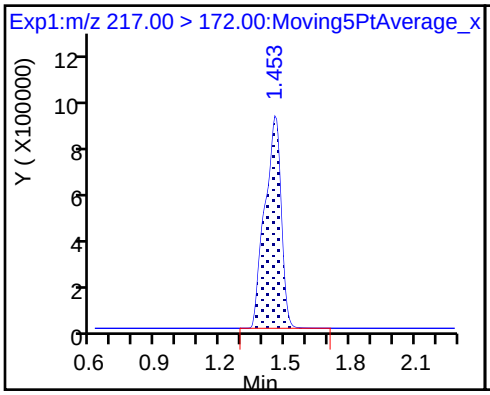
Client ID: MW-BNA05-01-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 10

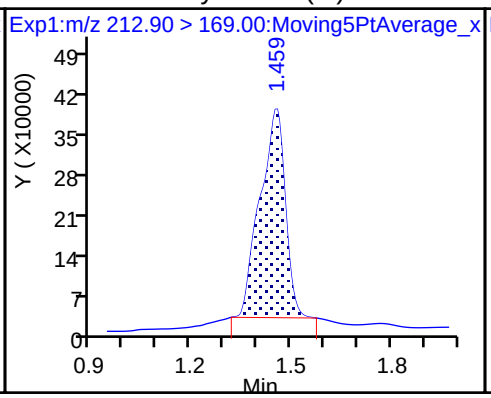
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL

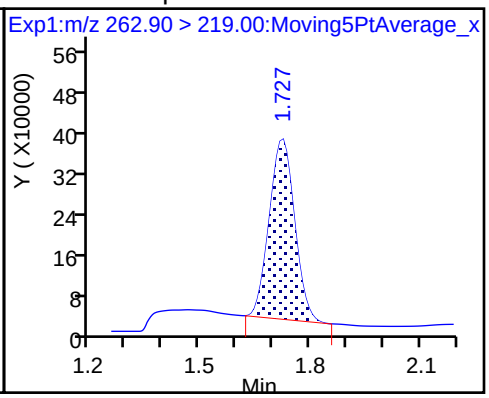
D 1 13C4 PFBA



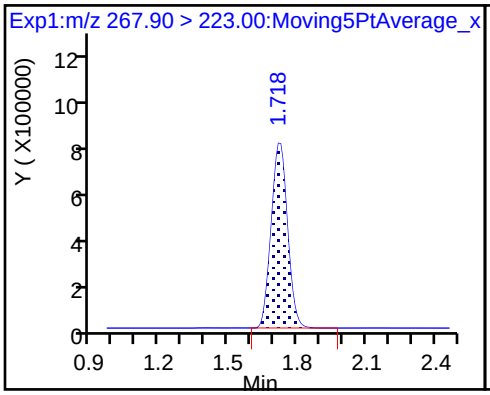
2 Perfluorobutyric acid (M)



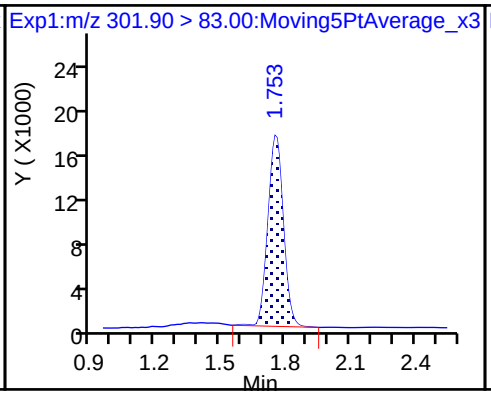
4 Perfluoropentanoic acid



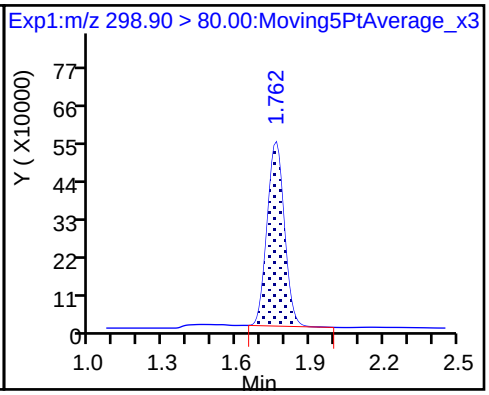
D 3 13C5-PFPeA



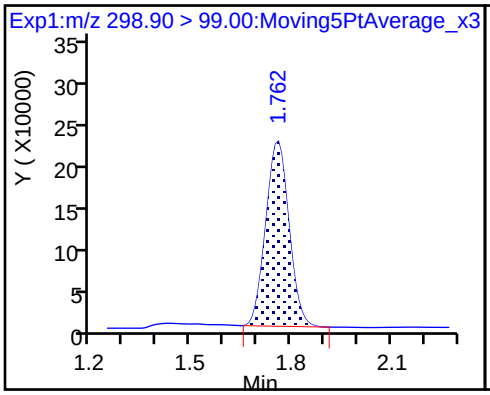
D 47 13C3-PFBS



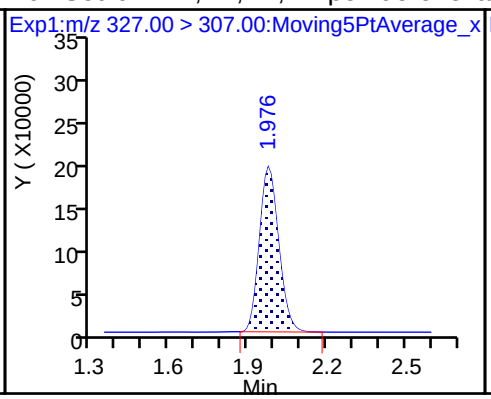
5 Perfluorobutanesulfonic acid



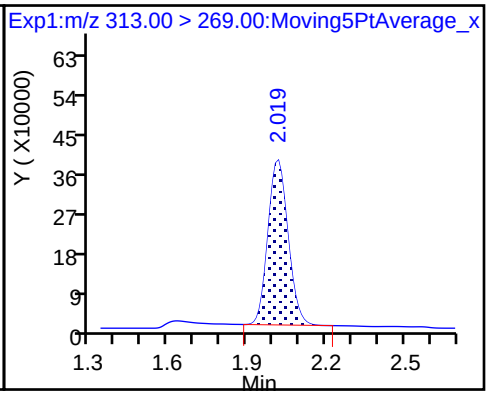
5 Perfluorobutanesulfonic acid



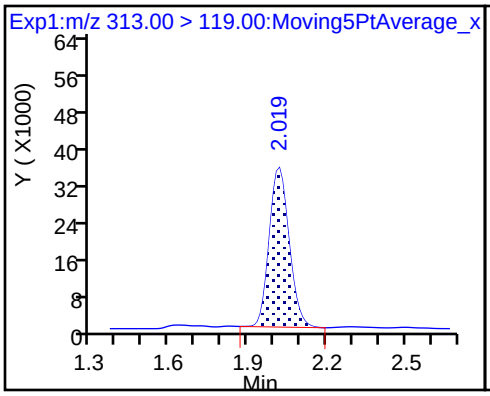
61 Sodium 1H,1H,2H,2H-perfluorohexane



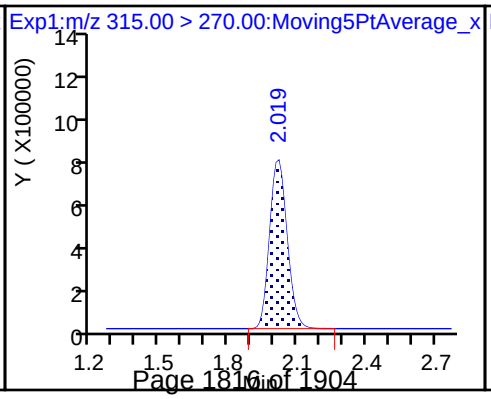
6 Perfluorohexanoic acid



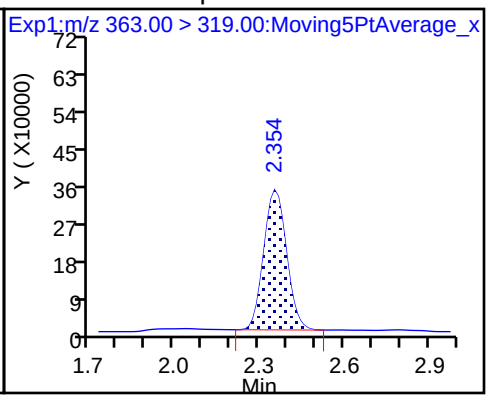
6 Perfluorohexanoic acid



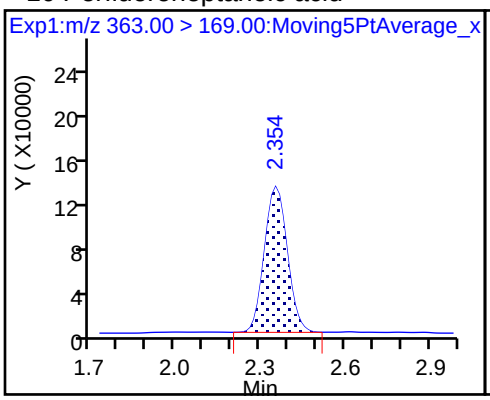
D 7 13C2 PFHxA



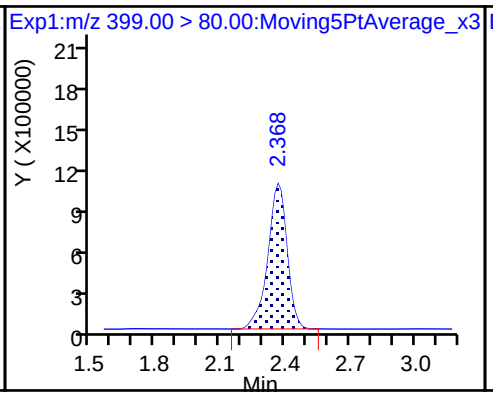
10 Perfluoroheptanoic acid



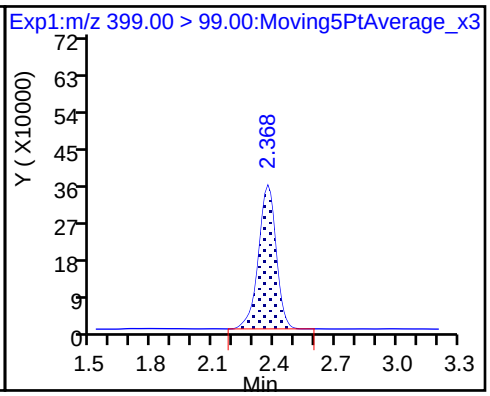
10 Perfluoroheptanoic acid



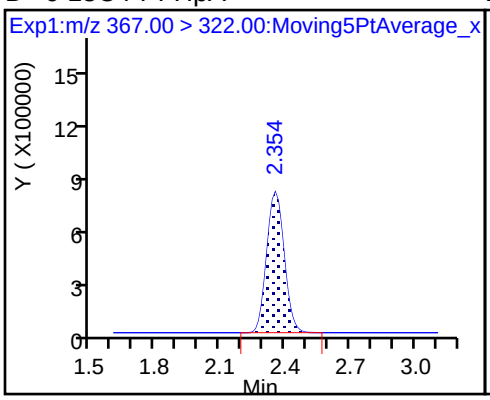
8 Perfluorohexanesulfonic acid



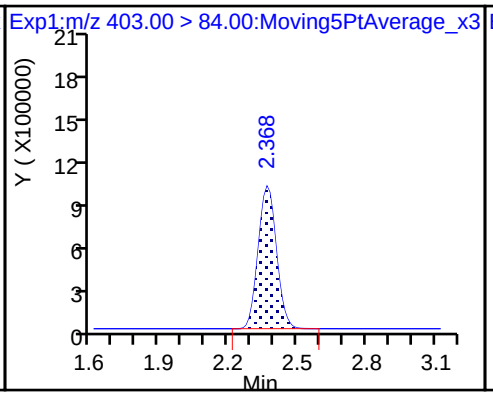
8 Perfluorohexanesulfonic acid



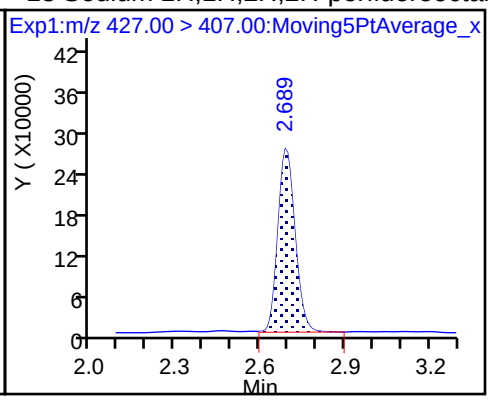
D 9 13C4-PFHpA



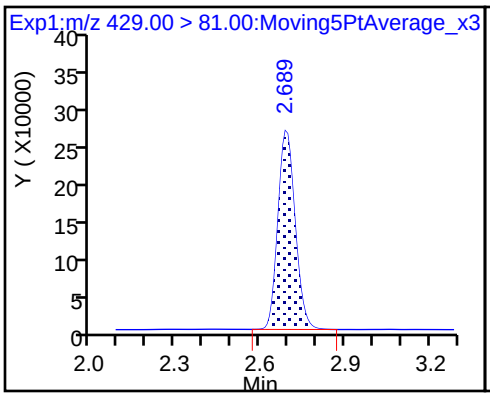
D 11 18O2 PFHxS



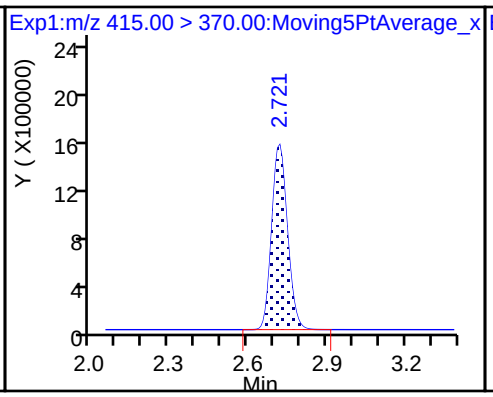
13 Sodium 1H,1H,2H,2H-perfluorooctane



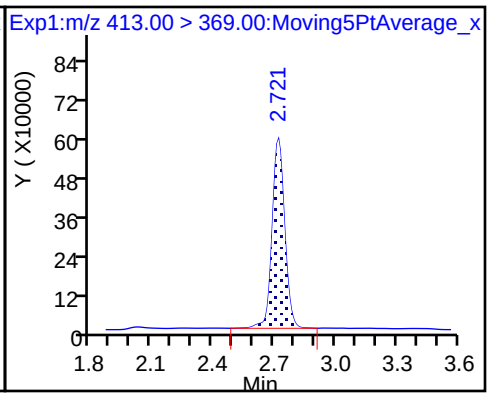
D 12 M2-6:2FTS



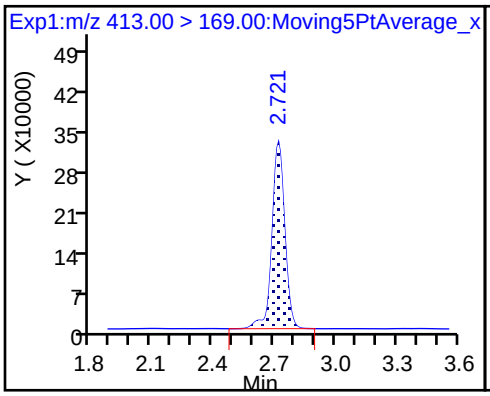
* 62 13C2-PFOA



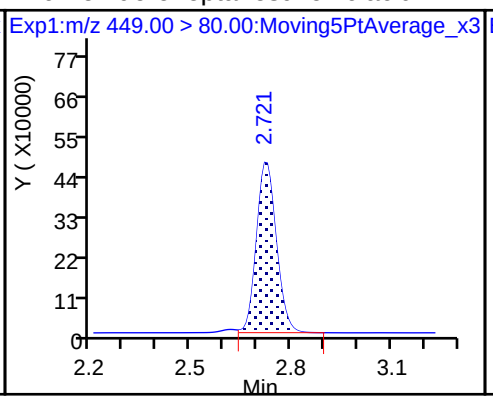
15 Perfluorooctanoic acid



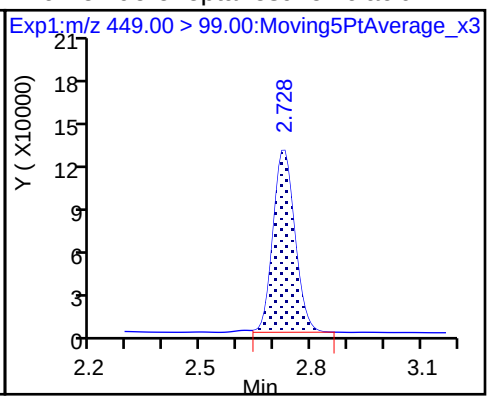
15 Perfluorooctanoic acid



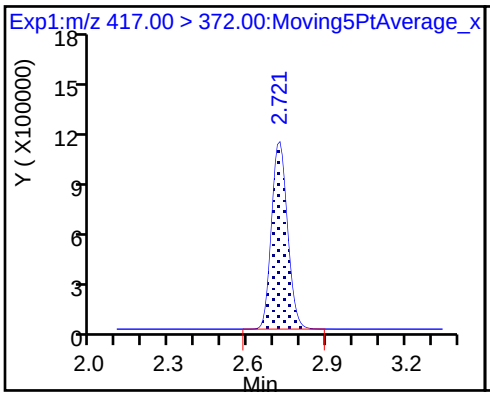
16 Perfluoroheptanesulfonic acid



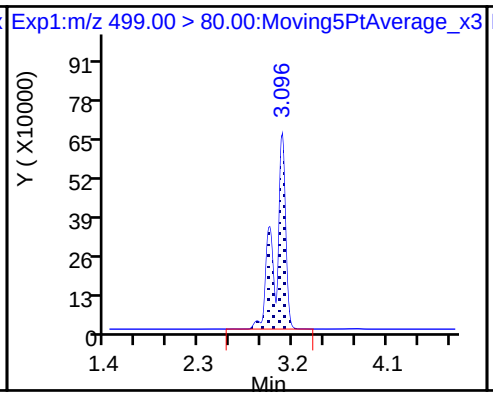
16 Perfluoroheptanesulfonic acid



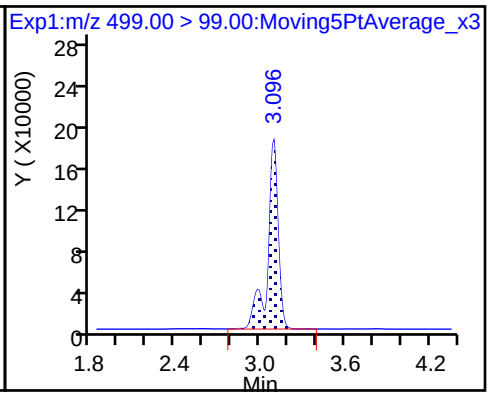
D 14 13C4 PFOA



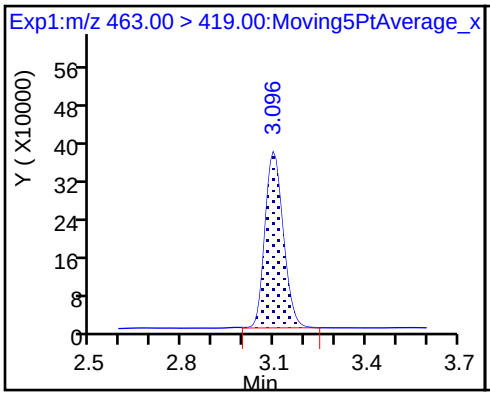
17 Perfluorooctane sulfonic acid



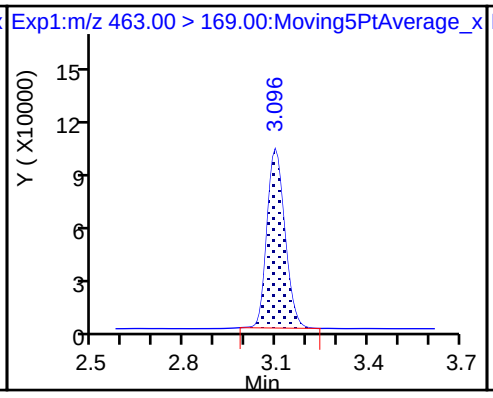
17 Perfluorooctane sulfonic acid



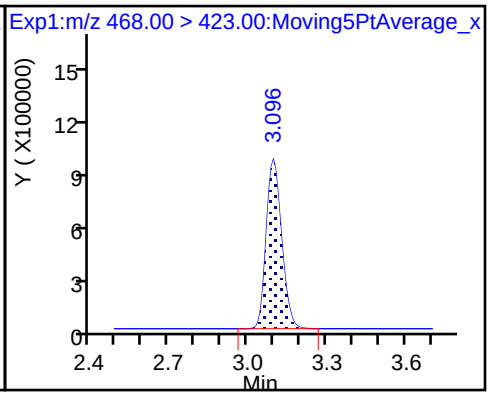
20 Perfluorononanoic acid



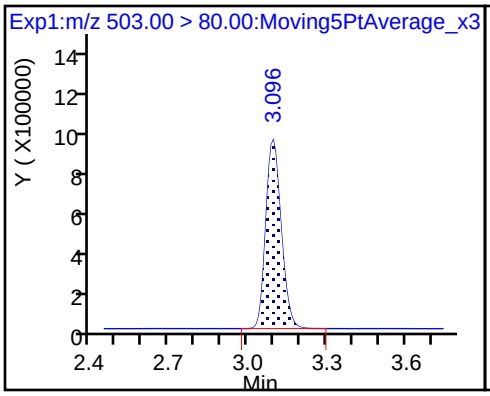
20 Perfluorononanoic acid



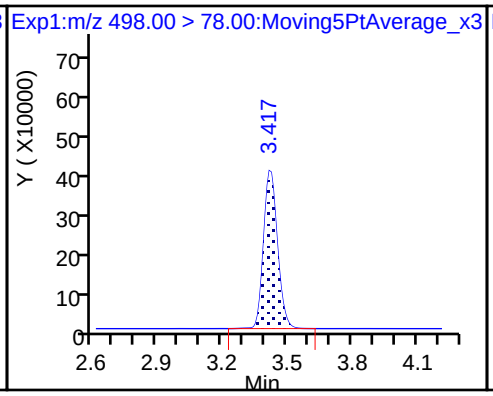
D 19 13C5 PFNA



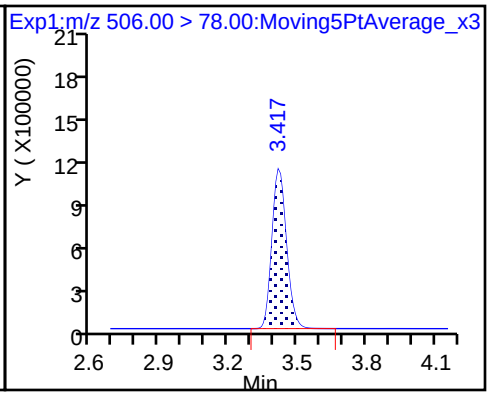
D 18 13C4 PFOS



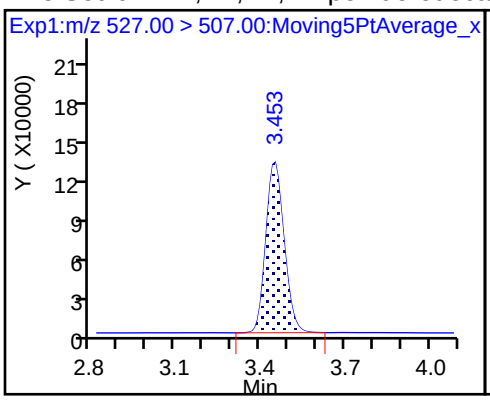
22 Perfluorooctane Sulfonamide



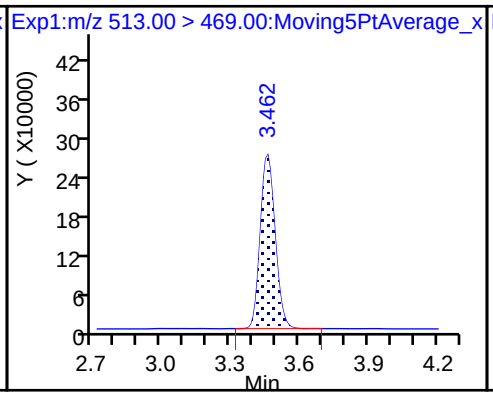
D 21 13C8 FOSA



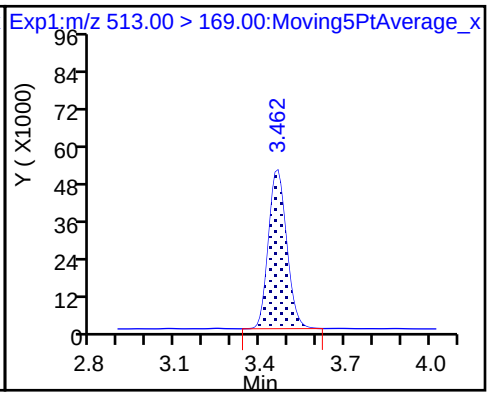
25 Sodium 1H,1H,2H,2H-perfluorodecane



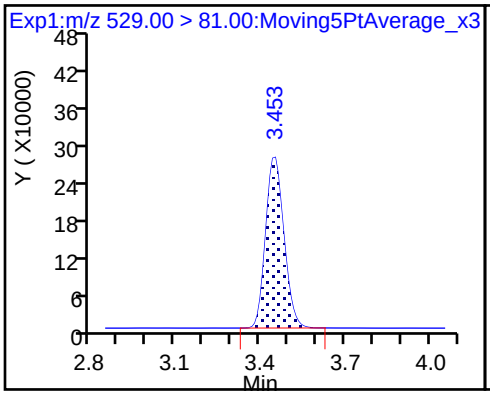
24 Perfluorodecanoic acid



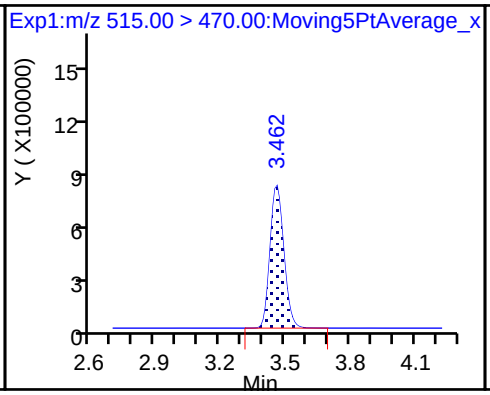
24 Perfluorodecanoic acid



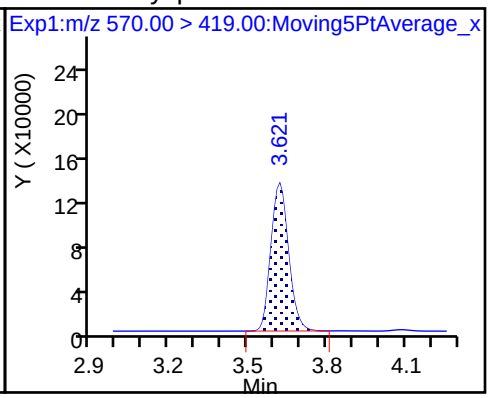
D 26 M2-8:2FTS



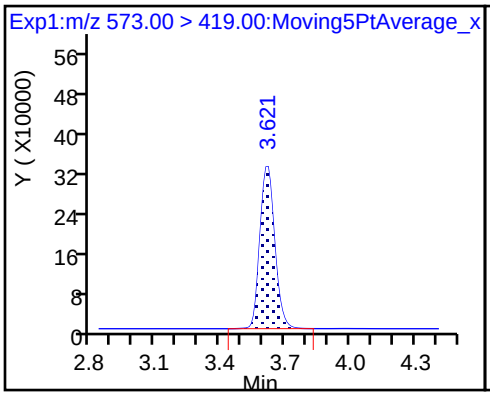
D 23 13C2 PFDA



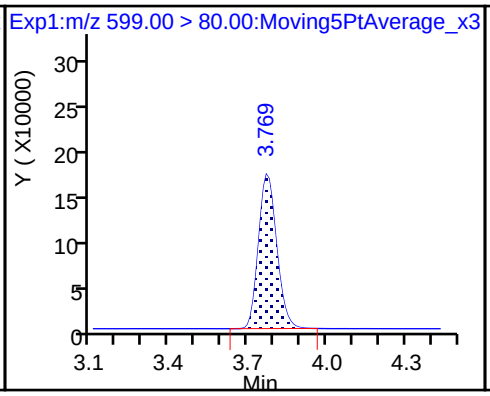
28 N-methyl perfluorooctane sulfonami



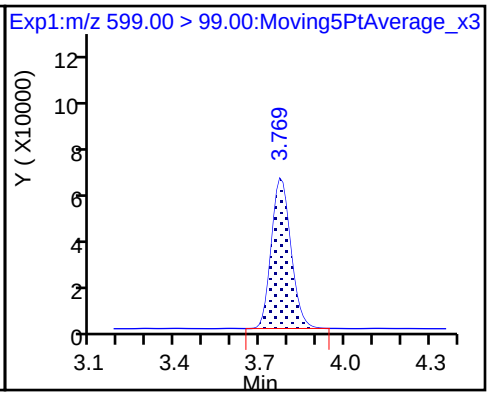
D 27 d3-NMeFOSAA



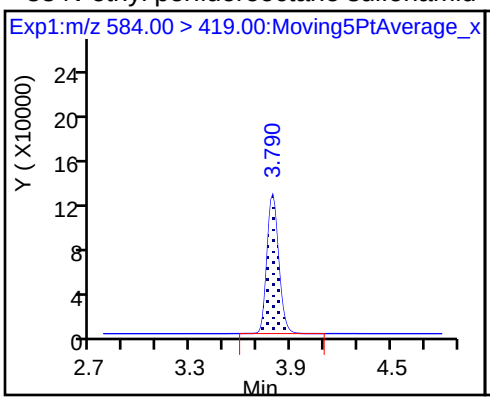
29 Perfluorodecane Sulfonic acid



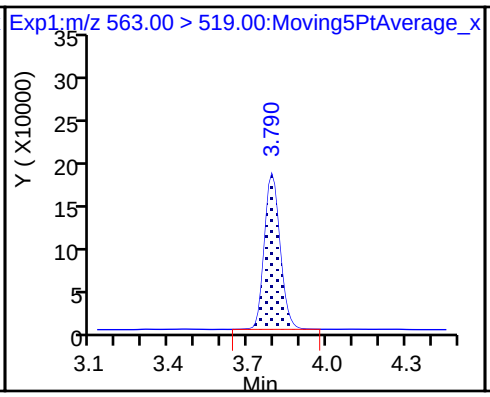
29 Perfluorodecane Sulfonic acid



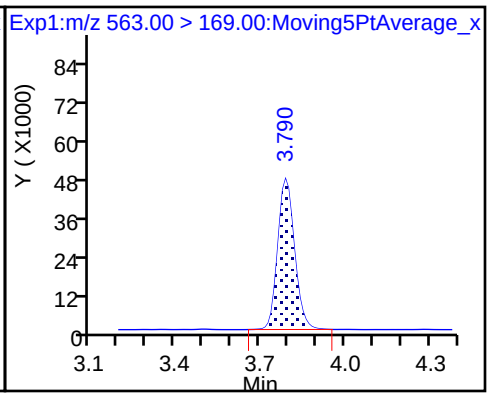
33 N-ethyl perfluorooctane sulfonamid



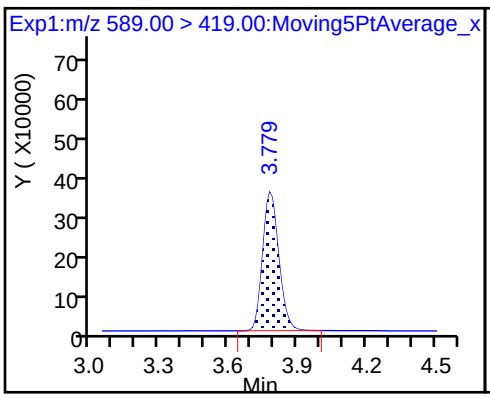
31 Perfluoroundecanoic acid



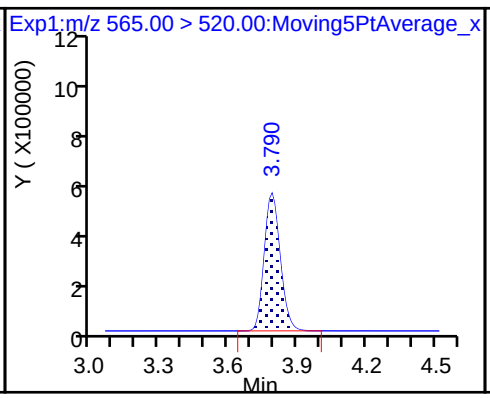
31 Perfluoroundecanoic acid



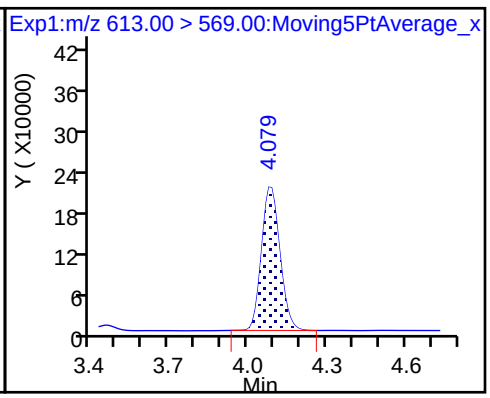
D 32 d5-NEtFOSAA



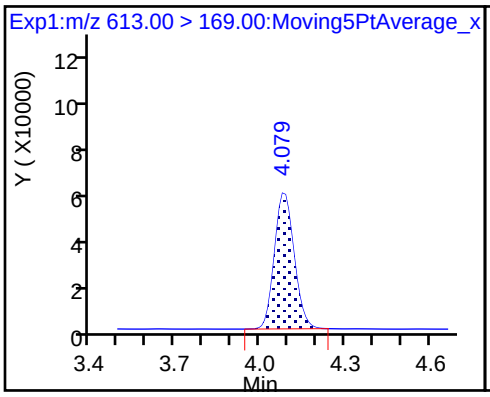
D 30 13C2 PFUnA



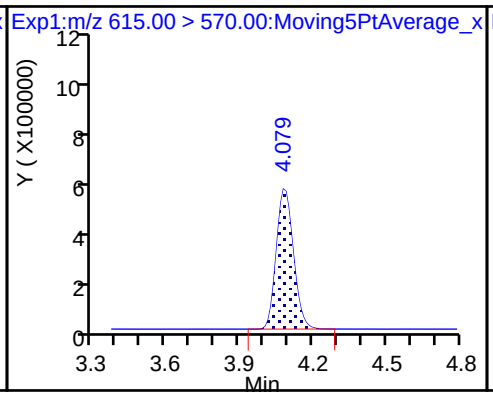
37 Perfluorododecanoic acid



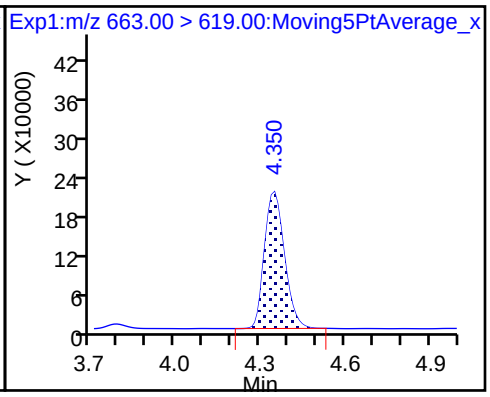
37 Perfluorododecanoic acid



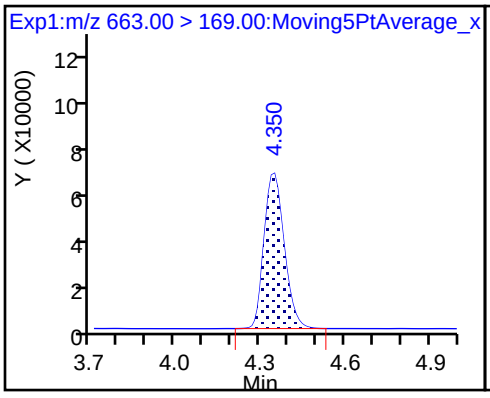
D 36 13C2 PFDoA



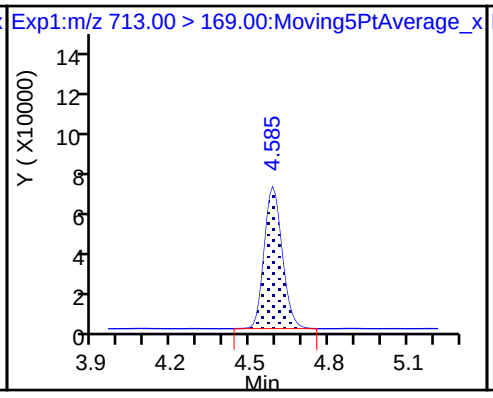
41 Perfluorotridecanoic acid



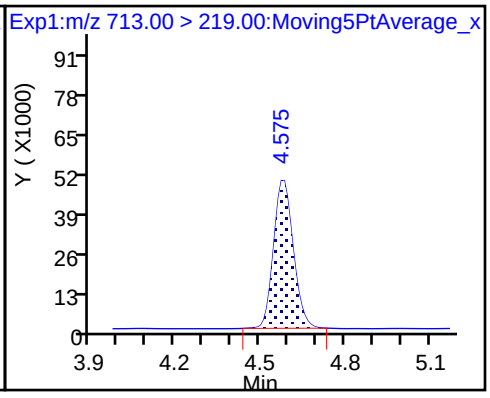
41 Perfluorotridecanoic acid



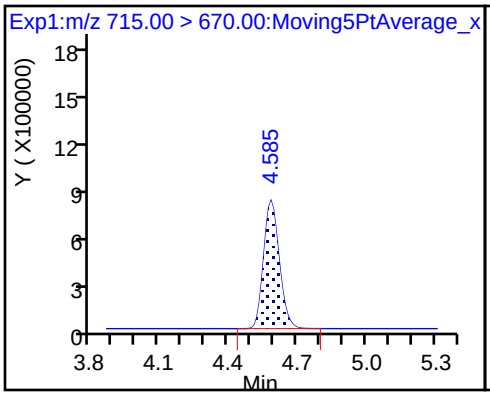
42 Perfluorotetradecanoic acid



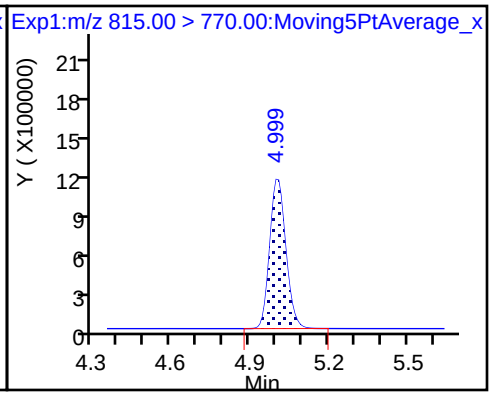
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 03/16/2018 23:01

Analysis Batch Number: 213555 End Date: 03/17/2018 00:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		03/16/2018 23:01	1		GeminiC18 3x100 3(mm)
IC 320-213555/2		03/16/2018 23:09	1	2018.03.16ICAL_002.d	GeminiC18 3x100 3(mm)
IC 320-213555/3		03/16/2018 23:17	1	2018.03.16ICAL_003.d	GeminiC18 3x100 3(mm)
IC 320-213555/4		03/16/2018 23:25	1	2018.03.16ICAL_004.d	GeminiC18 3x100 3(mm)
IC 320-213555/5 ICIS		03/16/2018 23:33	1	2018.03.16ICAL_005.d	GeminiC18 3x100 3(mm)
IC 320-213555/6		03/16/2018 23:41	1	2018.03.16ICAL_006.d	GeminiC18 3x100 3(mm)
IC 320-213555/7		03/16/2018 23:48	1	2018.03.16ICAL_007.d	GeminiC18 3x100 3(mm)
IC 320-213555/8		03/16/2018 23:56	1	2018.03.16ICAL_008.d	GeminiC18 3x100 3(mm)
ICB 320-213555/9		03/17/2018 00:04	1	2018.03.16ICAL_010.d	GeminiC18 3x100 3(mm)
ICV 320-213555/10		03/17/2018 00:12	1	2018.03.16ICAL_011.d	GeminiC18 3x100 3(mm)
CCB 320-213555/11		03/17/2018 00:20	1		GeminiC18 3x100 3(mm)
CCVL 320-213555/12		03/17/2018 00:27	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 03/19/2018 10:10

Analysis Batch Number: 213658 End Date: 03/19/2018 10:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-213658/1		03/19/2018 10:10	1	2018.03.19LLA_003.d	GeminiC18 3x100 3(mm)
CCVL 320-213658/2		03/19/2018 10:18	1	2018.03.19LLA_004.d	GeminiC18 3x100 3(mm)
CCV 320-213658/3 CCVIS		03/19/2018 10:26	1	2018.03.19LLA_005.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 10:33	10		GeminiC18 3x100 3(mm)
CCV 320-213658/5		03/19/2018 10:41	1		GeminiC18 3x100 3(mm)

EPA 537 (Mod)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 03/19/2018 11:13

Analysis Batch Number: 213672 End Date: 03/19/2018 12:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-213672/4		03/19/2018 11:13	1	2018.03.19LLA_026.d	GeminiC18 3x100 3(mm)
MB 320-213387/1-A		03/19/2018 11:20	1	2018.03.19LLA_027.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 11:28	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 11:36	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 11:44	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 11:52	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 11:59	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 12:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 12:15	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 12:23	1		GeminiC18 3x100 3(mm)
CCV 320-213672/14		03/19/2018 12:31	1	2018.03.19LLA_036.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 03/19/2018 13:10

Analysis Batch Number: 213706 End Date: 03/19/2018 13:26

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-213706/1		03/19/2018 13:10	1	2018.03.19LLAA_026.d	GeminiC18 3x100 3(mm)
LCS 320-213387/2-A		03/19/2018 13:18	1	2018.03.19LLAA_028.d	GeminiC18 3x100 3(mm)
CCV 320-213706/3		03/19/2018 13:26	1	2018.03.19LLAA_036.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 03/19/2018 19:18

Analysis Batch Number: 213789 End Date: 03/19/2018 21:15

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-213789/1		03/19/2018 19:18	1	2018.03.19LLAX_036.d	GeminiC18 3x100 3(mm)
320-36960-1		03/19/2018 19:26	1	2018.03.19LLAX_037.d	GeminiC18 3x100 3(mm)
320-36960-2		03/19/2018 19:33	1	2018.03.19LLAX_038.d	GeminiC18 3x100 3(mm)
320-36960-3		03/19/2018 19:41	1	2018.03.19LLAX_039.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 19:49	1		GeminiC18 3x100 3(mm)
320-36960-17		03/19/2018 19:57	1	2018.03.19LLAX_041.d	GeminiC18 3x100 3(mm)
320-36960-19		03/19/2018 20:05	1	2018.03.19LLAX_042.d	GeminiC18 3x100 3(mm)
320-36960-20		03/19/2018 20:13	1	2018.03.19LLAX_043.d	GeminiC18 3x100 3(mm)
320-36960-22		03/19/2018 20:20	1	2018.03.19LLAX_044.d	GeminiC18 3x100 3(mm)
320-36960-22 MS		03/19/2018 20:28	1	2018.03.19LLAX_045.d	GeminiC18 3x100 3(mm)
320-36960-22 MSD		03/19/2018 20:36	1	2018.03.19LLAX_046.d	GeminiC18 3x100 3(mm)
CCV 320-213789/12		03/19/2018 20:44	1	2018.03.19LLAX_047.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 20:52	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 21:00	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/19/2018 21:07	1		GeminiC18 3x100 3(mm)
CCV 320-213789/16		03/19/2018 21:15	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 03/21/2018 18:16

Analysis Batch Number: 214176 End Date: 03/21/2018 19:34

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		03/21/2018 18:16	1		GeminiC18 3x100 3(mm)
IC 320-214176/2		03/21/2018 18:24	1	2018.03.21LLICA LAX 002.d	GeminiC18 3x100 3(mm)
IC 320-214176/3		03/21/2018 18:32	1	2018.03.21LLICA LAX 003.d	GeminiC18 3x100 3(mm)
IC 320-214176/4		03/21/2018 18:39	1	2018.03.21LLICA LAX 004.d	GeminiC18 3x100 3(mm)
IC 320-214176/5 ICIS		03/21/2018 18:47	1	2018.03.21LLICA LAX 005.d	GeminiC18 3x100 3(mm)
IC 320-214176/6		03/21/2018 18:55	1	2018.03.21LLICA LAX 006.d	GeminiC18 3x100 3(mm)
IC 320-214176/7		03/21/2018 19:03	1	2018.03.21LLICA LAX 007.d	GeminiC18 3x100 3(mm)
IC 320-214176/8		03/21/2018 19:11	1	2018.03.21LLICA LAX 008.d	GeminiC18 3x100 3(mm)
ICB 320-214176/9		03/21/2018 19:19	1	2018.03.21LLICA LAX 009.d	GeminiC18 3x100 3(mm)
ICV 320-214176/10		03/21/2018 19:26	1	2018.03.21LLICA LAX 010.d	GeminiC18 3x100 3(mm)
CCB 320-214176/11		03/21/2018 19:34	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 03/24/2018 19:03

Analysis Batch Number: 214716 End Date: 03/24/2018 21:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-214716/1		03/24/2018 19:03	1	2018.03.24LLAA_004.d	GeminiC18 3x100 3(mm)
CCVL 320-214716/2		03/24/2018 19:11	1	2018.03.24LLAA_005.d	GeminiC18 3x100 3(mm)
CCV 320-214716/3 CCVIS		03/24/2018 19:18	1	2018.03.24LLAA_006.d	GeminiC18 3x100 3(mm)
MB 320-214457/1-A		03/24/2018 19:26	1	2018.03.24LLAA_007.d	GeminiC18 3x100 3(mm)
LCS 320-214457/2-A		03/24/2018 19:34	1	2018.03.24LLAA_008.d	GeminiC18 3x100 3(mm)
320-36960-16		03/24/2018 19:42	1	2018.03.24LLAA_009.d	GeminiC18 3x100 3(mm)
320-36960-22 RE		03/24/2018 19:50	1	2018.03.24LLAA_010.d	GeminiC18 3x100 3(mm)
320-36960-22 MS RE		03/24/2018 19:58	1	2018.03.24LLAA_011.d	GeminiC18 3x100 3(mm)
320-36960-22 MSD RE		03/24/2018 20:05	1	2018.03.24LLAA_012.d	GeminiC18 3x100 3(mm)
320-36960-23		03/24/2018 20:13	1	2018.03.24LLAA_013.d	GeminiC18 3x100 3(mm)
320-36960-24		03/24/2018 20:21	1	2018.03.24LLAA_014.d	GeminiC18 3x100 3(mm)
320-36960-25		03/24/2018 20:29	1	2018.03.24LLAA_015.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/24/2018 20:37	1		GeminiC18 3x100 3(mm)
CCV 320-214716/15		03/24/2018 20:45	1	2018.03.24LLAA_017.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/24/2018 20:52	5		GeminiC18 3x100 3(mm)
ZZZZZ		03/24/2018 21:00	1		GeminiC18 3x100 3(mm)
CCV 320-214716/19		03/24/2018 21:16	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 03/29/2018 17:19

Analysis Batch Number: 215538 End Date: 03/29/2018 18:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		03/29/2018 17:19	1		GeminiC18 3x100 3(mm)
IC 320-215538/2		03/29/2018 17:27	1	2018.03.29A_ICALB 002.d	GeminiC18 3x100 3(mm)
IC 320-215538/3		03/29/2018 17:35	1	2018.03.29A_ICALB 003.d	GeminiC18 3x100 3(mm)
IC 320-215538/4		03/29/2018 17:43	1	2018.03.29A_ICALB 004.d	GeminiC18 3x100 3(mm)
IC 320-215538/5 ICIS		03/29/2018 17:50	1	2018.03.29A_ICALB 005.d	GeminiC18 3x100 3(mm)
IC 320-215538/6		03/29/2018 17:58	1	2018.03.29A_ICALB 006.d	GeminiC18 3x100 3(mm)
IC 320-215538/7		03/29/2018 18:06	1	2018.03.29A_ICALB 007.d	GeminiC18 3x100 3(mm)
IC 320-215538/8		03/29/2018 18:14	1	2018.03.29A_ICALB 008.d	GeminiC18 3x100 3(mm)
ICB 320-215538/9		03/29/2018 18:22	1	2018.03.29A_ICALB 009.d	GeminiC18 3x100 3(mm)
ICV 320-215538/10		03/29/2018 18:29	1	2018.03.29A_ICALB 010.d	GeminiC18 3x100 3(mm)
CCB 320-215538/11		03/29/2018 18:37	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 04/07/2018 09:01

Analysis Batch Number: 216821 End Date: 04/07/2018 11:45

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-216821/1		04/07/2018 09:01	1	2018.04.07LLA_004.d	GeminiC18 3x100 3(mm)
CCVL 320-216821/2		04/07/2018 09:08	1	2018.04.07LLA_005.d	GeminiC18 3x100 3(mm)
CCV 320-216821/3 CCVIS		04/07/2018 09:16	1	2018.04.07LLA_006.d	GeminiC18 3x100 3(mm)
MB 320-213404/1-A		04/07/2018 09:24	1	2018.04.07LLA_007.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/07/2018 09:32	1		GeminiC18 3x100 3(mm)
320-36960-4		04/07/2018 09:40	1	2018.04.07LLA_009.d	GeminiC18 3x100 3(mm)
320-36960-4 MS		04/07/2018 09:48	1	2018.04.07LLA_010.d	GeminiC18 3x100 3(mm)
320-36960-4 MSD		04/07/2018 09:55	1	2018.04.07LLA_011.d	GeminiC18 3x100 3(mm)
320-36960-5		04/07/2018 10:03	1	2018.04.07LLA_012.d	GeminiC18 3x100 3(mm)
320-36960-6		04/07/2018 10:11	1	2018.04.07LLA_013.d	GeminiC18 3x100 3(mm)
320-36960-7		04/07/2018 10:19	1	2018.04.07LLA_014.d	GeminiC18 3x100 3(mm)
320-36960-8		04/07/2018 10:27	1	2018.04.07LLA_015.d	GeminiC18 3x100 3(mm)
320-36960-9		04/07/2018 10:35	1	2018.04.07LLA_016.d	GeminiC18 3x100 3(mm)
CCV 320-216821/14		04/07/2018 10:42	1	2018.04.07LLA_017.d	GeminiC18 3x100 3(mm)
320-36960-10		04/07/2018 10:50	1	2018.04.07LLA_018.d	GeminiC18 3x100 3(mm)
320-36960-11		04/07/2018 10:58	1	2018.04.07LLA_019.d	GeminiC18 3x100 3(mm)
320-36960-12		04/07/2018 11:06	1	2018.04.07LLA_020.d	GeminiC18 3x100 3(mm)
320-36960-13		04/07/2018 11:14	1	2018.04.07LLA_021.d	GeminiC18 3x100 3(mm)
320-36960-14		04/07/2018 11:22	1	2018.04.07LLA_022.d	GeminiC18 3x100 3(mm)
320-36960-15		04/07/2018 11:29	1	2018.04.07LLA_023.d	GeminiC18 3x100 3(mm)
320-36960-18		04/07/2018 11:37	1	2018.04.07LLA_024.d	GeminiC18 3x100 3(mm)
CCV 320-216821/22		04/07/2018 11:45	1	2018.04.07LLA_025.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: A8_N Start Date: 04/07/2018 11:45

Analysis Batch Number: 216849 End Date: 04/07/2018 12:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-216849/1		04/07/2018 11:45	1	2018.04.07LLA_025.d	GeminiC18 3x100 3(mm)
LCS 320-213404/2-A		04/07/2018 11:53	1	2018.04.07LLA1_008.d	GeminiC18 3x100 3(mm)
320-36960-4 DL		04/07/2018 12:01	5	2018.04.07LLA1_026.d	GeminiC18 3x100 3(mm)
320-36960-4 MS DL		04/07/2018 12:09	5	2018.04.07LLA1_027.d	GeminiC18 3x100 3(mm)
320-36960-4 MSD DL		04/07/2018 12:16	5	2018.04.07LLA1_028.d	GeminiC18 3x100 3(mm)
CCV 320-216849/6		04/07/2018 12:24	1	2018.04.07LLA1_029.d	GeminiC18 3x100 3(mm)

EPA 537 (Mod)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 213387 Batch Start Date: 03/16/18 10:38 Batch Analyst: Kolstad, Kate M

Batch Method: 3535 Batch End Date: 03/16/18 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00042	LCPFC-IS 00030
MB 320-213387/1		3535, EPA 537 (Mod)				250.0 mL	10.0 mL	500 uL	500 uL
LCS 320-213387/2		3535, EPA 537 (Mod)				250.0 mL	10.0 mL	500 uL	500 uL
320-36960-A-1	BNA-ER-SB-01	3535, EPA 537 (Mod)	T	279.95 g	27.57 g	252.4 mL	10.0 mL	500 uL	500 uL
320-36960-A-2	BNA-FB-01	3535, EPA 537 (Mod)	T	279.27 g	27.22 g	252.1 mL	10.0 mL	500 uL	500 uL
320-36960-A-3	BNA-RB-01	3535, EPA 537 (Mod)	T	278.74 g	27.16 g	251.6 mL	10.0 mL	500 uL	500 uL
320-36960-A-17	BNA05-ER-SD-01	3535, EPA 537 (Mod)	T	273.33 g	27.59 g	245.7 mL	10.0 mL	500 uL	500 uL
320-36960-A-19	BNA-ER-GW-01	3535, EPA 537 (Mod)	T	277.82 g	27.43 g	250.4 mL	10.0 mL	500 uL	500 uL
320-36960-A-20	BNA-FB-02	3535, EPA 537 (Mod)	T	270.49 g	28.81 g	241.7 mL	10.0 mL	500 uL	500 uL
320-36960-A-22	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	281.93 g	29.66 g	252.3 mL	10.0 mL	500 uL	500 uL
320-36960-A-22 MS	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	279.17 g	27.38 g	251.8 mL	10.0 mL	500 uL	500 uL
320-36960-A-22 MSD	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	281.64 g	29.45 g	252.2 mL	10.0 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00118					
MB 320-213387/1		3535, EPA 537 (Mod)							
LCS 320-213387/2		3535, EPA 537 (Mod)		500 uL					
320-36960-A-1	BNA-ER-SB-01	3535, EPA 537 (Mod)	T						
320-36960-A-2	BNA-FB-01	3535, EPA 537 (Mod)	T						
320-36960-A-3	BNA-RB-01	3535, EPA 537 (Mod)	T						
320-36960-A-17	BNA05-ER-SD-01	3535, EPA 537 (Mod)	T						
320-36960-A-19	BNA-ER-GW-01	3535, EPA 537 (Mod)	T						
320-36960-A-20	BNA-FB-02	3535, EPA 537 (Mod)	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 Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 213387 Batch Start Date: 03/16/18 10:38 Batch Analyst: Kolstad, Kate M

Batch Method: 3535 Batch End Date: 03/16/18 16:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00118					
320-36960-A-22	MW-BNA05-01-01	3535, EPA 537 (Mod)	T						
320-36960-A-22 MS	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	500 uL					
320-36960-A-22 MSD	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	500 uL					

Batch Notes	
Analyst ID - Aliquot Step	KMK
Balance ID	QA-078
Batch Comment	Sample labels match client IDs: KMK. Envi-Carb Lot #96014
Analyst ID - Final Volume Step	KMK
H2O ID	3-16-18
Hexane ID	1175188
Internal Standard ID#	1178672
Manifold ID	11, 15
Methanol ID	1167500
Sodium Hydroxide ID	1178465
Pipette ID	N32761F
Analyst ID - Reagent Drop	KMK
Analyst ID - IS Reagent Drop	KMK
Analyst ID - IS Reagent Drop Witness	TWL
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	VPM
Solvent Lot #	1181200
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237137A

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 213387 Batch Start Date: 03/16/18 10:38 Batch Analyst: Kolstad, Kate M

Batch Method: 3535 Batch End Date: 03/16/18 16:38

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 213404 Batch Start Date: 03/16/18 11:18 Batch Analyst: Sharifi, Nooshin

Batch Method: SHAKE Batch End Date: 04/06/18 14:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00042	LCPFC-IS 00033	LCPFCSP 00118	
MB 320-213404/1		SHAKE, EPA 537 (Mod)		5.00 g	10.00 mL	500 uL	500 uL		
LCS 320-213404/2		SHAKE, EPA 537 (Mod)		5.00 g	10.00 mL	500 uL	500 uL	500 uL	
320-36960-A-4	BNA01-SB1-01	SHAKE, EPA 537 (Mod)	T	5.00 g	10.00 mL	500 uL	500 uL		
320-36960-A-4 MS	BNA01-SB1-01	SHAKE, EPA 537 (Mod)	T	4.99 g	10.00 mL	500 uL	500 uL	500 uL	
320-36960-A-4 MSD	BNA01-SB1-01	SHAKE, EPA 537 (Mod)	T	4.96 g	10.00 mL	500 uL	500 uL	500 uL	
320-36960-A-5	BNA01-SB1-02	SHAKE, EPA 537 (Mod)	T	5.07 g	10.00 mL	500 uL	500 uL		
320-36960-A-6	BNA03-SB1-01	SHAKE, EPA 537 (Mod)	T	5.10 g	10.00 mL	500 uL	500 uL		
320-36960-A-7	BNA03-SB1-01D	SHAKE, EPA 537 (Mod)	T	5.08 g	10.00 mL	500 uL	500 uL		
320-36960-A-8	BNA03-SB1-02	SHAKE, EPA 537 (Mod)	T	5.03 g	10.00 mL	500 uL	500 uL		
320-36960-A-9	BNA03-SB2-01	SHAKE, EPA 537 (Mod)	T	4.98 g	10.00 mL	500 uL	500 uL		
320-36960-A-10	BNA03-SB2-01D	SHAKE, EPA 537 (Mod)	T	4.97 g	10.00 mL	500 uL	500 uL		
320-36960-A-11	BNA03-SB2-02	SHAKE, EPA 537 (Mod)	T	5.00 g	10.00 mL	500 uL	500 uL		
320-36960-A-12	BNA04-SB1-01	SHAKE, EPA 537 (Mod)	T	4.93 g	10.00 mL	500 uL	500 uL		
320-36960-A-13	BNA04-SB1-02	SHAKE, EPA 537 (Mod)	T	4.96 g	10.00 mL	500 uL	500 uL		
320-36960-A-14	BNA05-SB1-01	SHAKE, EPA 537 (Mod)	T	5.04 g	10.00 mL	500 uL	500 uL		
320-36960-A-15	BNA05-SB1-02	SHAKE, EPA 537 (Mod)	T	4.95 g	10.00 mL	500 uL	500 uL		
320-36960-A-18	BNA05-SD1-01	SHAKE, EPA 537 (Mod)	T	5.08 g	10.00 mL	500 uL	500 uL		

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 213404 Batch Start Date: 03/16/18 11:18 Batch Analyst: Sharifi, Nooshin

Batch Method: SHAKE Batch End Date: 04/06/18 14:15

Batch Notes	
Acetic Acid ID	985731
Analyst ID - Aliquot Step	HJA
Balance ID	QA-070
Batch Comment	Sample labels match client IDs NSH; Supelco envi-carb lot # 97221
Analyst ID - Concentration	HJA
Analyst ID - Final Volume Step	HJA
Hexane ID	1175187
Internal Standard ID#	1178675
Manifold ID	12,18
Methanol ID	1204219
Methanolic Potassium Hydroxide ID	1178465
Millipore Water Dispense Date	4-31-18
Sodium Hydroxide ID	1142835
Ammonium Hydroxide/MeOH ID	1204324
pH Indicator ID	3817
Analyst ID - Reagent Drop Witness	TMZ
Analyst ID - IS Reagent Drop	HJA
Analyst ID - IS Reagent Drop Witness	VPM
Blank Sand Lot #	162639
SPE Cartridge Lot ID	01763748A
SPE Cartridge Type	WAX 150mg

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 214457 Batch Start Date: 03/22/18 18:06 Batch Analyst: Long, Tyrel W

Batch Method: 3535 Batch End Date: 03/23/18 21:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00044	LCPFC-IS 00031
MB 320-214457/1		3535, EPA 537 (Mod)				250 mL	10.00 mL	500 uL	500 uL
LCS 320-214457/2		3535, EPA 537 (Mod)				250 mL	10.00 mL	500 uL	500 uL
320-36960-B-16	BNA05-SW1-01	3535, EPA 537 (Mod)	T	320.54 g	29.13 g	291.4 mL	10.00 mL	500 uL	500 uL
320-36960-B-22	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	295.34 g	28.58 g	266.8 mL	10.00 mL	500 uL	500 uL
320-36960-B-22 MS	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	286.37 g	28.36 g	258 mL	10.00 mL	500 uL	500 uL
320-36960-B-22 MSD	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	289.56 g	27.69 g	261.9 mL	10.00 mL	500 uL	500 uL
320-36960-B-23	MW-BNA05-01-01D	3535, EPA 537 (Mod)	T	287.47 g	28.74 g	258.7 mL	10.00 mL	500 uL	500 uL
320-36960-B-24	MW-BNA01-01-01	3535, EPA 537 (Mod)	T	290.83 g	29.51 g	261.3 mL	10.00 mL	500 uL	500 uL
320-36960-B-25	BNA04-SW1-01	3535, EPA 537 (Mod)	T	291.21 g	28.49 g	262.7 mL	10.00 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00138					
MB 320-214457/1		3535, EPA 537 (Mod)							
LCS 320-214457/2		3535, EPA 537 (Mod)		500 uL					
320-36960-B-16	BNA05-SW1-01	3535, EPA 537 (Mod)	T						
320-36960-B-22	MW-BNA05-01-01	3535, EPA 537 (Mod)	T						
320-36960-B-22 MS	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	500 uL					
320-36960-B-22 MSD	MW-BNA05-01-01	3535, EPA 537 (Mod)	T	500 uL					
320-36960-B-23	MW-BNA05-01-01D	3535, EPA 537 (Mod)	T						
320-36960-B-24	MW-BNA01-01-01	3535, EPA 537 (Mod)	T						
320-36960-B-25	BNA04-SW1-01	3535, EPA 537 (Mod)	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 Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 214457 Batch Start Date: 03/22/18 18:06 Batch Analyst: Long, Tyrel W

Batch Method: 3535 Batch End Date: 03/23/18 21:45

Batch Notes	
Analyst ID - Aliquot Step	TWL
Balance ID	QA-078
Batch Comment	Checked client ID labels: TWL 3/22/18 ENVICarb Lot# 97221
Analyst ID - Final Volume Step	TWL
H2O ID	3/16/18
Hexane ID	1175188
Internal Standard ID#	1178673
Manifold ID	2
Methanol ID	1167500
Sodium Hydroxide ID	1178465
Pipette ID	N32761F
Analyst ID - Reagent Drop	TWL
Analyst ID - IS Reagent Drop	TWL
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	TWL
Analyst ID - SU Reagent Drop Witness	JER
Solvent Lot #	1186517
Solvent Name	0.3%NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX OASIS 500 mg
Solid Phase Extraction Disk ID	003137011A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

55400

Job Number(s): 36960, 36685

Work List ID(s): 55504, 55514, 55338, 55794, 55341,

Extraction Batch: 213387, 214457, 212670

Analysis Batch(es): 213672, 213706, 213789, 214716, 213059, 213281

Delivery Rank 4

Due Date: ——————

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 213555, 214176, 212752	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• $RF_{average}$ criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓	✓	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

**Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.*

1st Level (Analyst): [signature] Date: 3/25/18

2nd Level Reviewer: [signature] Date: 3/26/2018

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 15MAR2018NCA_PFC **Worklist Num:** 55341
Instrument: A8_N **Method:** A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180315-55341.b
Anaylysis Type: SemiVOA **Creator:** Royce, Amani A
Inj Volume: 2.00 **Inj Vol Units:** ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCVL	320-0055341-001	CCVL	15-Mar-2018 05:31:23	2018.03.14LLC_044.d	21	1.0		sv
CCV L4	320-0055341-002	CCVIS	15-Mar-2018 05:39:11	2018.03.14LLC_045.d	28	1.0		sv
CCB	320-0055341-003	CCB	15-Mar-2018 05:46:59	2018.03.14LLC_046.d	20	1.0		sv
MB 320-212670/1-A	320-0055341-004	MB	15-Mar-2018 05:54:46	2018.03.14LLC_047.d	35	1.0		sv
LCS 320-212670/2-A	320-0055341-005	LCS	15-Mar-2018 06:02:34	2018.03.14LLC_048.d	36	1.0		sv
LCSD 320-212670/3-A	320-0055341-006	LCSD	15-Mar-2018 06:10:23	2018.03.14LLC_049.d	37	1.0		sv
320-36685-A-7-A	320-0055341-007	Client	15-Mar-2018 06:18:13	2018.03.14LLC_050.d	38	1.0	TYS-RB-01	sv
320-36685-A-8-A	320-0055341-008	Client	15-Mar-2018 06:26:06	2018.03.14LLC_051.d	39	1.0	TYS12-SW1-01	sv
CCV L5	320-0055341-009	CCV	15-Mar-2018 06:33:58	2018.03.14LLC_052.d	29	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 15MAR2018NCAA_PFC Worklist Num: 55367
Instrument: A8_N Method: A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180315-55367.b
Anaylysis Type: SemiVOA Creator: Royce, Amani A
Inj Volume: 2.00 Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Fract
CCB	320-0055367-001	CCB	15-Mar-2018 12:37:00	2018.03.15LLAA_003.d	19	1.0	sv
CCVL	320-0055367-002	CCVL	15-Mar-2018 12:44:49	2018.03.15LLAA_004.d	21	1.0	sv
CCV L4	320-0055367-003	CCVIS	15-Mar-2018 12:52:37	2018.03.15LLAA_005.d	13	1.0	sv
MANIFOLD QC 16-5	320-0055367-004	Client	15-Mar-2018 13:00:25	2018.03.15LLAA_006.d	1	1.0	sv
MANIFOLD QC 6-5	320-0055367-005	Client	15-Mar-2018 13:08:17	2018.03.15LLAA_007.d	2	1.0	sv
MANIFOLD QC 6-6	320-0055367-006	Client	15-Mar-2018 13:16:08	2018.03.15LLAA_008.d	3	1.0	sv
MEOH QC 177826	320-0055367-007	Client	15-Mar-2018 13:23:57	2018.03.15LLAA_009.d	4	1.0	sv
CCV L5	320-0055367-008	CCV	15-Mar-2018 13:31:46	2018.03.15LLAA_010.d	14	1.0	sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 15MAR2018NCHH_PFC **Worklist Num:** 55400
Instrument: A8_N **Method:** A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55400.b
Anaylysis Type: SemiVOA **Creator:** Royce, Amani A
Inj Volume: 2.00 **Inj Vol Units:** ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L4	320-0055400-001	CCV	15-Mar-2018 20:24:23	2018.03.15LLC_008.d	28	1.0		sv
LCS 320-212670/2-A	320-0055400-002	LCS	15-Mar-2018 20:32:11	2018.03.15LLC_009.d	36	1.0		sv
320-36685-A-8-A	320-0055400-003	Client	15-Mar-2018 20:39:58	2018.03.15LLC_010.d	43	5.0	TYS12-SW1-01	sv
CCV L5	320-0055400-004	CCV	15-Mar-2018 20:47:47	2018.03.15LLC_011.d	29	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 19MAR2018NCA_PFC Worklist Num: 55502
Instrument: A8_N Method: A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b
Anaylysis Type: SemiVOA Creator: Hannigan, Alyssa B
Inj Volume: 2.00 Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCB	320-0055502-001	CCB	19-Mar-2018 10:10:32	2018.03.19LLA_003.d	20	1.0		sv
CCVL	320-0055502-002	CCVL	19-Mar-2018 10:18:23	2018.03.19LLA_004.d	21	1.0		sv
CCV L4	320-0055502-003	CCVIS	19-Mar-2018 10:26:10	2018.03.19LLA_005.d	13	1.0		sv
320-37017-A-9-A	320-0055502-004	Client	19-Mar-2018 10:33:59	2018.03.19LLA_024.d	13	10.0	18EIE378SW21	sv
CCV L5	320-0055502-005	CCV	19-Mar-2018 10:41:48	2018.03.19LLA_025.d	14	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 19MAR2018NCB_PFC Worklist Num: 55504
Instrument: A8_N Method: A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b
Anaylysis Type: SemiVOA Creator: Royce, Amani A
Inj Volume: 2.00 Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L4	320-0055504-001	CCV	19-Mar-2018 10:49:36	2018.03.19LLA_023.d	13	1.0		SV
DONOTUSE320-36631-B-3	320-0055504-002	Client	19-Mar-2018 10:57:24	2018.03.19LLA_006.d	1	1.0		SV
DONOTUSE320-36631-B-8	320-0055504-003	Client	19-Mar-2018 11:05:13	2018.03.19LLA_007.d	2	1.0		SV
CCV L5	320-0055504-004	CCV	19-Mar-2018 11:13:00	2018.03.19LLA_026.d	14	1.0		SV
MB 320-213387/1-A	320-0055504-005	MB	19-Mar-2018 11:20:51	2018.03.19LLA_027.d	14	1.0		SV
LCS 320-213387/2-A	320-0055504-006	LCS	19-Mar-2018 11:28:40	2018.03.19LLA_028.d	15	1.0		SV
320-36369-B-1-A	320-0055504-007	Client	19-Mar-2018 11:36:30	2018.03.19LLA_029.d	16	1.0	SPM-93-05X-02222018	SV
320-36369-B-1-B MS	320-0055504-008	MS	19-Mar-2018 11:44:21	2018.03.19LLA_030.d	17	1.0	SPM-93-05X-02222018	SV
320-36369-B-1-C MSD	320-0055504-009	MSD	19-Mar-2018 11:52:09	2018.03.19LLA_031.d	18	1.0	SPM-93-05X-02222018	SV
320-36369-B-2-A	320-0055504-010	Client	19-Mar-2018 11:59:57	2018.03.19LLA_032.d	19	1.0	SPM-93-07X-02222018	SV
320-36369-B-4-A	320-0055504-011	Client	19-Mar-2018 12:07:45	2018.03.19LLA_033.d	20	1.0	SPM-93-11X-02222018	SV
320-36369-B-6-A	320-0055504-012	Client	19-Mar-2018 12:15:35	2018.03.19LLA_034.d	21	1.0	FIELD BLANK-02222018	SV
320-36369-B-7-A	320-0055504-013	Client	19-Mar-2018 12:23:23	2018.03.19LLA_035.d	22	1.0	RINSATE-02222018	SV
CCV L4	320-0055504-014	CCV	19-Mar-2018 12:31:12	2018.03.19LLA_036.d	13	1.0		SV

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 19MAR2018NCD_PFC Worklist Num: 55514
Instrument: A8_N Method: A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b
Anaylysis Type: SemiVOA Creator: Royce, Amani A
Inj Volume: 2.00 Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Fract
CCV L5	320-0055514-001	CCV	19-Mar-2018 13:10:17	2018.03.19LLAA_026.d	14	1.0	sv
LCS 320-213387/2-A	320-0055514-002	LCS	19-Mar-2018 13:18:09	2018.03.19LLAA_028.d	15	1.0	sv
CCV L4	320-0055514-003	CCV	19-Mar-2018 13:26:00	2018.03.19LLAA_036.d	13	1.0	sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 19MAR2018NCK_PFC Worklist Num: 55538
Instrument: A8_N Method: A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b
Anaylysis Type: SemiVOA Creator: Royce, Amani A
Inj Volume: 2.00 Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L4	320-0055538-001	CCV	19-Mar-2018 19:18:15	2018.03.19LLAX_036.d	13	1.0		sv
320-36960-A-1-A	320-0055538-002	Client	19-Mar-2018 19:26:05	2018.03.19LLAX_037.d	23	1.0	BNA-ER-SB-01	sv
320-36960-A-2-A	320-0055538-003	Client	19-Mar-2018 19:33:53	2018.03.19LLAX_038.d	24	1.0	BNA-FB-01	sv
320-36960-A-3-A	320-0055538-004	Client	19-Mar-2018 19:41:41	2018.03.19LLAX_039.d	25	1.0	BNA-RB-01	sv
320-36960-A-16-A	320-0055538-005	Client	19-Mar-2018 19:49:32	2018.03.19LLAX_040.d	26	1.0	BNA05-SW1-01	sv
320-36960-A-17-A	320-0055538-006	Client	19-Mar-2018 19:57:24	2018.03.19LLAX_041.d	27	1.0	BNA05-ER-SD-01	sv
320-36960-A-19-A	320-0055538-007	Client	19-Mar-2018 20:05:15	2018.03.19LLAX_042.d	28	1.0	BNA-ER-GW-01	sv
320-36960-A-20-A	320-0055538-008	Client	19-Mar-2018 20:13:06	2018.03.19LLAX_043.d	29	1.0	BNA-FB-02	sv
320-36960-A-22-A	320-0055538-009	Client	19-Mar-2018 20:20:55	2018.03.19LLAX_044.d	30	1.0	MW-BNA05-01-01	sv
320-36960-A-22-B MS	320-0055538-010	MS	19-Mar-2018 20:28:44	2018.03.19LLAX_045.d	31	1.0	MW-BNA05-01-01	sv
320-36960-A-22-C MSD	320-0055538-011	MSD	19-Mar-2018 20:36:34	2018.03.19LLAX_046.d	32	1.0	MW-BNA05-01-01	sv
CCV L5	320-0055538-012	CCV	19-Mar-2018 20:44:23	2018.03.19LLAX_047.d	14	1.0		sv
320-36960-A-23-A	320-0055538-013	Client	19-Mar-2018 20:52:14	2018.03.19LLAX_048.d	33	1.0	MW-BNA05-01-01D	sv
320-36960-A-24-A	320-0055538-014	Client	19-Mar-2018 21:00:05	2018.03.19LLAX_049.d	34	1.0	MW-BNA01-01-01	sv
320-36960-A-25-A	320-0055538-015	Client	19-Mar-2018 21:07:53	2018.03.19LLAX_050.d	35	1.0	BNA04-SW1-01	sv
CCV L4	320-0055538-016	CCV	19-Mar-2018 21:15:44	2018.03.19LLAX_051.d	13	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 24MAR2018NCA_PFC **Worklist Num:** 55794
Instrument: A8_N **Method:** A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b
Anaylysis Type: SemiVOA **Creator:** Westendorf, Cary B
Inj Volume: 2.00 **Inj Vol Units:** ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCB	320-0055794-001	CCB	24-Mar-2018 19:03:21	2018.03.24LLAA_004.d	20	1.0		sv
CCVL	320-0055794-002	CCVL	24-Mar-2018 19:11:10	2018.03.24LLAA_005.d	21	1.0		sv
CCV L4	320-0055794-003	CCVIS	24-Mar-2018 19:18:58	2018.03.24LLAA_006.d	13	1.0		sv
MB 320-214457/1-A	320-0055794-005	MB	24-Mar-2018 19:26:45	2018.03.24LLAA_007.d	1	1.0		sv
LCS 320-214457/2-A	320-0055794-006	LCS	24-Mar-2018 19:34:34	2018.03.24LLAA_008.d	2	1.0		sv
320-36960-B-16-A	320-0055794-007	Client	24-Mar-2018 19:42:24	2018.03.24LLAA_009.d	3	1.0	BNA05-SW1-01	sv
320-36960-B-22-A	320-0055794-008	Client	24-Mar-2018 19:50:13	2018.03.24LLAA_010.d	4	1.0	MW-BNA05-01-01	sv
320-36960-B-22-B MS	320-0055794-009	MS	24-Mar-2018 19:58:04	2018.03.24LLAA_011.d	5	1.0	MW-BNA05-01-01	sv
320-36960-B-22-C MSD	320-0055794-010	MSD	24-Mar-2018 20:05:55	2018.03.24LLAA_012.d	6	1.0	MW-BNA05-01-01	sv
320-36960-B-23-A	320-0055794-011	Client	24-Mar-2018 20:13:48	2018.03.24LLAA_013.d	7	1.0	MW-BNA05-01-01D	sv
320-36960-B-24-A	320-0055794-012	Client	24-Mar-2018 20:21:40	2018.03.24LLAA_014.d	8	1.0	MW-BNA01-01-01	sv
320-36960-B-25-A	320-0055794-013	Client	24-Mar-2018 20:29:32	2018.03.24LLAA_015.d	9	1.0	BNA04-SW1-01	sv
320-36685-B-7-A	320-0055794-014	Client	24-Mar-2018 20:37:22	2018.03.24LLAA_016.d	10	1.0	TYS-RB-01	sv
CCV L5	320-0055794-015	CCV	24-Mar-2018 20:45:11	2018.03.24LLAA_017.d	14	1.0		sv
320-36685-B-8-A	320-0055794-016	Client	24-Mar-2018 20:52:58	2018.03.24LLAA_018.d	11	5.0	TYS12-SW1-01	sv
320-36685-B-8-A	320-0055794-017	Client	24-Mar-2018 21:00:47	2018.03.24LLAA_019.d	12	1.0	TYS12-SW1-01	sv
RB	320-0055794-018	RB	24-Mar-2018 21:08:36	2018.03.24LLAA_020.d	54	1.0		sv
CCV L4	320-0055794-019	CCV	24-Mar-2018 21:16:24	2018.03.24LLAA_021.d	13	1.0		sv

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 15MAR2018NCA_PFC Worklist Number: 55341
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180315-55341.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213057	LC PFC ICAL Raw Batch: 213058	LC PFC_QSM5-1 ICAL Raw Batch: 213059
# 1 CCVL	# 1 CCVL	# 1 CCVL	# 1 CCVL
# 2 CCV L4	# 2 CCV L4	# 2 CCV L4	# 2 CCV L4
# 3 CCB	# 3 CCB	# 3 CCB	# 3 CCB
# 4 MB 320-212670/1-A			# 4 MB 320-212670/1-A
# 5 LCS 320-212670/2-A			# 5 LCS 320-212670/2-A
# 6 LCSD 320-212670/3-A			# 6 LCSD 320-212670/3-A
# 7 320-36685-A-7-A			# 7 320-36685-A-7-A
# 8 320-36685-A-8-A			# 8 320-36685-A-8-A
# 9 CCV L5	# 9 CCV L5	# 9 CCV L5	# 9 CCV L5

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 15MAR2018NCHH_PFC Worklist Number: 55400
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55400.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213279	LC PFC ICAL Raw Batch: 213280	LC PFC_QSM5-1 ICAL Raw Batch: 213281
# 1 CCV L4 # 2 LCS 320-212670/2-A # 3 320-36685-A-8-A # 4 CCV L5	# 1 CCV L4 # 4 CCV L5	# 1 CCV L4 # 4 CCV L5	# 1 CCV L4 # 2 LCS 320-212670/2-A # 3 320-36685-A-8-A # 4 CCV L5

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 19MAR2018NCB_PFC Worklist Number: 55504
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55504.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_QSM5-1 ICAL Raw Batch: 213672
# 1 CCV L4	# 1 CCV L4
# 2 DONOTUSE320-36631-B-3-B	# 2 DONOTUSE320-36631-B-3-B
# 3 DONOTUSE320-36631-B-8-B	# 3 DONOTUSE320-36631-B-8-B
# 4 CCV L5	# 4 CCV L5
# 5 MB 320-213387/1-A	# 5 MB 320-213387/1-A
# 6 LCS 320-213387/2-A	# 6 LCS 320-213387/2-A
# 7 320-36369-B-1-A	# 7 320-36369-B-1-A
# 8 320-36369-B-1-B MS	# 8 320-36369-B-1-B MS
# 9 320-36369-B-1-C MSD	# 9 320-36369-B-1-C MSD
#10 320-36369-B-2-A	#10 320-36369-B-2-A
#11 320-36369-B-4-A	#11 320-36369-B-4-A
#12 320-36369-B-6-A	#12 320-36369-B-6-A
#13 320-36369-B-7-A	#13 320-36369-B-7-A
#14 CCV L4	#14 CCV L4

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 19MAR2018NCD_PFC Worklist Number: 55514
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55514.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_QSM5-1 ICAL Raw Batch: 213706
# 1 CCV L5	# 1 CCV L5
# 2 LCS 320-213387/2-A	# 2 LCS 320-213387/2-A
# 3 CCV L4	# 3 CCV L4

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 19MAR2018NCK_PFC Worklist Number: 55538
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55538.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213787	LC PFC ICAL Raw Batch: 213788	LC PFC_QSM5-1 ICAL Raw Batch: 213789
# 1 CCV L4	# 1 CCV L4	# 1 CCV L4	# 1 CCV L4
# 2 320-36960-A-1-A			# 2 320-36960-A-1-A
# 3 320-36960-A-2-A			# 3 320-36960-A-2-A
# 4 320-36960-A-3-A			# 4 320-36960-A-3-A
# 5 320-36960-A-16-A			# 5 320-36960-A-16-A
# 6 320-36960-A-17-A			# 6 320-36960-A-17-A
# 7 320-36960-A-19-A			# 7 320-36960-A-19-A
# 8 320-36960-A-20-A			# 8 320-36960-A-20-A
# 9 320-36960-A-22-A			# 9 320-36960-A-22-A
#10 320-36960-A-22-B MS			#10 320-36960-A-22-B MS
#11 320-36960-A-22-C MSD			#11 320-36960-A-22-C MSD
#12 CCV L5	#12 CCV L5	#12 CCV L5	#12 CCV L5
#13 320-36960-A-23-A			#13 320-36960-A-23-A
#14 320-36960-A-24-A			#14 320-36960-A-24-A
#15 320-36960-A-25-A			#15 320-36960-A-25-A
#16 CCV L4	#16 CCV L4	#16 CCV L4	#16 CCV L4

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 24MAR2018NCA_PFC Worklist Number: 55794
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180325-55794.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch 1	LC PFC_DOD ICAL Raw Batch 214714	LC PFC ICAL Raw Batch 214715	LC PFC_QSM5-1 ICAL Raw Batch 214716
# 1 CCB	# 1 CCB	# 1 CCB	# 1 CCB
# 2 CCVL	# 2 CCVL	# 2 CCVL	# 2 CCVL
# 3 CCV L4	# 3 CCV L4	# 3 CCV L4	# 3 CCV L4
# 5 MB 320-214457/1-A			# 5 MB 320-214457/1-A
# 6 LCS 320-214457/2-A			# 6 LCS 320-214457/2-A
# 7 320-36960-B-16-A			# 7 320-36960-B-16-A
# 8 320-36960-B-22-A			# 8 320-36960-B-22-A
# 9 320-36960-B-22-B MS			# 9 320-36960-B-22-B MS
#10 320-36960-B-22-C MSD			#10 320-36960-B-22-C MSD
#11 320-36960-B-23-A			#11 320-36960-B-23-A
#12 320-36960-B-24-A			#12 320-36960-B-24-A
#13 320-36960-B-25-A			#13 320-36960-B-25-A
#14 320-36685-B-7-A			#14 320-36685-B-7-A
#15 CCV L5	#15 CCV L5	#15 CCV L5	#15 CCV L5
#16 320-36685-B-8-A			#16 320-36685-B-8-A
#17 320-36685-B-8-A			#17 320-36685-B-8-A
#18 RB	#18 RB	#18 RB	#18 RB
#19 CCV L4	#19 CCV L4	#19 CCV L4	#19 CCV L4

RX

AS 3/19/18

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213387 ✓

19

Method Code: 320-3535_PFC-320

Analyst: Kolstad, Kate M

Batch Open: 3/16/2018 10:38:00AM

Batch End: 3/16/2018 4:38:00PM

3/26

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-213387/1 N/A	N/A		250.0 mL 10.0 mL	NA			N/A	N/A	N/A		
2	LCS-320-213387/2 N/A	N/A		250.0 mL 10.0 mL	NA			N/A	N/A	N/A		
3	320-36369-B-1 (PFC_IDA_DOD5.1)	N/A (320-36369-1)	274.59 g 27.65 g	246.9 mL 10.0 mL	NA			3/19/18	16_Days	4		
4	320-36369-B-1-MS (PFC_IDA_DOD5.1)	N/A (320-36369-1)	272.32 g 27.52 g	244.8 mL 10.0 mL	NA			3/19/18	16_Days	4		
5	320-36369-B-1-MSD (PFC_IDA_DOD5.1)	N/A (320-36369-1)	274.00 g 27.49 g	246.5 mL 10.0 mL	NA			3/19/18	16_Days	4		
6	320-36369-B-2 (PFC_IDA_DOD5.1)	N/A (320-36369-1)	275.69 g 27.55 g	248.1 mL 10.0 mL	NA			3/19/18	16_Days	4		
7	320-36369-B-4 (PFC_IDA_DOD5.1)	N/A (320-36369-1)	275.89 g 29.44 g	246.5 mL 10.0 mL	NA			3/19/18	16_Days	4		
8	320-36369-B-6 (PFC_IDA_DOD5.1)	N/A (320-36369-1)	278.38 g 27.89 g	250.5 mL 10.0 mL	NA			3/19/18	16_Days	4		
9	320-36369-B-7 (PFC_IDA_DOD5.1)	N/A (320-36369-1)	279.16 g 27.87 g	251.3 mL 10.0 mL	NA			3/19/18	16_Days	4		
10	320-36960-A-1 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	279.95 g 27.57 g	252.4 mL 10.0 mL	NA			3/28/18	16_Days	4		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213387

Analyst: Kolstad, Kate M

Batch Open: 3/16/2018 10:38:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/16/2018 4:38:00PM

11	320-36960-A-2 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	279.27 g 27.22 g	252.1 mL 10.0 mL	NA			3/28/18	16_Days	4	
12	320-36960-A-3 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	278.74 g 27.16 g	251.6 mL 10.0 mL	NA			3/28/18	16_Days	4	
13	320-36960-A-16 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	275.48 g 28.14 g	247.3 mL 10.0 mL	NA			3/28/18	16_Days	4	
14	320-36960-A-17 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	273.33 g 27.59 g	245.7 mL 10.0 mL	NA			3/28/18	16_Days	4	
15	320-36960-A-19 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	277.82 g 27.43 g	250.4 mL 10.0 mL	NA			3/28/18	16_Days	4	
16	320-36960-A-20 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	270.49 g 28.81 g	241.7 mL 10.0 mL	NA			3/28/18	16_Days	4	
17	320-36960-A-22 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	281.93 g 29.66 g	252.3 mL 10.0 mL	NA			3/28/18	16_Days	4	
18	320-36960-A-22-MS (PFC_IDA_DOD5.1)	N/A (320-36960-1)	279.17 g 27.38 g	251.8 mL 10.0 mL	NA			3/28/18	16_Days	4	
19	320-36960-A-22-MSD (PFC_IDA_DOD5.1)	N/A (320-36960-1)	281.64 g 29.45 g	252.2 mL 10.0 mL	NA			3/28/18	16_Days	4	
20	320-36960-A-23 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	278.54 g 29.43 g	249.1 mL 10.0 mL	NA			3/28/18	16_Days	4	
21	320-36960-A-24 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	282.51 g 27.58 g	254.9 mL 10.0 mL	NA			3/28/18	16_Days	4	
22	320-36960-A-25 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	279.73 g 29.15 g	250.6 mL 10.0 mL	NA			3/28/18	16_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213387

Method Code: 320-3535_PFC-320

Analyst: Kolstad, Kate M

Batch Open: 3/16/2018 10:38:00AM

Batch End: 3/16/2018 4:38:00PM

Batch Notes

Manifold ID	11, 15
Methanol ID	1167500
Hexane ID	1175188
Sodium Hydroxide ID	1178465
First Start time	NA
First End time	NA
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237137A
Balance ID	QA-078
H2O ID	3-16-18
Pipette ID	N32761F
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	1181200
Analyst ID - Reagent Drop	KMK
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	VPM
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
Analyst ID - IS Reagent Drop	KMK

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213387

Analyst: Kolstad, Kate M

Batch Open: 3/16/2018 10:38:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/16/2018 4:38:00PM

Analyst ID - IS Reagent Drop Witness	TWL
Internal Standard ID#	1178672
Analyst ID - Concentration	NA
Analyst ID - Aliquot Step	KMK
Analyst ID - Final Volume Step	KMK
SOP Number	WS-LC-0025
Batch Comment	Sample labels match client IDs: KMK. envi-carb Lot # 960014

Comments

Login Comments for Job 320-36369-B-1 36369: **DOD5**

320-36369-B-1~MS	Rework Comments:	Double Spiked IS
320-36369-B-1~MSD	Rework Comments:	Double Spiked IS
320-36369-B-2	Rework Comments:	Double Spiked IS
320-36369-B-4	Rework Comments:	Double Spiked IS
320-36369-B-6	Rework Comments:	Double Spiked IS
320-36369-B-7	Rework Comments:	Double Spiked IS
	Rework Comments:	Double Spiked IS

Page 1956 of 1994

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213387

Method Code: 320-3535_PFC-320

Analyst: Kolstad, Kate M

Batch Open: 3/16/2018 10:38:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-213387/1	LCMPFC_ALL_SU_00042	500 uL	10.0 mL	KMK 3-16-18	VPM 3-16-18
LCS 320-213387/2	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
LCS 320-213387/2	LCPFCSP_00118	500 uL	10.0 mL		
320-36369-B-1	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36369-B-1 MS	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36369-B-1 MS	LCPFCSP_00118	500 uL	10.0 mL		
320-36369-B-1 MSD	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36369-B-1 MSD	LCPFCSP_00118	500 uL	10.0 mL		
320-36369-B-2	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36369-B-4	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36369-B-6	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36369-B-7	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-1	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-2	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-3	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-16	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-17	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-19	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213387

Analyst: Kolstad, Kate M

Batch Open: 3/16/2018 10:38:00AM

Method Code: 320-3535_PFC-320

Batch End:

320-36960-A-20	LCMPFC_ALL_SU_00042	500 uL	10.0 mL	KMK 3-16-18	RPM 3-16-18
320-36960-A-22	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-22 MS	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-22 MS	LCPFCSP_00118	500 uL	10.0 mL		
320-36960-A-22 MSD	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-22 MSD	LCPFCSP_00118	500 uL	10.0 mL		
320-36960-A-23	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-24	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		
320-36960-A-25	LCMPFC_ALL_SU_00042	500 uL	10.0 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s) 213387 Test 3535_PFC

Earliest Holding Time 3-8-18 (Rx); 3-19-18.

Batch Information	1st Level Reviewer	2nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary batch information complete and entered into TALS correctly	✓	✓
BD, FV, and AL initials are transcribed into the batch comment	✓	✓
Sample List Tab	**1st Level Reviewer**	**2nd Level Reviewer**
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	✓	✓
MS/MSD or MS/DU NCM filed	NA	NA
NCM for any anomalies filed	✓	✓
All NCMs include method code, matrix, and prep batch	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Batch contains no more than 20 live samples	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed properly in TALS	✓	✓
All additional information is transcribed into TALS and is correct and raw data is attached	✓	✓
Comments/Observations are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and checked into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Internal Standard is added to the reagents	✓	✓
All units are correctly transcribed into TALS	✓	✓

1st Level Reviewer: KMK Date: 3-16-18

2nd Level Reviewer: VPM Date: 3/16/18

Comments: _____

(RX)

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-214457

Method Code: 320-3535_PFC-320

Analyst: Long, Tyrel W

27 AS 3/24/18

Batch Open: 3/22/2018 6:06:00PM

Batch End: 3/23/2018 9:45:00PM

Solid-Phase Extraction (SPE)

3/27

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB~320-214457/1 N/A	N/A		250 mL	NA			N/A	N/A	N/A		
				10.00 mL								
2	LCS~320-214457/2 N/A	N/A		250 mL	NA			N/A	N/A	N/A		
				10.00 mL								
3	320-36960-B-16 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	320.54 g	291.4 mL	NA			3/28/18	16_Days	4		
			29.13 g	10.00 mL								
4	320-36960-B-22 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	295.34 g	266.8 mL	NA			3/28/18	16_Days	4		
			28.58 g	10.00 mL								
5	320-36960-B-22~MS (PFC_IDA_DOD5.1)	N/A (320-36960-1)	286.37 g	258 mL	NA			3/28/18	16_Days	4		
			28.36 g	10.00 mL								
6	320-36960-B-22~MSD (PFC_IDA_DOD5.1)	N/A (320-36960-1)	289.56 g	261.9 mL	NA			3/28/18	16_Days	4		
			27.69 g	10.00 mL								
7	320-36960-B-23 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	287.47 g	258.7 mL	NA			3/28/18	16_Days	4		
			28.74 g	10.00 mL								
8	320-36960-B-24 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	290.83 g	261.3 mL	NA			3/28/18	16_Days	4		
			29.51 g	10.00 mL								
9	320-36960-B-25 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	291.21 g	262.7 mL	NA			3/28/18	16_Days	4		
			28.49 g	10.00 mL								
10	320-36685-B-7 (PFC_IDA_DOD5.1)	N/A (320-36685-1)	310.01 g	282.3 mL	NA			3/18/18	16_Days	4		
			27.69 g	10.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-214457

Analyst: Long, Tyrel W

Batch Open: 3/22/2018 6:06:00PM

Method Code: 320-3535_PFC-320

Batch End: 3/23/2018 9:45:00PM

11	320-36685-B-8 (PFC_IDA_DOD5.1)	N/A (320-36685-1)	19.99 g 29.55 g	290.4 mL 10.00 mL	NA			3/18/18	16_Days	4	5X	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-214457

Method Code: 320-3535_PFC-320

Analyst: Long, Tyrel W

Batch Open: 3/22/2018 6:06:00PM

Batch End: 3/23/2018 9:45:00PM

Batch Notes

Manifold ID	2
Methanol ID	1167500
Hexane ID	1175188
Sodium Hydroxide ID	1178465
First Start time	NA
First End time	NA
SPE Cartridge Type	WAX OASIS 500 mg
Solid Phase Extraction Disk ID	003137011A
Balance ID	QA-078
H2O ID	3/16/18
Pipette ID	N32761F
Solvent Name	0.3%NH4OH/MeOH
Solvent Lot #	1186517
Analyst ID - Reagent Drop	TWL
Analyst ID - SU Reagent Drop	TWL
Analyst ID - SU Reagent Drop Witness	JER
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
Analyst ID - IS Reagent Drop	TWL

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-214457

Analyst: Long, Tyrel W

Batch Open: 3/22/2018 6:06:00PM

Method Code: 320-3535_PFC-320

Batch End: 3/23/2018 9:45:00PM

Analyst ID - IS Reagent Drop	JER
Witness	
Internal Standard ID#	1178673
Analyst ID - Concentration	NA
Analyst ID - Aliquot Step	TWL
Analyst ID - Final Volume Step	TWL
SOP Number	WS-LC-0025
Batch Comment	Checked client ID labels: TWL 3/22/18

Comments

320-36960-B-16	Rework Comments:	PFOA high in LCS and detections in associated samples
320-36960-B-22	Rework Comments:	PFOA high in LCS and detections in associated samples
320-36960-B-22~MS	Rework Comments:	PFOA high in LCS and detections in associated samples
320-36960-B-22~MSD	Rework Comments:	PFOA high in LCS and detections in associated samples
320-36960-B-23	Rework Comments:	PFOA high in LCS and detections in associated samples
320-36960-B-24	Rework Comments:	PFOA high in LCS and detections in associated samples
320-36960-B-25	Rework Comments:	PFOA high in LCS and detections in associated samples
320-36685-B-7	Rework Comments:	LCS recovery failed high
320-36685-B-8	Rework Comments:	LCS recovery failed high

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-214457

Method Code: 320-3535_PFC-320

Analyst: Long, Tyrel W

Batch Open: 3/22/2018 6:06:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-214457/1	LCMPFC_ALL_SU_00044	500 uL	10.00 mL	TVL 3-22-18	JMD 3/22/18
LCS 320-214457/2	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
LCS 320-214457/2	LCPFCSP_00138	500 uL	10.00 mL		
320-36960-B-16	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
320-36960-B-22	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
320-36960-B-22 MS	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
320-36960-B-22 MS	LCPFCSP_00138	500 uL	10.00 mL		
320-36960-B-22 MSD	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
320-36960-B-22 MSD	LCPFCSP_00138	500 uL	10.00 mL		
320-36960-B-23	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
320-36960-B-24	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
320-36960-B-25	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
320-36685-B-7	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		
320-36685-B-8	LCMPFC_ALL_SU_00044	500 uL	10.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-214457

Analyst: Long, Tyrel W

Batch Open: 3/22/2018 6:06:00PM

Method Code: 320-3535_PFC-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s) 214457 Test 3535_PFC

Earliest Holding Time 3/22/18

Batch Information	1st Level Reviewer	2nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary batch information complete and entered into TALS correctly	✓	✓
BD, FV, and AL initials are transcribed into the batch comment	✓	✓
Sample List Tab	**1st Level Reviewer**	**2nd Level Reviewer**
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	NA	NA
MS/MSD or MS/DU NCM filed	NA	NA
NCM for any anomalies filed	✓	✓
All NCMs include method code, matrix, and prep batch	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Batch contains no more than 20 live samples	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed properly in TALS	✓	✓
All additional information is transcribed into TALS and is correct and raw data is attached	✓	✓
Comments/Observations are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and checked into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Internal Standard is added to the reagents	✓	✓
All units are correctly transcribed into TALS	✓	✓

1st Level Reviewer: [signature] Date: 3/23/18 VPM 3/24/18

2nd Level Reviewer: VPM Date: 3/24/18

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC - IDA

Analyst (Print Name) Amani Bayee **Reagent ID** 1168592

Date 3/24/18

Job #	Sample #	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
320-36685	8	10,000	60	300	5X

AAL 3/24/18

Comments:

QSM 5.1

13

JSB 3/19/18
KS 3/15/18

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212670

Analyst: Kolstad, Kate M

Method Code: 320-3535_PFC-320

Batch Open: 3/13/2018 10:10:00AM

Batch End: 3/13/2018 4:32:00PM

Solid-Phase Extraction (SPE)

Due: 3/23

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-212670/1 N/A	N/A		250 mL	NA			N/A	N/A	N/A		
				10 mL								
2	LCS-320-212670/2 N/A	N/A		250 mL	NA			N/A	N/A	N/A	R1	
				10 mL								
3	LCSD-320-212670/3 N/A	N/A		250 mL	NA			N/A	N/A	N/A		
				10 mL								
4	320-36685-A-7 (PFC_IDA_DOD5.1)	N/A (320-36685-1)	261.87 g	233.9 mL	NA			3/18/18	16_Days	4		
			27.98 g	10 mL								
5	320-36685-A-8 (PFC_IDA_DOD5.1)	N/A (320-36685-1)	260.94 g	232.3 mL	NA			3/18/18	16_Days	4	5X	
			28.65 g	10 mL								

Page 1860 of 1904

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212670
Method Code: 320-3535_PFC-320

Analyst: Kolstad, Kate M

Batch Open: 3/13/2018 10:10:00AM
Batch End: 3/13/2018 4:32:00PM

Batch Notes

Manifold ID	14
Methanol ID	1167500
Hexane ID	1174408
Sodium Hydroxide ID	1178465
First Start time	NA
First End time	NA
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237137A
Balance ID	QA-078
H2O ID	3-8-18
Pipette ID	N32728F
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	1181200
Analyst ID - Reagent Drop	KMK
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	ABH
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
Analyst ID - IS Reagent Drop	KMK

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212670

Analyst: Kolstad, Kate M

Batch Open: 3/13/2018 10:10:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/13/2018 4:32:00PM

Analyst ID - IS Reagent Drop Witness	TWL
Internal Standard ID#	1140898
Analyst ID - Concentration	NA
Analyst ID - Aliquot Step	KMK
Analyst ID - Final Volume Step	KMK
SOP Number	WS-LC-0025
Batch Comment	Sample labels match: KMK. Envi-Carb: 96014.

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212670

Method Code: 320-3535_PFC-320

Analyst: Kolstad, Kate M

Batch Open: 3/13/2018 10:10:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-212670/1	LCMPFC_ALL_SU_00043	500 uL	10 mL	kmk 3-13-18	ABH 3/13/18
LCS 320-212670/2	LCMPFC_ALL_SU_00043	500 uL	10 mL		
LCS 320-212670/2	LCPFCSP_00119	500 uL	10 mL		
LCSD 320-212670/3	LCMPFC_ALL_SU_00043	500 uL	10 mL		
LCSD 320-212670/3	LCPFCSP_00119	500 uL	10 mL		
320-36685-A-7	LCMPFC_ALL_SU_00043	500 uL	10 mL		
320-36685-A-8	LCMPFC_ALL_SU_00043	500 uL	10 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s) 212670 Test 3535_PFC

Earliest Holding Time 3-13-18

Batch Information	1st Level Reviewer	2nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary batch information complete and entered into TALS correctly	✓	✓
BD, FV, and AL initials are transcribed into the batch comment	✓	✓
Sample List Tab	**1st Level Reviewer**	**2nd Level Reviewer**
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	NA	NA
MS/MSD or MS/DU NCM filed	✓	✓
NCM for any anomalies filed	NA	NA
All NCMs include method code, matrix, and prep batch	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Batch contains no more than 20 live samples	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed properly in TALS	✓	✓
All additional information is transcribed into TALS and is correct and raw data is attached	✓	✓
Comments/Observations are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and checked into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Internal Standard is added to the reagents	✓	✓
All units are correctly transcribed into TALS	✓	✓

1st Level Reviewer: KMK Date: 3-13-18

2nd Level Reviewer: VPM Date: ~~3-13-18~~ 3/14/18

Comments: VPM 3-14-18

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC-1DA

Analyst (Print Name) Amani Royce **Reagent ID** 1168592

Date 3/15/18

Job #	Sample #	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
320-36619	1	40,000	15	300	20
480-132031	1	↓	30	↓	10x
320-36680	3		V		10X
320-36685	8		60		5x

aak 3/15/18

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 36960 Work List ID(s): 56376, 56384

Extraction Batch: 213404 Analysis Batch(es): 216821, 216849

Delivery Rank 4 Due Date: ———

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 215535	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• $RF_{average}$ criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).			✓
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?			✓
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓	✓	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

**Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.*

1st Level (Analyst): CBw Date: 4/9/18

2nd Level Reviewer: Mway Date: 4/9/2018

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 07APR2018NCA_PFC Worklist Num: 56376
Instrument: A8_N Method: A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b
Anaylysis Type: SemiVOA Creator: Royce, Amani A
Inj Volume: 2.00 Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCB	320-0056376-001	CCB	07-Apr-2018 09:01:11	2018.04.07LLA_004.d	20	1.0		SV
CCVL	320-0056376-002	CCVL	07-Apr-2018 09:08:59	2018.04.07LLA_005.d	21	1.0		SV
CCV L4	320-0056376-003	CCVIS	07-Apr-2018 09:16:48	2018.04.07LLA_006.d	13	1.0		SV
MB 320-213404/1-A	320-0056376-004	MB	07-Apr-2018 09:24:36	2018.04.07LLA_007.d	1	1.0		SV
LCS 320-213404/2-A	320-0056376-005	LCS	07-Apr-2018 09:32:24	2018.04.07LLA_008.d	2	1.0		SV
320-36960-A-4-A	320-0056376-006	Client	07-Apr-2018 09:40:14	2018.04.07LLA_009.d	3	1.0	BNA01-SB1-01	SV
320-36960-A-4-B MS	320-0056376-007	MS	07-Apr-2018 09:48:06	2018.04.07LLA_010.d	4	1.0	BNA01-SB1-01	SV
320-36960-A-4-C MSD	320-0056376-008	MSD	07-Apr-2018 09:55:57	2018.04.07LLA_011.d	5	1.0	BNA01-SB1-01	SV
320-36960-A-5-A	320-0056376-009	Client	07-Apr-2018 10:03:50	2018.04.07LLA_012.d	6	1.0	BNA01-SB1-02	SV
320-36960-A-6-A	320-0056376-010	Client	07-Apr-2018 10:11:38	2018.04.07LLA_013.d	7	1.0	BNA03-SB1-01	SV
320-36960-A-7-A	320-0056376-011	Client	07-Apr-2018 10:19:27	2018.04.07LLA_014.d	8	1.0	BNA03-SB1-01D	SV
320-36960-A-8-A	320-0056376-012	Client	07-Apr-2018 10:27:15	2018.04.07LLA_015.d	9	1.0	BNA03-SB1-02	SV
320-36960-A-9-A	320-0056376-013	Client	07-Apr-2018 10:35:03	2018.04.07LLA_016.d	10	1.0	BNA03-SB2-01	SV
CCV L5	320-0056376-014	CCV	07-Apr-2018 10:42:53	2018.04.07LLA_017.d	14	1.0		SV
320-36960-A-10-A	320-0056376-015	Client	07-Apr-2018 10:50:40	2018.04.07LLA_018.d	11	1.0	BNA03-SB2-01D	SV
320-36960-A-11-A	320-0056376-016	Client	07-Apr-2018 10:58:29	2018.04.07LLA_019.d	12	1.0	BNA03-SB2-02	SV
320-36960-A-12-A	320-0056376-017	Client	07-Apr-2018 11:06:21	2018.04.07LLA_020.d	13	1.0	BNA04-SB1-01	SV
320-36960-A-13-A	320-0056376-018	Client	07-Apr-2018 11:14:11	2018.04.07LLA_021.d	14	1.0	BNA04-SB1-02	SV
320-36960-A-14-A	320-0056376-019	Client	07-Apr-2018 11:22:01	2018.04.07LLA_022.d	15	1.0	BNA05-SB1-01	SV
320-36960-A-15-A	320-0056376-020	Client	07-Apr-2018 11:29:55	2018.04.07LLA_023.d	16	1.0	BNA05-SB1-02	SV
320-36960-A-18-A	320-0056376-021	Client	07-Apr-2018 11:37:45	2018.04.07LLA_024.d	17	1.0	BNA05-SD1-01	SV
CCV L4	320-0056376-022	CCV	07-Apr-2018 11:45:36	2018.04.07LLA_025.d	13	1.0		SV

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 07APR2018NCB_PFC Worklist Num: 56384
Instrument: A8_N Method: A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b
Anaylysis Type: SemiVOA Creator: Hannigan, Alyssa B
Inj Volume: 2.00 Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L4	320-0056384-001	CCV	07-Apr-2018 11:45:36	2018.04.07LLA_025.d	13	1.0		sv
LCS 320-213404/2-A	320-0056384-002	LCS	07-Apr-2018 11:53:26	2018.04.07LLA1_008.d	2	1.0		sv
320-36960-A-4-A	320-0056384-003	Client	07-Apr-2018 12:01:15	2018.04.07LLA1_026.d	18	5.0	BNA01-SB1-01	sv
320-36960-A-4-B MS	320-0056384-004	MS	07-Apr-2018 12:09:05	2018.04.07LLA1_027.d	19	5.0	BNA01-SB1-01	sv
320-36960-A-4-C MSD	320-0056384-005	MSD	07-Apr-2018 12:16:54	2018.04.07LLA1_028.d	20	5.0	BNA01-SB1-01	sv
CCV L5	320-0056384-006	CCV	07-Apr-2018 12:24:43	2018.04.07LLA1_029.d	14	1.0		sv

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 07APR2018NCA_PFC Worklist Number: 56376
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180407-56376.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 216819	LC PFC ICAL Raw Batch: 216820	LC PFC_QSM5-1 ICAL Raw Batch: 216821
# 1 CCB	# 1 CCB	# 1 CCB	# 1 CCB
# 2 CCVL	# 2 CCVL	# 2 CCVL	# 2 CCVL
# 3 CCV L4	# 3 CCV L4	# 3 CCV L4	# 3 CCV L4
# 4 MB 320-213404/1-A			# 4 MB 320-213404/1-A
# 5 LCS 320-213404/2-A			# 5 LCS 320-213404/2-A
# 6 320-36960-A-4-A			# 6 320-36960-A-4-A
# 7 320-36960-A-4-B MS			# 7 320-36960-A-4-B MS
# 8 320-36960-A-4-C MSD			# 8 320-36960-A-4-C MSD
# 9 320-36960-A-5-A			# 9 320-36960-A-5-A
#10 320-36960-A-6-A			#10 320-36960-A-6-A
#11 320-36960-A-7-A			#11 320-36960-A-7-A
#12 320-36960-A-8-A			#12 320-36960-A-8-A
#13 320-36960-A-9-A			#13 320-36960-A-9-A
#14 CCV L5	#14 CCV L5	#14 CCV L5	#14 CCV L5
#15 320-36960-A-10-A			#15 320-36960-A-10-A
#16 320-36960-A-11-A			#16 320-36960-A-11-A
#17 320-36960-A-12-A			#17 320-36960-A-12-A
#18 320-36960-A-13-A			#18 320-36960-A-13-A
#19 320-36960-A-14-A			#19 320-36960-A-14-A
#20 320-36960-A-15-A			#20 320-36960-A-15-A
#21 320-36960-A-18-A			#21 320-36960-A-18-A
#22 CCV L4	#22 CCV L4	#22 CCV L4	#22 CCV L4

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 07APR2018NCB_PFC Worklist Number: 56384
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180408-56384.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 216847	LC PFC ICAL Raw Batch: 216848	LC PFC_QSM5-1 ICAL Raw Batch: 216849
# 1 CCV L4	# 1 CCV L4	# 1 CCV L4	# 1 CCV L4
# 2 LCS 320-213404/2-A			# 2 LCS 320-213404/2-A
# 3 320-36960-A-4-A			# 3 320-36960-A-4-A
# 4 320-36960-A-4-B MS			# 4 320-36960-A-4-B MS
# 5 320-36960-A-4-C MSD			# 5 320-36960-A-4-C MSD
# 6 CCV L5	# 6 CCV L5	# 6 CCV L5	# 6 CCV L5

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

48 AB 4/7/18

Batch Number: 320-213404

Method Code: 320-Shake_Bath_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 3/16/2018 11:18:00AM

Batch End: 4/6/2018 2:15:00PM

Shake Extraction with Ultrasonic Bath Extraction

Due: 4/2

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB-320-213404/1 N/A	N/A	5.00 g	10.00 mL	N/A	N/A	N/A		
2	LCS-320-213404/2 N/A	N/A	5.00 g	10.00 mL	N/A	N/A	N/A	R1	
3	320-36960-A-4 (PFC_IDA_DOD5.1) 4/2	N/A (320-36960-1)	5.00 g	10.00 mL	3/16/18	16_Days	4	5x	
4	320-36960-A-4-MS (PFC_IDA_DOD5.1)	N/A (320-36960-1)	4.99 g	10.00 mL	3/16/18	16_Days	4	5x	
5	320-36960-A-4-MSD (PFC_IDA_DOD5.1)	N/A (320-36960-1)	4.96 g	10.00 mL	3/16/18	16_Days	4	5x	
6	320-36960-A-5 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	5.07 g	10.00 mL	3/16/18	16_Days	4		
7	320-36960-A-6 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	5.10 g	10.00 mL	3/16/18	16_Days	4		
8	320-36960-A-7 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	5.08 g	10.00 mL	3/16/18	16_Days	4		
9	320-36960-A-8 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	5.03 g	10.00 mL	3/16/18	16_Days	4		
10	320-36960-A-9 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	4.98 g	10.00 mL	3/16/18	16_Days	4		
11	320-36960-A-10 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	4.97 g	10.00 mL	3/16/18	16_Days	4		
12	320-36960-A-11 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	5.00 g	10.00 mL	3/16/18	16_Days	4		
13	320-36960-A-12 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	4.93 g	10.00 mL	3/16/18	16_Days	4		
14	320-36960-A-13 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	4.96 g	10.00 mL	3/16/18	16_Days	4		
15	320-36960-A-14 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	5.04 g	10.00 mL	3/16/18	16_Days	4		

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213404

Analyst: Sharifi, Nooshin

Batch Open: 3/16/2018 11:18:00AM

Method Code: 320-Shake_Bath_14D-320

Batch End: 4/6/2018 2:15:00PM

16	320-36960-A-15 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	4.95 g	10.00 mL	3/16/18	16_Days	4	
17	320-36960-A-18 (PFC_IDA_DOD5.1)	N/A (320-36960-1)	5.08 g	10.00 mL	3/16/18	16_Days	4	

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213404

Analyst: Sharifi, Nooshin

Batch Open: 3/16/2018 11:18:00AM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Batch Notes

Balance ID	QA-070
Blank Sand Lot #	162639
Filter ID	NA
Millipore Water Dispense Date	4-31-18
Analyst ID - Reagent Drop Witness	TMZ
SPE Cartridge Lot ID	01763748A
SPE Cartridge Type	WAX 150mg
Hexane ID	1175187
Methanol ID	1204219
Ammonium Hydroxide/MeOH ID	1204324
Sodium Hydroxide ID	1142835
Methanolic Potassium Hydroxide ID	1178465
Manifold ID	12,18
Interference check solution ID	NA
Acetic Acid ID	985731
pH Indicator ID	3817
Analyst ID - IS Reagent Drop	HJA
Analyst ID - IS Reagent Drop Witness	VPM
Internal Standard ID#	1178675
Analyst ID - Concentration	HJA
Analyst ID - Aliquot Step	HJA

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213404 Analyst: Sharifi, Nooshin Batch Open: 3/16/2018 11:18:00AM

Method Code: 320-Shake_Bath_14D-320 Batch End:

Analyst ID - Final Volume Step HJA

Batch Comment Sample labels match client IDs NSH; Supelco envi-carb lot # 97221

Comments

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213404

Method Code: 320-Shake_Bath_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 3/16/2018 11:18:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-213404/1	LCMPFC_ALL_SU_00042	500 uL	10.00 mL	NSH 3/16/18	TMZ 3-16-18
LCS 320-213404/2	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
LCS 320-213404/2	LCPFCSP_00118	500 uL	10.00 mL		
320-36960-A-4	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-4 MS	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-4 MS	LCPFCSP_00118	500 uL	10.00 mL		
320-36960-A-4 MSD	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-4 MSD	LCPFCSP_00118	500 uL	10.00 mL		
320-36960-A-5	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-6	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-7	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-8	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-9	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-10	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-11	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-12	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-13	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		
320-36960-A-14	LCMPFC_ALL_SU_00042	500 uL	10.00 mL		

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-213404

Analyst: Sharifi, Nooshin

Batch Open: 3/16/2018 11:18:00AM

Method Code: 320-Shake_Bath_14D-320

Batch End:

320-36960-A-15	LCMPFC_ALL_SU_00042	500 uL	10.00 mL	NSH 3/16/18	TMZ 3-16-18
320-36960-A-18	LCMPFC_ALL_SU_00042	500 uL	10.00 mL	↓	↓

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s) 320-213404 Test PFC-S

Earliest Holding Time 3-19-18

Batch Information	1st Level Reviewer	2nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary batch information complete and entered into TALS correctly	✓	✓
BD, FV, and AL initials are transcribed into the batch comment	✓	✓
Sample List Tab	**1st Level Reviewer**	**2nd Level Reviewer**
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	NA	NA
MS/MSD or MS/DU NCM filed	NA	NA
NCM for any anomalies filed	NA	NA
All NCMs include method code, matrix, and prep batch	NA	NA
Method/sample/login/QAS checked and correct	✓	✓
Batch contains no more than 20 live samples	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed properly in TALS	NA	NA
All additional information is transcribed into TALS and is correct and raw data is attached	✓	✓
Comments/Observations are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and checked into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Internal Standard is added to the reagents	✓	✓
All units are correctly transcribed into TALS	✓	✓

1st Level Reviewer: HSA Date: 4-6-18

2nd Level Reviewer: VPM Date: 4-6-18

Comments: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC – IDA

Analyst (Print Name) Amani Royce **Reagent ID** LC_80:20_00002

Date 4/7/18

Job #	Sample #	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
320-37045	13	10,000	30	300	10X
480-132665	1	↓	15	1500	100X
↓	2	↓	↓	↓	100K
480-132666	1	↓	↓	↓	↓
↓	2	↓	↓	↓	↓
↓	3	↓	↓	↓	↓
320-36960	4	↓	60	300	5
↓	4MS	↓	↓	↓	↓
↓	4MSD	↓	↓	↓	↓

ave 4/7/18

Comments:

Q:\Document-Management\Forms\QA-747 SampleDilutionRecord.doc 1/29/20187 RE

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-36960-1

SDG No.:

Project: PFC 4 SI's - Nashville ANGB

Client Sample ID	Lab Sample ID
BNA01-SB1-01	320-36960-4
BNA01-SB1-02	320-36960-5
BNA03-SB1-01	320-36960-6
BNA03-SB1-01D	320-36960-7
BNA03-SB1-02	320-36960-8
BNA03-SB2-01	320-36960-9
BNA03-SB2-01D	320-36960-10
BNA03-SB2-02	320-36960-11
BNA04-SB1-01	320-36960-12
BNA04-SB1-02	320-36960-13
BNA05-SB1-01	320-36960-14
BNA05-SB1-02	320-36960-15
BNA05-SD1-01	320-36960-18

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-36960-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: D 2216 DL Date: 01/01/2017 12:44

Analyte	Wavelength/ Mass	LOQ (%)	DL (%)
Percent Moisture		0.1	0.1
Percent Solids		0.1	0.1

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-36960-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: D 2216 XMDL Date: 01/01/2017 12:46

Analyte	Wavelength/ Mass	XRL (%)	XMDL (%)
Percent Moisture		0.1	0.1
Percent Solids		0.1	0.1

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: D 2216

Start Date: 03/13/2018 15:10 End Date: 03/13/2018 15:10

Lab Sample Id	D/F	Type	Time	Analytes																									
				% Sol	Moist																								
320-36960-4	1	T	15:10	X	X																								
320-36960-4 DU	1	T	15:10	X	X																								
320-36960-5	1	T	15:10	X	X																								
320-36960-6	1	T	15:10	X	X																								
320-36960-7	1	T	15:10	X	X																								
320-36960-8	1	T	15:10	X	X																								
320-36960-9	1	T	15:10	X	X																								
320-36960-10	1	T	15:10	X	X																								
320-36960-11	1	T	15:10	X	X																								
320-36960-12	1	T	15:10	X	X																								
320-36960-13	1	T	15:10	X	X																								
320-36960-14	1	T	15:10	X	X																								
320-36960-15	1	T	15:10	X	X																								
320-36960-18	1	T	15:10	X	X																								

Prep Types:
T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 212716 Batch Start Date: 03/13/18 15:10 Batch Analyst: Saechao, Tammy C

Batch Method: D 2216 Batch End Date: 03/14/18 09:32

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry	AnalysisComment	
320-36960-A-4	BNA01-SB1-01	D 2216	T	1	1.04 g	9.07 g	7.48 g		
320-36960-A-4 DU	BNA01-SB1-01	D 2216	T	2	1.03 g	11.25 g	9.30 g		
320-36960-A-5	BNA01-SB1-02	D 2216	T	3	1.02 g	11.24 g	8.94 g		
320-36960-A-6	BNA03-SB1-01	D 2216	T	4	1.01 g	11.20 g	8.89 g		
320-36960-A-7	BNA03-SB1-01D	D 2216	T	5	1.00 g	10.22 g	8.11 g		
320-36960-A-8	BNA03-SB1-02	D 2216	T	6	1.03 g	12.61 g	9.97 g		
320-36960-A-9	BNA03-SB2-01	D 2216	T	7	1.07 g	14.27 g	11.08 g		
320-36960-A-10	BNA03-SB2-01D	D 2216	T	8	1.04 g	9.57 g	7.40 g		
320-36960-A-11	BNA03-SB2-02	D 2216	T	9	1.01 g	9.24 g	7.55 g		
320-36960-A-12	BNA04-SB1-01	D 2216	T	10	1.07 g	9.00 g	7.32 g		
320-36960-A-13	BNA04-SB1-02	D 2216	T	11	0.99 g	13.92 g	10.13 g		
320-36960-A-14	BNA05-SB1-01	D 2216	T	12	1.08 g	10.80 g	8.76 g		
320-36960-A-15	BNA05-SB1-02	D 2216	T	13	1.03 g	7.91 g	6.63 g		
320-36960-A-18	BNA05-SD1-01	D 2216	T	14	1.04 g	13.79 g	10.65 g	pebbles, wet sand	

Batch Notes	
Balance ID	QA-068
Date and Time Samples in Desiccator	03/14/2018 08:27
Date and Time Samples out of Desiccator	03/14/2018 09:32
Date samples were placed in the oven	03/13/2018
Oven Temp In	110 Degrees C
Time samples were place in the oven	15:10
Date samples were removed from oven	03/14/2018
Oven Temp Out	112 Degrees C
Time Samples were removed from oven	08:27
Oven ID	Soil Prep #2
Thermometer ID	151969607

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36960-1

SDG No.:

Batch Number: 212716 Batch Start Date: 03/13/18 15:10 Batch Analyst: Saechao, Tammy C

Batch Method: D 2216 Batch End Date: 03/14/18 09:32

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 212715, 212716, 212794, 212799, 212758 Test: % MOISTURE

Earliest Holding Time: NA; 020-36962, 36960, 36979, 36980, 36935

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	NA	✓
The pH is transcribed correctly in TALS	NA	✓
All additional information transcribed into TALS is correct and raw data is attached	NA	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	NA	✓
All spike amounts correct and added to necessary samples and QC	NA	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: TCS Date: 03/14/18

2nd Level Reviewer: [signature] Date: 3/14/18

Comments:

Subcontract Data

Shipping and Receiving Documents

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Mike Klidzejs	Lab PM: David Alltucker 916.374.4383	Carrier Tracking No(s):	COC No: BNA-01
Client Contact: Mr. Michael Poligone	Phone: 615.663.7485	E-Mail: David.Alltucker@testamericainc.com		Page: Page 1 of 3
Company: Leidos, Inc.				Job #:
Address: 301 Laboratory Road	Due Date Requested:			
City: Oak Ridge	TAT Requested (days): Standard TAT (21 days)			
State, Zip: TN, 37830				
Phone: 865.405.8332	PO #: P010205723			
Email: poligonem@leidos.com	Charge No #: 322229.00.09.8002.122			
Project Name: PFC Site Investigations for ANG - Phase 4	TA Project #: 32010671			
Site: Nashville Air National Guard Base	SSOW#: N/A			

Analysis Requested

320-36960 Chain of Custody

Preservation Codes:
L - M - Hexane
OH - N - None
Acetate - O - AsNaO2
ric Acid - P - Na2O4S
HSO4 - Q - Na2SO3
DH - R - Na2S2O3
chlor - S - H2SO4
corbic Acid - T - TSP Dodecahydrate
I - Ice - U - Acetone
J - DI Water - V - MCAA
K - EDTA - W - pH 4-5
L - EDA - Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA - PFAS - UCMR list	Total Number of contain	Special Instructions/Note:
			Preservation Code:				N		
BNA-ER-SB-01	3/5/18	1045	G	W			2	2	
BNA-FB-01		1055	G	W			2	2	
BNA-RB-01		1105	G	W			2	2	
BNA01-SB1-01		1415	G	S			1	1	
BNA01-SB1-01MS		1415	G	S		Y	1	1	MS FOR PRIMARY SAMPLE
BNA01-SB1-01MSD		1415	G	S		Y	1	1	MSD FOR PRIMARY SAMPLE
BNA01-SB1-02		1550	G	S			1	1	
BNA03-SB1-01	3/6/18	0720	G	S			1	1	
* BNA03-SB1-01D		0720	G	S			1	1	
BNA03-SB1-02		0735	G	S			1	1	
BNA03-SB2-01		0920	G	S			1	1	

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

Sample Disposal
(Per Contract Terms - Lab disposal after 3 months archive

Deliverable Requested: I, II, III, IV, Other (specify) — Deliverable Requested is per terms of contract.

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
M. Klidzejs	3/9/18 1730	Leidos	N/A	3/9/18 1730	FEDEX
N/A		FEDEX		3/10/18 930	TA

Custody Seals Intact: ☐ Yes ☐ No
Custody Seal No.: * Date on Coolers is 3/10/18 & 3/12/18
Cooler Temperature(s) °C and Other Remarks: 0.3c

Ver: 08/04/2016

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Mike Klidzejs	Lab PM: David Alltucker 916.374.4383	Carrier Tracking No(s):	COC No: BNA-01
Client Contact: Mr. Michael Poligone	Phone: 615.663.7485	E-Mail: David.Alltucker@testamericainc.com		Page: Page 3 of 3
Company: Leidos, Inc.				Job #:
Address: 301 Laboratory Road	Due Date Requested:			
City: Oak Ridge	TAT Requested (days): Standard TAT (21 days)			
State, Zip: TN, 37830				
Phone: 865.405.8332	PO #: P010205723			
Email: poligonem@leidos.com	Charge No #: 322229.00.09.8002.122			
Project Name: PFC Site Investigations for ANG - Phase 4	TA Project #: 32010671			
Site: Nashville Air National Guard Base	SSOW#: N/A			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA - PFAS - UCMR list	TCLP VOCs	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N			
BNA-10W-5-01	3/8/18	1655	C	S				1	1	
MW-BNA05-01-01	3/9/18	0902	G	W			2		2	
MW-BNA05-01-01D		0902	G	W			2		2	
MW-BNA05-01-01MS		0902	G	W		Y	2		2	MS FOR PRIMARY SAMPLE
MW-BNA05-01-01MSD		0902	G	W		Y	2		2	MSD FOR PRIMARY SAMPLE
MW-BNA01-01-01		1134	G	W			2		2	
BNA04-SW1-01		1340	G	W			2		2	
BNA-1RW-W-01		1520	G	W			~~2~~ 3		3	
							MK 3/9/18			
					MK 3/9/18					

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

Sample Disposal
(Per Contract Terms - Lab disposal after 3 months archive

Deliverable Requested: I, II, III, IV, Other (specify) — Deliverable Requested is per terms of contract.

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
M. Klidzejs	3/9/18 1730	Leidos	N/A	3/9/18 1730	FedEx
Relinquished by: N/A	Date/Time:	Company FedEx	Received by:	Date/Time: 3/10/18	Company TA-Sac

Custody Seals Intact: △ Yes △ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 0.3c

Ver: 08/04/2016

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Mike Klidzejs	Lab PM: David Alltucker 916.374.4383	Carrier Tracking No(s):
Client Contact: Mr. Michael Poligone	Phone: 615.663.7485	E-Mail: David.Alltucker@testamericainc.com	
Company: Leidos, Inc.			
Address: 301 Laboratory Road	Due Date Requested:		
City: Oak Ridge	TAT Requested (days): Standard TAT (21 days)		
State, Zip: TN, 37830			
Phone: 865.405.8332	PO #: P010205723		
Email: poligonem@leidos.com	Charge No #: 322229.00.09.8002.122		
Project Name: PFC Site Investigations for ANG - Phase 4	TA Project #: 32010671		
Site: Nashville Air National Guard Base	SSOW#: N/A		

COC No: BNA-01
Page: Page 2 of 3
Job #:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA - PFAS - UCMR list	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
BNA03-SB2-01D	3/6/18	0920	G	S			1	1	
BNA03-SB2-02		0940	G	S			1	1	
BNA04-SB1-01		1330	G	S			1	1	
BNA04-SB1-02		1420	G	S			1	1	
BNA05-SB1-01	3/7/18	0825	G	S			1	1	
BNA05-SB1-02		0835	G	S			1	1	
BNA05-SW1-01	3/8/18	1145	G	W			2	2	
BNA05-ER-SD-01		1205	G	W			2	2	
BNA05-SD1-01		1210	G	S			1	1	
BNA-ER-GW-01		1635	G	W			2	2	
BNA-FB-02		1645	G	W			2	2	TRIZMA PRESERVED

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

Sample Disposal
(Per Contract Terms - Lab disposal after 3 months archive

Deliverable Requested: I, II, III, IV, Other (specify) — Deliverable Requested is per terms of contract.

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by: M. Klidzejs	Date/Time: 3/9/18 1730	Company: Leidos	Received by: N/A	Date/Time: 3/9/18 1730	Company: FedEx		
Relinquished by: N/A	Date/Time:	Company: FedEx	Received by:	Date/Time: 3/9/18 930	Company: TA-Sac		
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 0.3C				

Ver: 08/04/2016

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Alltucker, David R	Carrier Tracking No(s):	COC No: 320-113593.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: david.alltucker@testamericainc.com	State of Origin: Tennessee	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Oregon		Job #: 320-36960-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 3/28/2018			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Phase IV, ANG-Mutiple Sites (Phase III &	Project #: 32010671			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B_DOD5/1311_Z TCLP Volatile Organic Compounds	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
BNA-IDW-W-01 (320-36960-26)	3/9/18	15:20 Central		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	3-14-18 1630	TAS SAC			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Allucker, David R	Carrier Tracking No(s):	COC No: 320-113498.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: david.allucker@testamericainc.com	State of Origin: Tennessee	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Oregon		Job #: 320-36960-1
Address: 5755 8th Street East,	Due Date Requested: 3/28/2018			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel) 253-922-5047(Fax)	PO #:			
Email:	WO #:			
Project Name: Phase IV, ANG-Mutiple Sites (Phase III &	Project #: 32010671			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Perform MS/MSD (Yes or No)	826OB_DOD/1311_Z TCLP Volatile Organic Compounds	Total Number of containers	Special Instructions/Note:
			Preservation Code:					
BNA-IDW-5-01 (320-36960-21)	3/8/18	16:55 Central		Solid		X		

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by:	Date/Time: 3-13-18 1630	Company	Received by:		Date/Time: 3-14-18 0920	Company TASea	
Relinquished by:	Date/Time:	Company	Received by:		Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:		Date/Time:	Company	
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: IR5 = 0.9/a8				

Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 320-36960-1

Login Number: 36960
List Number: 1
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

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

Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 320-36960-1

Login Number: 36960
List Number: 3
Creator: Burtness, Benjamin W

List Source: TestAmerica Denver
List Creation: 03/15/18 06:54 PM

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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 320-36960-1

Login Number: 36960
List Number: 2
Creator: Blankinship, Tom X

List Source: TestAmerica Seattle
List Creation: 03/14/18 01:16 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	0.9°C
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?	False	Received project as a subcontract.
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	